



Technical Report for Narrative Review in support of the NHMRC Recreational Water Quality Guidelines: Chemical Hazards



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By Ecos Environmental Consulting Pty Ltd

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Executive Summary

Background

The National Health and Medical Research Council (NHMRC) commissioned Ecos Environmental Consulting Pty Ltd (Ecos) to conduct this Technical Report as part of a narrative review on chemical hazards in recreational waters that will be used to update the *Guidelines for Managing Risks in Recreational Water* (NHMRC, 2008) (the Guidelines).

Chemical hazards in recreational waters may arise from a range of point and non-point (diffuse) sources in the catchment area of the particular recreational water body. It is generally considered that exposures to chemical hazards in recreational waters will be low and usually within safe levels (i.e. below guideline levels). However, for the update to the Guidelines, NHMRC considers it important to determine the current status of evidence for any potential human health risks resulting from exposure to chemical hazards in recreational water. This includes reviewing any site-specific issues that could lead to higher exposures or types of chemical substances that may be problematic in most recreational water use situations. The review will provide NHMRC with an independent body of evidence to assure that the revision of the Guidelines is based on the most up-to-date and relevant scientific literature

Methods

The review process followed a research protocol methodology developed specifically for this narrative review (O'Connor, 2020). The protocol involved a systematic search of several international databases of primary scientific research literature (Scopus, Web of Science, PubMed, Google Scholar) using search strings constructed from an extensive key word list. In addition to primary research literature, a search of grey literature, including existing recreational water quality guidelines and/or reports, was undertaken.

The search strings were constructed to identify literature citations relevant to a primary research question and three secondary research questions supplied by NHMRC's Recreational Water Quality Advisory Committee (the Committee). The primary research question was:

Are exposures to the following hazards: per- and poly-fluoroalkyl substances (PFAS), pesticides, nanomaterials, hydrocarbons, heavy metals, endocrine-disrupting chemicals (EDCs), surfactants, or combinations thereof, likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?

The secondary questions were:

1. *What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?*
2. *What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?*



3. *Should the focus be on “hot spots” i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?*

To assist in appropriate assessment of the literature, the search results were classified into two broad categories:

- (i) primary studies that were largely peer-reviewed journal articles, and;
- (ii) existing guidelines that were mainly regulatory guidelines or technical guidance publications produced by federal and state agencies in support of regulatory compliance goals. Such literature is also commonly included in the classification “grey literature”.

The publication date-range for inclusion was from 1 January 2003 to 30 October 2020.

The methodological quality of guidelines was assessed using administrative and technical criteria via an assessment tool provided by NHMRC which was developed based on common domains for assessing guidelines and systematic reviews such as the Appraisal of Guidelines for Research and Evaluation (AGREE) tool. For primary studies, a critical appraisal of evidence tool was used, which was based on approaches described in the Critical Appraisal Skills Programme (CASP).

As part of the quality assessment, guidelines and primary studies were rated for risk of bias using methods developed from the CASP and the US Office of Health Assessment and Translation (OHAT) risk of bias assessment tool. This Technical Report contains detailed assessments of each primary study and guideline included in the final list of studies. These assessments were used to evaluate the body of evidence described in the companion Evidence Evaluation Report. The Evidence Evaluation Report used a process based on the OHAT approach to using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system to assess the certainty of the body of evidence from primary studies and permit upgrading or downgrading of the body of evidence, as appropriate. For existing guidelines, the assessment methodology for the body of evidence drew on the GRADE approach as well as the outcomes of relevance to the primary and secondary research questions.

Results

Searches for grey literature identified 40 documents. Each document was evaluated for its relevance to the primary and secondary research questions and excluded if not relevant. This process identified 11 guideline documents relevant to the primary and secondary research questions. Following quality assessments, 4 documents were considered ineligible on quality grounds, leaving 7 guidelines for evaluation and synthesis.

For primary studies, search results by database yielded 3523 citations initially. After removal of duplicates the number was 1769. Further screening for relevancy identified 6 studies. These were assessed for eligibility (quality including risk of bias), which resulted in 3 studies remaining for evaluation and synthesis.

For the 7 guidelines and 3 primary studies eligible for evaluation, data for evaluation was extracted from each document into standard forms developed for the purpose.

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The information contained in the quality assessment and data extraction forms was used in the accompanying Evidence Evaluation Report for this narrative review.



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Glossary

ADWG	Australian Drinking Water Guidelines
AGREE	Appraisal of Guidelines for Research and Evaluation
AGWR	Australian Guidelines for Water Recycling
AHMC	Australian Health Ministers Conference
BMDL	Benchmark dose level
BTEX	Benzene, toluene, ethylbenzene and xylene
CASP	Critical Appraisal Skills Programme
CDC	Centre for Disease Control and Prevention
CR	Carcinogenic risk
CSF	Carcinogenic slope factor
CSO	Combined sewer overflow
DALY	Disability-adjusted life years
DBP	Disinfection by-product
ECDC	European Centre for Disease Prevention and Control
EDC	Endocrine-disrupting chemical
EEA	European Environment Agency
EFSA	European Food Safety Authority
EPA	Environmental Protection Agency
enHealth	Environmental Health Standing Committee
EPHC	Environment Protection and Heritage Council
EU	European Union
FSANZ	Food Standards Australia New Zealand
GC/MS	Gas chromatography mass spectrometry
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HBT	Health-based target
HEPA	Heads of Environmental Protection Agency Australia and New Zealand
HQ/HI	Hazard quotient / hazard index
HPLC	High Performance Liquid Chromatography
ICPMS	Inductively coupled plasma mass spectrometry
LOD	Limit of detection
LRV	Log reduction values
MoA	Mode of action
MoE	Margin of Exposure
MRC	British Medical Research Council
MW	Molecular weight
NDMA	N-Nitrosodimethylamine
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NOM	Natural organic matter
NRC	National Research Council



NRMMC	National Resource Management Ministerial Council
NZ MoH	New Zealand Ministry of Health
OECD	Organisation for Economic Co-operation and Development
OHAT	Office of Health Assessment and Translation
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
PCR/qPCR	Polymerase Chain Reaction / Quantitative Polymerase Chain Reaction
PDTA	Propylenedinitrilotetraacetic acid
PECO	Population, Exposure, Comparator, Outcome
PFHxS	Perfluorohexane sulfonate
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PhAC	Pharmaceutically active compound
PHE	Public Health England
POD	Point of departure
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PTDI	Provisional Tolerable Daily Intake
QMRA	Quantitative Microbial Risk Assessment
QRA	Quantitative risk assessment
QSAR	Quantitative Structure Activity Relationship
RCT	Randomised controlled trial
RfD	Reference dose
RoB	Risk of bias
RWQAC	Recreational Water Quality Advisory Committee (the Committee)
STP	Sewage treatment plant
TDI	Tolerable daily intake
TE	Trace element
TEF	Toxicity equivalence factors
THM	Trihalomethane
TTC	Threshold of toxicological concern
UCL	Upper confidence limit
UNEP	United Nations Environment Programme
UNEP MAP	United Nations Environment Programme Mediterranean Action Plan
US EPA	United States Environmental Protection Agency
UV	Ultraviolet
VOC/SVOC	Volatile/semi-volatile organic compound
WHO	World Health Organization
WWTP	Wastewater Treatment Plant



1 Introduction

The National Health and Medical Research Council (NHMRC) commissioned Ecos Environmental Consulting Pty Ltd (Ecos) to conduct narrative reviews on two of four research topics that will be used to update the *Guidelines for Managing Risks from Recreational Water* (NHMRC, 2008) (the Guidelines).

The two research topics to be addressed by Ecos are Microbial Risks and Chemical Hazards. The other two topics (Cyanobacteria and Algae, and Free-living Organisms) will be addressed elsewhere. This document addresses Chemical Hazards.

Ecos developed a research protocol to guide the review of the evidence (O'Connor, 2020). The research protocol sets out the methods to be used for the review including the research questions, population groups, health outcomes of interest, and a structured search and evaluation strategy. This Technical Report documents the results obtained using the described methods and contains the detail (e.g. lists of search results, pages of search strings, tabulated reviews of key references, lists of excluded studies) that would otherwise make the related Evidence Evaluation Report difficult to read.

1.1. Purpose and objectives of review

The purpose of the Chemical Hazards review is to inform the update to information provided in Chapter 9 of the Guidelines and any relevant sections throughout the rest of the document with respect to the chemical hazards associated with the recreational use of water. This review, undertaken using a systematic approach, aims to provide NHMRC with an independent body of evidence to assure that the revision of the Guidelines is based on the most up-to-date and relevant scientific literature.



2 Research Protocol

2.1. Review Period

Publications published between 1 January 2003 and 30 October 2020 were considered for the review. Although the existing NHMRC Guidelines were published in 2008, extending the date range back earlier was done to assist in locating any documents that may have been overlooked, have become recognised as being of greater importance since that time or missed the cut-off period during the preparation of the Guidelines.

2.2. Definitions

In this Technical Report, “Chemical Hazards” refers to risks associated with the contamination of recreational waters by chemical substances including organic compounds (e.g. per- and poly-fluoroalkyl substances, pesticides, hydrocarbons, surfactants), metals, nanoparticles, endocrine-disrupting chemicals. For the purposes of this review, this does not include endotoxins. Endotoxins such as cyanotoxins and algal toxins will be considered in another review commissioned by NHMRC.

Definitions of types, uses and users of recreational water are given in **Appendix 1**.

2.3. Research Question/s

The research questions that form the basis of this review were developed by the NHMRC Recreational Water Quality Advisory Committee (the Committee). There is one primary question and three secondary questions.

2.3.1. Primary question

The primary question is: *Are exposures to the hazards outlined in the PECO Table (Table 2-2) below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?*

2.3.2. Secondary questions

The secondary questions are:

1. *What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?*
2. *What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?*
3. *Should the focus be on “hot spots” i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?*



2.3.3. Additional commentary and guidance from the Committee

The Committee listed the following topics in relation to chemical hazards in recreational water that may assist in developing responses to the above questions:

- Substances of interest to include:
 - Key contaminants of concern in recreational waters;
 - Metals and metalloids, halogenated organic compounds and polycyclic aromatic hydrocarbons (PAHs), nutrients, water soluble trace organic contaminants, per- and poly-fluoroalkyl substances (PFAS);
 - Other high-risk chemicals and chemical hazards such as sunscreens and nanoparticles;
- Risk assessment methods (including exposure assessment calculations and assumptions);
- Consideration of short, medium- and long-term exposures;
- Consider whether existing aquatic ecosystem health indicators can be used as surrogates for recreational water quality, noting that aquatic organisms are substantially more sensitive to toxicants than humans. Subsequently, it was decided in discussions with the the Committee that a response to this topic was no longer required since ecosystem health was not necessarily correlated with the presence of pathogens (for example treated outfalls discharging to high energy ocean environments may not prevent a recreational area generally achieving a high ecological score but could be a source of viral pathogens); and
- Consideration of the use of indicator substances for chemical risk assessment and monitoring.

As noted earlier, the primary and secondary research questions were the focus of the review, however, in responding to those questions, it was understood that consideration of the additional commentary and guidance from the Committee and associated questions, as listed above, would be helpful.

2.4. Search Strategy and Selection of Evidence

2.4.1. Overview

The specific steps involved in finding and selecting the evidence for review were:

- Preparation of a list of keywords (search terms) (**Appendix 3**) for approval by the Committee;
- Classification of the list into logical categories related to population, location, study type, property or attribute, method, health outcome, carrier (type of water), exposure pathway (includes split into sub-categories) and source. The classification was performed to assist in composing search strings;
- Development of search strings based on the keywords and preparing combinations of strings to create search strategies;



- Using the composed search strategies to search key life-science literature databases (Scopus, Web of Science, PubMed) and the general technical literature database, Google Scholar;
- In addition to the above literature, a search of grey literature, including existing recreational water quality guidelines and/or reports, was undertaken based on a list provided by the Committee (Appendix 2) plus a search of websites of key international environmental and public health agencies e.g. World Health Organization (WHO), United States Environment Protection Agency (US EPA);
- Lists of retrieved publications were exported to Microsoft Excel spreadsheets and sorted and filtered based on relevancy and quality, including risk of bias, using methods described in detail in subsequent sections below; and
- Shortlisted literature was imported from Excel into a bibliographic software package (Zotero) for management of associated PDF documents and for reporting on the results of the literature search.
- The shortlisted literature was subject to further screening during the quality assessment steps (Sections 2.5 and 2.6).

2.4.2. Keywords and search strings

An extensive list of keywords relevant to recreational water quality (Appendix 3) was composed and included in the research protocol (O'Connor, 2020), which was approved by the Committee. To aid in the effectiveness of the search process, the keyword list was classified into logical categories consistent with a risk assessment exposure pathway approach (Table 2-1). Categories included were population, location, study type, property or attribute, method, health outcome, carrier (type of water), exposure pathway (includes split into sub-categories) and source.

For each category, search strings composed of a series of keywords that described related sub-categories of items. Within search strings, keywords were linked by the logical operators "OR" or "AND" as appropriate. Quotation marks were used to encapsulate keywords that consisted of more than one word. Certain groups of keywords that were variations of a root term were represented by an asterisk (*), which acted as a wildcard for any of those terms (e.g. gastro* for gastroenteritis, gastrointestinal).

Table 2-1. Keywords, search categories, and search strings

No.	Category	Strings
1	Population	"aboriginal" OR "children" OR "pregnant women" OR "anglers" OR "athletes" OR "children" OR "divers" OR "elderly" OR "immunocompromised" OR "indigenous" OR "kayakers" OR "Torres Strait Islander" OR "tourists"
2	Location	"recreational water" OR "recreational waters" OR coast* OR "dam" OR estuar* OR freshwat* OR "lake" OR "river" OR "saline water" OR beach* OR "water parks" OR "marine" OR "pool" OR "surface water" OR "watershed" OR "catchment" OR "wetland"
3	Study Type	"ambient water quality" OR "analysis" OR "case control study" OR "cohort study" OR "cross-sectional study" OR "diagnostic test study" OR "quantitative risk assessment" OR "randomised controlled trial" OR "systematic review" OR "classification" OR "control" OR "source tracking" OR "recreational guidelines" OR "recreational water quality" OR "standards" OR "water quality" OR "risk" OR "jurisdiction" OR "legislation"



No.	Category	Strings
4	Property/Attribute	"bioaccumulative" OR "persistent" OR "synergism" OR "potentiation" OR "indicator" OR "organic" OR "inorganic" OR "methylated metals" OR "perfluorinated" OR "chemicals" OR "contaminant" OR "endotoxin" OR "antimicrobial resistance" OR "source vulnerability" OR "turbidity" OR "color"
6	Method	"prevention" OR "disability adjusted life year" OR "dose-response" "adverse effects" OR "diarrhea" OR "diarrhoea" OR allerg* OR "fever" OR gastro* OR "hay fever-like" OR "headache" OR "health effects" OR "health outcome" OR "hepatotoxicity" OR "illness" OR "induction of asthma" OR "inhalation-related symptoms" OR neuro*
7.1	Outcome 1	"pneumonia-like symptoms" OR "pruritis" OR "shortness of breath exposure" OR ("skin" AND (rash* OR irritation)) OR "toxic" OR "vomiting" OR ((dermal" OR "eye") AND "irritation") OR "flu-like" OR "health" OR illness* OR "nausea" OR symptom* OR outbreak*
7.2	Outcome 2	"water contamination" OR "water pollution" "aural" OR dermal* OR "endocrine" OR "endocrine disruptors" OR "ocular" OR "oral"
8	Carrier	
9	Pathway mode	"exposure" OR "ingestion" OR "inhalation" OR "secondary contact recreation" OR "primary contact recreation" OR "acid mine drainage" OR "outfall" OR "sewage" OR "sewage discharge" OR "sewer overflows" OR "spills" OR "aerosols" OR "industrial discharges" OR "runoff" OR "point source pollution" OR "non-point source pollution" OR "effluent" OR "domestic animals"
10	Pathway 1	"angling" OR "bathing" OR ("body-" AND ("boarding" OR "surfing")) OR "boating" OR "canoeing" OR "diving" OR "fishing" OR ("fishing" AND ("canoe" OR "kayak" OR "riverbank" OR "shoreline" OR "wading")) OR "jet skiing" OR "jet-skiing" OR "kayaking" OR kite*
11.1	Pathway 2 - Sporting activity	"outfall" OR "paddling" OR "parasailing" OR "pentathlon" OR "rowing" OR "sail boarding" OR "sailing" OR "sand" OR "scuba" OR "sea kayaking" OR "snorkelling" OR "spearfishing" OR "sunbathing" OR "surfing"
11.2	Pathway 3 - Sporting activity	"swimmer acquired" OR "swimming" OR "triathlon" OR "wading" OR "wakeboarding" OR "water skiing" OR "water-skiing" OR "water sports" OR "wave-boarding" OR "whitewater canoeing" OR "wind surfing" OR "wind-surfing"
11.3	Pathway 4 - Sporting activity	"antibiotics" OR "benzene" OR "BTEX" OR "ethylene" OR "fuel and oil" OR "fuel" OR ("heavy" OR "trace" AND "metals") OR "hydrocarbons" OR microplastic* OR nonylphenol* OR pesticide* OR "PFAS" OR pharmaceutical* OR "sunscreen" OR surfactant* OR "toluene" OR "xylene" OR "zinc oxide" OR nanomaterial* OR nanoparticle* OR "oil and grease"
12	Source	exposure OR "ingestion" OR "inhalation" OR "secondary contact recreation" OR "primary contact recreation" OR "acid mine drainage" OR "outfall" OR "sewage" OR "sewage discharge" OR "sewer overflows" OR "spills" OR "aerosols" OR "industrial discharges" OR "runoff" OR "point source pollution" OR "non-point source pollution" OR "effluent" OR "domestic animals" OR "angling" OR ("body-" AND ("boarding" OR "surfing")) OR "boating" OR "canoeing" OR "diving" OR "fishing" OR ("fishing" AND ("canoe" OR "kayak" OR "riverbank" OR "shoreline" OR "wading")) OR "jet skiing" OR "jet-skiing" OR "kayaking" OR kite* OR "outfall" OR "paddling" OR "parasailing" OR "pentathlon" OR "rowing" OR "sail boarding" OR "sailing" OR "sand" OR "scuba" OR "sea kayaking" OR "snorkelling" OR "spearfishing" OR "sunbathing (no contact)" OR "surfing" OR "swimmer acquired" OR "swimming" OR "triathlon" OR "wading" OR "wakeboarding" OR "water skiing" OR "water-skiing" OR "water sports" OR "wave-boarding" OR "whitewater canoeing" OR "wind surfing" OR "wind-surfing"
10 - 11	Exposure (10 and 11 combined)	

2.4.3. Scientific Literature Databases

The following life science databases were searched for primary research studies: Scopus, Web of Science, and PubMed. Access to these subscription databases was via Royal Melbourne Institute of Technology University library services. Using the keywords above, searches were also made of the general technical literature database, Google Scholar.



Literature types

To assist in appropriate assessment of the literature, the search results were classified into two broad categories:

- (i) primary studies that were largely peer-reviewed journal articles, and;
- (ii) existing guidelines which were mainly regulatory guidelines or technical guidance publications produced by federal and state agencies in support of regulatory compliance goals. Such literature is also commonly included in the classification “grey literature”, which refers to literature produced by organisations other than conventional academic journal publishers.

2.4.4. Inclusion and exclusion criteria

When conducting the literature search exercise, the criteria for literature inclusion or exclusion were:

- Only studies in English language were included;
- Only studies with human health outcomes were included
 - Well-conducted animal studies could be considered if human data was unavailable, however, no such studies were identified in the context of recreational water quality.
- The publication date-range for inclusion was from 1 January 2003 to 30 October 2020;
 - As noted earlier the date range for review was extended back to 2003 which is 5 years prior to the publication of the 2008 NHMRC Guidelines. Extending the date range back earlier was done to assist in locating any documents that may have been overlooked, have become recognised as being of greater importance since that time or missed the cut-off period during the preparation of the Guidelines;
- Only peer reviewed publications were considered, except for certain grey literature reports and guidelines from reputable international and national agencies (e.g. WHO, US EPA, State and Commonwealth Departments of Health, State EPAs) (see Section 2.4.6).
 - It is likely that such documents have undergone a peer-review process, however the process is not always clearly documented;
- Studies of biotoxins e.g. cyanotoxins, endotoxins were excluded as these are being dealt with via the related Cyanobacteria and Algae review being conducted for NHMRC.
- Studies investigating illnesses acquired from chemically treated recreational water (e.g. swimming pools, spas, hot tubs) were excluded as such facilities were beyond the guideline/review scope.
- Studies of health outcomes as a result of domestic exposure (e.g. drinking water or water used for washing) or occupational exposure to natural waters were excluded as they were beyond the guideline/review scope
- Relevancy – studies irrelevant to the guideline/review scope were excluded, e.g. studies on dental hygiene.

The review considered all studies that involved healthy human subjects of any age who have had recreational exposure to natural waters. Initially, the review was limited



to any developed country (excluding external territories) that was listed as a member of the OECD on the OECD website: (<http://www.oecd.org/about/members-and-partners/>). However, since initial search results yielded a very limited selection of studies, the Committee advised that the OECD filter could be dropped to increase the number of studies that could be included for review.

Apart from the exclusions listed above, all other study types were included (e.g. local and international surveys; peer-reviewed publications or government reports or guidelines for indicators). The resulting list of studies was subject to further screening and filtering based on more refined criteria for quality as described in Section 2.5 below.

2.4.5. Validation of search methods

The search strategies were trialled and refined before undertaking the final full searches. The trialling process involved removal of certain keywords that caused excessive harvesting of literature. For example, the word “reservoir” was added to the keyword list prior to searching to capture water recreation literature associated with water supply reservoirs. Unfortunately, the term is widely used in the health literature to denote “reservoirs of infection” and led to excessive harvesting of literature unrelated to the primary and secondary research questions. Hence the term was subsequently removed from the keyword list.

2.4.6. Grey literature (guidelines)

In addition to the grey literature list provided by the Committee (Appendix 2) and similar literature identified in the scientific literature databases, searches were also undertaken of the websites of the following international organisations:

- British Medical Research Council (MRC)
- Centre for Disease Control and Prevention (CDC)
- Environment Canada
- European Centre for Disease Prevention and Control (ECDC)
- European Environment Agency (EEA)
- Health Canada
- New Zealand Ministry of Health (NZ MoH)
- Public Health England (PHE)
- United Nations Environment Programme (UNEP)
- United Nations Environment Programme Mediterranean Action Plan (UNEP MAP)
- United States Environment Protection Agency (US EPA)
- World Health Organization (WHO)

It was not possible to search the websites of the above organisations using the search terms and search strings described for the major database searches as these were too long and complicated for the simple search engines associated with each website. Furthermore, each website held a narrow list of publications that could be more readily accessed using a greatly shortened list of key words. After some trial and error, the following list was used to search websites of the above organisations: “recreational water”, “bathing water”, “ambient water quality”, “recreational guidelines”, “standards”,



and “water quality”. Search results were focussed on the first 40 titles of reports and documents retrieved in each case.

2.4.7. Documentation of search results

Search results were exported to Microsoft Excel spreadsheets and sorted and filtered based on relevancy and quality, including risk of bias. Search results also recorded which publications were excluded and the justification/criteria for exclusion (Section 7).

Shortlisted literature was imported from Excel into the bibliographic software package Zotero (www.zotero.org) for management of associated PDF documents and for reporting on the results of the literature search.

2.4.8. Population, Exposure, Comparator, Outcome (PECO) table

A PECO table is a method for constructing a search strategy in a strongly evidence-based approach. PECO stands for Population, Exposure, Comparator, and Outcomes; factors that need to be defined at the outset to provide pillars for addressing the question(s) being asked (Morgan, Whaley, et al., 2018).

The key details on the populations that will need to be reviewed to answer the research questions, including any susceptible populations or groups and justification for including them are described in the PECO table (Table 2-2). The PECO table also lists all relevant exposure pathways, comparator populations and health outcomes to be considered.

Table 2-2. Population, Exposure, Comparator, Outcome (PECO) table

Element	Criteria								
Population	<p>The general population was considered, as is the usual case for all NHMRC water guidelines. Individuals with underlying medical conditions aside from general immune suppression were out of scope but the following subgroups were considered as to whether they may require separate guidance in the guidelines:</p> <ul style="list-style-type: none">• Elderly• Infants and children• Pregnant women• Immunocompromised individuals• Indigenous Australians (Aboriginal and Torres Strait Islander peoples)• Any groups that might be exposed more frequently e.g. geographic location, socioeconomic status, lifestyle/occupational exposure.• Sub-groups with unusual exposure patterns making them more susceptible (e.g. athletes such as regular ocean swimmers and surfers, people or age-groups practicing energetic water-based activities) due to larger volumes of water ingested and/or inhaled, different frequency of exposure, etc. <p>The review considered all studies that involved healthy human subjects of any age who have had recreational exposure to natural waters.</p>								
Exposure (and comparator)	<p>Hazards and sources:</p> <table border="1"><thead><tr><th>Hazard*</th><th>Sources</th></tr></thead><tbody><tr><td>PFAS chemicals (not just regulated ones)</td><td>Military facilities, airports, fire stations and training grounds, sewage treatment plant (STP) effluent & sewer overflows</td></tr><tr><td>Pesticides</td><td>Rural and urban runoff</td></tr><tr><td>Other nanomaterials e.g. zinc oxide nanoparticles in sunscreens</td><td>Industrial discharges, STP effluent, sunscreens</td></tr></tbody></table>	Hazard*	Sources	PFAS chemicals (not just regulated ones)	Military facilities, airports, fire stations and training grounds, sewage treatment plant (STP) effluent & sewer overflows	Pesticides	Rural and urban runoff	Other nanomaterials e.g. zinc oxide nanoparticles in sunscreens	Industrial discharges, STP effluent, sunscreens
Hazard*	Sources								
PFAS chemicals (not just regulated ones)	Military facilities, airports, fire stations and training grounds, sewage treatment plant (STP) effluent & sewer overflows								
Pesticides	Rural and urban runoff								
Other nanomaterials e.g. zinc oxide nanoparticles in sunscreens	Industrial discharges, STP effluent, sunscreens								



Element	Criteria
	Hydrocarbons (especially benzene, toluene, ethylbenzene and xylene or BTEX chemicals) and volatiles
	Heavy metals (especially methylated)
	Endocrine disrupters
	Surfactants, nonylphenols
	Possible chemical interactions
<p>Endotoxins (Lipopolysaccharide components of gram-negative bacteria cell walls) were included in the initial review list, but after discussion with the Committee it was agreed that such compounds would be more appropriately dealt with via the related Cyanobacterial and Algae review being conducted for NHMRC by Australis Water Consulting Pty Ltd.</p> <p>Exposure settings –included all exposures to recreational waters as per the definition in Appendix 1. Specific types of recreational water body and recreational activities are described below.</p>	
<p><i>Recreational water bodies</i></p> <ul style="list-style-type: none"> • Marine: <ul style="list-style-type: none"> ○ beaches from the high tide waterline down ○ coastal waters near land and thus influenced by land-based sources ○ estuaries, including tidally influenced estuarine beaches • Freshwater <ul style="list-style-type: none"> ○ Flowing waters (streams, creeks, canals, and rivers) ○ Wetlands, lakes and reservoirs ○ Beaches on rivers and lakes from the waterline down <p><i>Recreational activities</i></p> <ul style="list-style-type: none"> • Type of recreational activities to be covered by degree of contact as defined in the 2008 NHMRC Guidelines ((NHMRC, 2008). <ul style="list-style-type: none"> ○ <i>Whole-body contact (primary contact)</i> — activity in which the whole body or the face and trunk are frequently immersed, or the face is frequently wet by spray, and where it is likely that some water will be swallowed or inhaled, or come into contact with ears, nasal passages, mucous membranes or cuts in the skin (e.g. swimming, bathing, diving, surfing, wave-boarding, body-boarding, wind-surfing, water parks or whitewater canoeing). ○ <i>Incidental contact (secondary contact)</i> — activity in which only the limbs are regularly wet and in which greater contact (including swallowing water) is unusual (e.g. boating, wading, sailing, kayaking and fishing), and including occasional and inadvertent immersion through slipping or being swept into the water by a wave. ○ <i>No contact (aesthetic uses)</i> — activity in which there is normally no contact with water (e.g. angling from shore), or where water is incidental to the activity (such as walking on a beach). • Most types of water-based recreational activities should fit under the above categories. Activities may include: <ul style="list-style-type: none"> ○ Swimming ○ Surfing ○ Water skiing ○ Jet skiing 	

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Element	Criteria
	<ul style="list-style-type: none"> ○ Diving, including snorkelling, scuba and activities such as spearfishing ○ Kiteboarding, and kitesurfing ○ Parasailing (from the beach or behind a boat) ○ Sail boarding and wind surfing ○ Kayaking and canoeing, including sea kayaking ○ Rowing ○ Fishing from a kayak or canoe ○ Fishing from a shoreline or riverbank with wading ○ Angling from the shore (no contact) ○ Sunbathing (no contact) ○ Other aesthetic uses, e.g. walking along the beach, etc. <p><i>Exclusions</i></p> <ul style="list-style-type: none"> ● Studies investigating illnesses acquired from chemically treated recreational water (e.g. swimming pools, spas, hot tubs) will be excluded. ● Health outcomes as a result of domestic exposure (e.g. drinking water or water used for washing) or occupational exposure to natural waters will also be excluded unless a study is clearly valuable in terms of protecting a subgroup. <p><i>Exposure pathways</i></p> <ul style="list-style-type: none"> ● Exposure pathways to be considered are oral ingestion of water, inhalation of aerosols and exposure via skin (dermis), eye (ocular) and ear (aural) pathways. It was expected that the literature with respect to chemical hazards in recreational waters would mainly deal with oral ingestion and dermal exposure with very little material being available on the other pathways. ● Contaminant exposure pathways should not just focus on the water column but also consider surface films and sediments due to the partitioning behaviour of compounds in the environment. <p><i>Comparative Populations</i></p> <ul style="list-style-type: none"> ● The comparative populations were human populations with: <ul style="list-style-type: none"> ○ No contact with natural waters. ○ Different levels of recreational exposure (e.g. no head immersion). ○ Recreational exposure to different grades of polluted water. <p>Before it was confirmed that the number of studies in this field may be very limited, consideration was given to excluding papers that did not report rates of illness in a comparator group since it may be impossible to calculate a risk metric for such studies. Since no standard epidemiological studies were identified, exclusion on this basis did not occur. Since most studies examined were risk assessments, measurement of background rates of illness was not required, rather it was assumed that illness would occur above tolerable levels if exposures exceeded daily exposure guidelines.</p>
Outcomes	<p><i>Relevant health outcomes</i></p> <ul style="list-style-type: none"> ● All relevant human health outcomes were of interest. Assuming the selected research included a significant number of epidemiological studies, the anticipated health outcomes were considered to include: <ul style="list-style-type: none"> ○ Self-reported cases of illness (such as rash) following natural recreational water exposure ○ Confirmed diagnosis of toxic response following exposure. <p>In practice, since most original research studies were of the quantitative risk assessment kind, negative health outcomes were considered to occur</p>



Element	Criteria
	<p>when a toxicological exposure guideline was exceeded, whilst compliance with the guideline was considered a positive health outcome.</p>
Study Type	<p>The review considered:</p> <ul style="list-style-type: none">• Reviews of recreational water quality risk monitoring and management focussing on:<ul style="list-style-type: none">◦ Identification and evaluation of existing methodologies for health risk assessment for chemical exposures; and◦ Site-specific case studies.• Existing recreational water quality guidelines/reports. A listing of reports supplied by the Committee is included in Appendix 2.• Grey literature, reports and guidelines from reputable international and national agencies (e.g. WHO, US EPA, State and Commonwealth Departments of Health, State EPAs, environmental agencies of OECD member countries where such documents are available in English, etc.) <p>It was planned where possible, that the above studies would be categorised according to a selected list of Critical Appraisal Skills Programme (CASP) study types as follows:</p> <ol style="list-style-type: none">1. Case control study2. Cohort study3. Diagnostic test study4. Systematic review5. Qualitative research6. Randomised controlled trial (RCT)7. Cross-sectional study (mix of case-control and cohort)8. Quantitative research <p>Study categories were used to guide a critical appraisal of study quality and selection for the review as described in the following sections.</p> <p>Based on the perceived lower risks posed by chemical hazards at recreational water areas compared to microbial risks, it was anticipated that the literature may contain few case-control, cohort, diagnostic test, RCT or cross-sectional studies. The methodology was prepared in anticipation that there may be some papers of each category among the literature and also to provide consistency with companion narrative reviews being undertaken for NHMRC, such as the review of Microbial Risks.</p>

2.5. Evidence collection

2.5.1. Classification of the evidence

In section 2.4.3 two broad classes of literature were described, namely (i) guidelines and (ii) primary studies. For the purposes of quality assessment, primary studies were further classified according to type of research involved.

2.5.1.1. Guidelines

The quality assessment criteria for guidelines (Section 2.5.2.1) were different from those for primary studies due to the different structure and purposes of each class of study. Grey literature guideline and review documents are generally structured as larger documents seeking to integrate a wide range of topics in support of national regulatory goals (e.g. US EPA documents) or more general international guidance (e.g. WHO documents), whereas primary studies are mainly focused on the results of original research undertaken in response to narrowly focused study objectives. For the purposes of this technical report and corresponding evidence evaluation report, grey



literature, whilst constructed around reviews of the literature should not be confused with the term “systematic review” used in the primary studies classification below. Systematic reviews generally have a much narrower focus and are published in peer-reviewed journals. The development of guidelines are also usually overseen by expert committees convened by national or international authorities and have many contributing authors, whereas systematic reviews may frequently be carried out by individual researchers or small groups of researchers.

2.5.1.2. Primary studies

The quality of each study to be included was assessed using the CASP (Critical Appraisal Skills Programme, Oxford CTVH, 2020)¹ quality assessment protocols for observational studies. The studies were categorised according to a selected list of CASP study types (Table 2-3). These study categories were used to guide a critical appraisal of study quality and selection for the review.

Table 2-3. Primary studies CASP classifications and definitions. Definitions are from CASP unless otherwise stated.

Category	Definitions (from CASP glossary unless otherwise stated)
1. Systematic review	Systematic review is a review in which evidence (in the form of original research) on a topic has been systematically identified, appraised, and summarised according to predetermined criteria. [†]
2. Qualitative research	Qualitative research uses individual in-depth interviews, focus groups or questionnaires to collect, analyse and interpret data on what people do and say. It reports on the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things. It is often exploratory and open-ended. For this review, the CASP Qualitative Research category was extended to include observational studies that measured or predicted concentrations of contaminants in recreational water environments and on the basis of those concentrations inferred the extent of exposure and against health guidelines. [§]
3. Case control study	A case-control study is an epidemiological study that is used to identify risk factors for a medical condition. This type of study compares a group of patients who have that condition with a group of patients that do not have it and looks back in time to see how the characteristics of the two groups differ.
4. Cohort study	An observational study in which a group of people with a particular exposure (e.g. a putative risk factor or protective factor) and a group of people without this exposure are followed over time. The outcomes of the people in the exposed group are compared to the outcomes of the people in the unexposed group to see if the exposure is associated with particular outcomes (e.g. getting cancer or length of life).
5. Diagnostic test study	A diagnostic test study documents the results of testing to confirm or determine the presence of disease in an individual or group of individuals suspected of having a disease, usually following the report of symptoms, or based on other medical test results. In the context of microbial risks to recreational water quality, a diagnostic test study may seek to determine the identity of the pathogen responsible for an outbreak event.*
6. Randomised controlled trial	Randomised controlled trial (RCT) is a trial in which participants are randomly assigned to one of two or more groups: the experimental group or groups receive the intervention or interventions being tested; the comparison group (control group) receive usual care or no treatment or a placebo. The groups are then followed up to see if there are any differences between the results. This helps in assessing the effectiveness of the intervention.
7. Cross-sectional study (mix of case-control and cohort)	A cross-sectional study involves collection of information (e.g. the presence or absence of disease and other variables of interest) from a defined population at one point in time. It documents the prevalence of disease at that time. **

¹ For further information on each CASP checklist see <https://casp-uk.net/casp-tools-checklists/>



Category	Definitions (from CASP glossary unless otherwise stated)
8. Quantitative research	Quantitative research uses statistical methods to count and measure outcomes from a study. The outcomes are usually objective and predetermined. A large number of participants are usually involved to ensure that the results are statistically significant.

† This category should not be confused with the grey literature guidelines described in this report. Grey literature guidelines documents are generally structured as larger documents seeking to integrate a wide range of topics in support of national regulatory goals or more general international guidance.

* definition derived from the following sources: Cochrane.org, Wikipedia, BMJ Best Practice:
<https://www.cochrane.org/news/what-are-diagnostic-test-accuracy-reviews>,
<https://bestpractice.bmjjournals.com/info/toolkit/learn-ebm/diagnostic-test-studies-assessment-and-critical-appraisal/>,
https://en.wikipedia.org/wiki/Medical_test.

** definition derived from the following sources: Cochrane.org, Wikipedia, BMJ Best Practice, and Mann (2003).

§ This definition also provided consistency with the narrative review of Microbial Risks being undertaken for NHMRC.

The CASP classifications tend to emphasise medical studies and involve assessment of impacts of pathogens or efficacy of medical treatments. Nevertheless, it was considered that the classification scheme was appropriate for this review which considers the issue of health of recreational water quality users potentially exposed to chemical hazards in the water.

2.5.2. Quality assessment (by types)

2.5.2.1. Guidelines

The methodological quality of existing guidelines was assessed using administrative and technical criteria in the assessment tool shown in Table 2-4. The criteria listed in the tool were based on common domains that have been evaluated in several existing tools for assessing guidelines and systematic reviews (e.g. AGREE tool: Brouwers, Kerkvliet, et al., 2016; AGREE Next Steps Consortium, 2017). Based on the responses in the form a decision was made on whether that guideline should be included or excluded from the review. Due to the paucity of material on chemical hazards in recreational waters the decision on inclusion/exclusion was weighted towards inclusion.

In addition to this formal quality assessment approach, the close inspection of the full text document indicated that the evidence contained in the document did not satisfactorily contribute to answering the primary and/or secondary research questions in some cases. Where that was the case, the document was classified as “Quality satisfactory but content not relevant (or obsolete)” and excluded on relevance.

Table 2-4. Form for administrative and technical criteria for assessing existing guidance or reviews. Criteria have been colour-coded to assess minimum requirements as follows: 'Must have', 'Should have' or 'May have'. Y/N/NA =Yes, No, or Not Applicable.

	Criteria	Y/N/NA	Notes
Overall guidance/advice development process			
	Are the key stages of the organisation's advice development processes compatible with Australian processes?		
	Are the administrative processes documented and publicly available?		
	Was the work overseen by an expert advisory committee? Are potential conflicts of interest of committee members declared, managed and/or reported?		
	Are funding sources declared?		
	Was there public consultation on this work? If so, provide details.		
	Is the advice peer reviewed? If so, is the peer review outcome documented and/or published?		

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	Criteria	Y/N/NA	Notes
	Was the guidance/advice developed or updated recently? Provide details.		
Evidence review parameters			
	Are decisions about scope, definitions and evidence review parameters documented and publicly available?		
	Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?		
	Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?		
	If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?		
	Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?		
	Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?		
	Can grey literature such as government reports and policy documents be included?		
	Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?		
Evidence search			
	Are databases and other sources of evidence specified?		
	Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?		
	Is it specified what date range the literature search covers? Is there a justification?		
	Are search terms and/or search strings specified?		
	Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?		
Critical appraisal methods and tools			
	Is risk of bias of individual studies taken into consideration to assess internal validity? If so, what tools are used? If not, was any method used to assess study quality?		
	Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.		
	Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.		
Derivation of health-based guideline values			
	Is there justification for the choice of uncertainty and safety factors?		
	Are the parameter value assumptions documented and explained?		
	Are the mathematical workings/algorithms clearly documented and explained?		
	Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?		
	Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?		
	If expert judgement is required, is the process documented and published?		
	Is dose response modelling (e.g. BMDL) routinely used?		
	Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?		
	If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?		
Comments			
	Reviewer's comments		
	Useful for answering primary research question?		<i>Decision on inclusion or exclusion</i>
	Useful for answering secondary research questions?		

2.5.2.2. Primary studies

Critical appraisal of evidence

As noted above, the CASP study categories were used to guide a critical appraisal of study quality and selection for the review.

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The CASP protocol considers three broad issues in appraising a study:

- (i) Are the results of the study valid?
- (ii) What are the results?
- (iii) Will the results help locally?

Depending on the type of study 10 to 13 questions are posed within the three categories above that are designed to assist the reviewer to consider the issues systematically. The first two to three questions are screening questions and can be answered quickly. If the answer to each is “yes”, it is worth proceeding with the remaining questions. There is some degree of overlap between the questions and the reviewer is asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of supporting hints or prompts are listed for each question which are designed to remind the reviewer why the question is important (Appendix 4). Answers with reasons for all questions are recorded in a tabular form for each reviewed document (see **Appendix 4**). The response to the first few questions can be used as a filter to exclude studies that do not address a clearly focussed issue or use appropriate methodologies.

2.5.2.3. Risk of bias assessment for primary studies

Primary studies selected for review were assessed for internal validity, which is also known as “risk of bias” (RoB). For reference, “*Bias*” is defined by OHAT (2019)² as: “*a systematic error, or deviation from the truth, in results or inferences. Biases can operate in either direction: different biases can lead to underestimation or overestimation of the true effect. Biases can vary in magnitude: some are small (and trivial compared with the observed effect), and some are substantial (so that an apparent finding may be entirely due to bias)*”.

Further, the process of evaluating individual studies for **risk of bias** involves “*the assessment of whether the design and conduct of a study compromised the credibility of the link between exposure and outcome*” (OHAT, 2015).

OHAT (2015) provides rigorous protocols that can be applied to case control studies, cohort studies, diagnostic test studies, randomised controlled trials, and cross-sectional studies. For these study types it was originally planned to apply the OHAT Risk-of-Bias Tool (OHAT, 2015) and to develop similar risk of bias assessment criteria for the remaining categories of systematic reviews, qualitative and quantitative studies. However, the only shortlisted studies remaining after the screening process were qualitative research studies for which OHAT does not provide risk of bias criteria. Consequently, the CASP protocol for critical appraisal of evidence was used to conduct a risk of bias assessment for qualitative research studies (Table 2-6) because it applies similar questions in relation to the validity of the study and the quality of its findings. The OHAT Risk-of-Bias Tool (OHAT, 2015) provides a colour-coded visual scheme to summarise risk of bias assessments and this scheme was applied based on the response to the CASP questions (Table 2-5).

² Office of Health Assessment and Translation of the US National Toxicology Program (<https://www.niehs.nih.gov/research/atniehs/dntp/assoc/ohat/index.cfm>)



Table 2-5. OHAT Risk-of-Bias scheme categories

Symbol	Description
++	<p>Definitely Low risk of bias:</p> <p>There is direct evidence of low risk of bias practices. May include specific examples of relevant low risk of bias practices.</p>
+	<p>Probably Low risk of bias:</p> <p>There is indirect evidence of low risk of bias practices OR it is deemed that deviations from low risk of bias practices for these criteria during the study would not appreciably bias results, <u>including consideration of direction and magnitude of bias</u>.</p>
-	<p>Probably High risk of bias:</p> <p>There is indirect evidence of high risk of bias practices If there is insufficient information provided about relevant risk of bias practices, “not reported” or “NR” may be used instead of the minus symbol “-”.</p>
--	<p>Definitely High risk of bias:</p> <p>There is direct evidence of high risk of bias practices. May include specific examples of relevant high risk of bias practices.</p>

Studies that had a high risk of bias or serious concerns with study quality were excluded from the review and the removal was recorded with justification in the PRISMA flow diagram.

Table 2-6. CASP (Critical Appraisal Skills Programme) Qualitative Research Study form including risk of bias rating.

Q.	Paper for appraisal and reference:	Assessment (Yes/No)	Comments (justification for assessment)	Risk of bias rating
	Section A1: Are the results valid?			
1	Was there a clear statement of the aims of the research?			
2	Is the methodology appropriate?			
	Section A2: Is it worth continuing?			
3	Was the research design appropriate to address the aims of the research?			
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?			
5	Was the data collected in a way that addressed the research issue?			
6	Has the relationship between researcher and participants been adequately considered?			
	Section B: What are the results?			
7	Have ethical issues been taken into consideration?			
8	Was the data analysis sufficiently rigorous?			
9	Is there a clear statement of findings?			
	Section C: Will the results help locally?			
10	How valuable is the research?	n/a		
	Overall risk of bias rating	n/a		
-	Reviewer’s conclusion (exclude or include based on risk of bias assessment)	n/a		



Once a determination of risk of bias for each domain was made, a visual summary of the risk of bias ratings for the included studies was prepared and used in the next stage of the critical appraisal process to determine overall risk of bias across the body of evidence (see Evidence Evaluation Report, also OHAT Handbook Table 9, OHAT, 2019).

2.6. Process for extracting and presenting data

2.6.1. Data extraction

2.6.1.1. Guidelines

Documentation of the attributes of the shortlisted guidelines in support of responses to the primary and secondary search questions were recorded using the form shown in Table 2-7, designed specifically for this review. The form is cross-referenced with a classification of study quality and risk of bias (see section 2.5). The form aided construction of an integrated report on each publication.

Table 2-7. Data extraction form for guidelines

Type	Question	Guideline/ Review ID
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	
Secondary Q3.	Should the focus be on “hot spots” i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	
Supporting information	Useful for answering primary research question?	
	Useful for answering secondary research questions?	
	<ul style="list-style-type: none">• Key contaminants of concern in recreational waters;• Risk assessment methods (including exposure assessment calculations and assumptions);• Consideration of short, medium- and long-term exposures; and• In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring.	
	Overall Assessment	
	Reviewer’s comment	

2.6.1.2. Primary studies

Documentation of the attributes of the shortlisted primary research literature in support of responses to the primary research question were recorded using the form shown in Table 2-8, which is based loosely on the PRISMA approach (Moher, Liberati, et al.,



2009). The form includes bibliographic information e.g. authors, year of publication, year(s) of study period, country of study, study characteristics. It is cross-referenced with a classification of study quality and risk of bias (see section 2.5). The form aided construction of an integrated report on each publication and calculation of summary statistics on the publication attributes.

Table 2-8. Data extraction and presentation form for primary research literature.

Category	Study ID	Response
General information	Date form completed	
	Authors	
	Reviewer comments	
	Title	
	Publication Title	
	Reference (Vol., pages)	
	Publication date	
	Publication type	
	Peer reviewed	
	Country of origin	
	Source of funding	
	Possible conflicts of interest	
Study characteristics	Aim/objectives of study	
	Study type/design	
	Study duration	
Population characteristics	Population/s studied	
	Selection criteria for population	
	Subgroups reported	
	Size of study	
Exposure and setting	Type of water source/water body	
	Exposure scenario	
	Exposure pathway	
	Source of contamination	
	Causal chemical(s)	
	Comparison group(s)	
Study methods	Water quality measurement used	
	Method of chemical detection (if applicable)	
	Water sampling methods (monitoring, surrogates). Was there sufficient replication in number of samples taken, what steps were taken to reduce contamination (especially for metals)?	
	Limits of reporting for the chemical of concern	
	Consideration of quality assurance such as field and lab blanks, reference sites, and reporting on related physico-chemical parameters	
Statistics	Statistical methods used	
	Details on statistical analysis (if any)	
	Relative risk/odds ratio, confidence interval?	
Results	Outcome	
	How outcome was assessed	
	Method of measurement	
	Number participants (exposed/non-exposed, missing/excluded) (if applicable)	
CASP Category (and OHAT Risk of Bias)	Critical Appraisal Skills Programme (CASP) or Cochrane/OHAT definitions of study types as follows:	
	1. Case control study	
	2. Cohort study	
	3. Diagnostic test study	
	4. Systematic review	
	5. Qualitative research	
	6. Randomised controlled trial	
	7. Cross-sectional study (mix of case-control and cohort)	
	8. Quantitative research	
	Interpretation of results	



Category	Study ID	Response
Author's conclusion	Assessment of uncertainty (if any)	
Reviewer comments	Reviewer comments Results included/excluded in review (if applicable)	
	Notes on study quality e.g. gaps, methods	

2.7. Process for assessing the Body of Evidence

The evidence collected and appraised for each research question was grouped by study type and outcome where possible and summarised in an Evidence Summary table that assigned the level of certainty (or confidence) in that body of evidence. Due to the different nature and quality of evidence between guidelines and primary studies different approaches were required to review and evaluate the body of evidence for each type of literature. The methodology for assessment and results of the assessment are described in the Evidence Evaluation Report (O'Connor, 2022).



3 Literature search results

3.1. Existing guidelines

Searches for grey literature (using the method described in Section 2.4.6) identified 40 documents, of which 16 were suggested by the Committee (Appendix 2). Each document was evaluated for its relevance to the primary and secondary research questions and excluded if not relevant. This process identified 11 documents relevant to the primary and secondary research questions (i.e., chemical hazards in recreational water), including 4 listed by the Committee. Each of the 11 shortlisted documents was subject to the quality assessment process described in 2.5.2.1 which resulted in 4 documents being screened out on quality grounds. The final list of 7 guidelines meeting the quality criteria are shown in Table 4-1, Section 4.1 whilst the 4 excluded guidelines are shown in Table 7-1, Section 7.

The screening process is summarised graphically in Figure 3-1.



PRISMA Flow Diagram – Guidelines

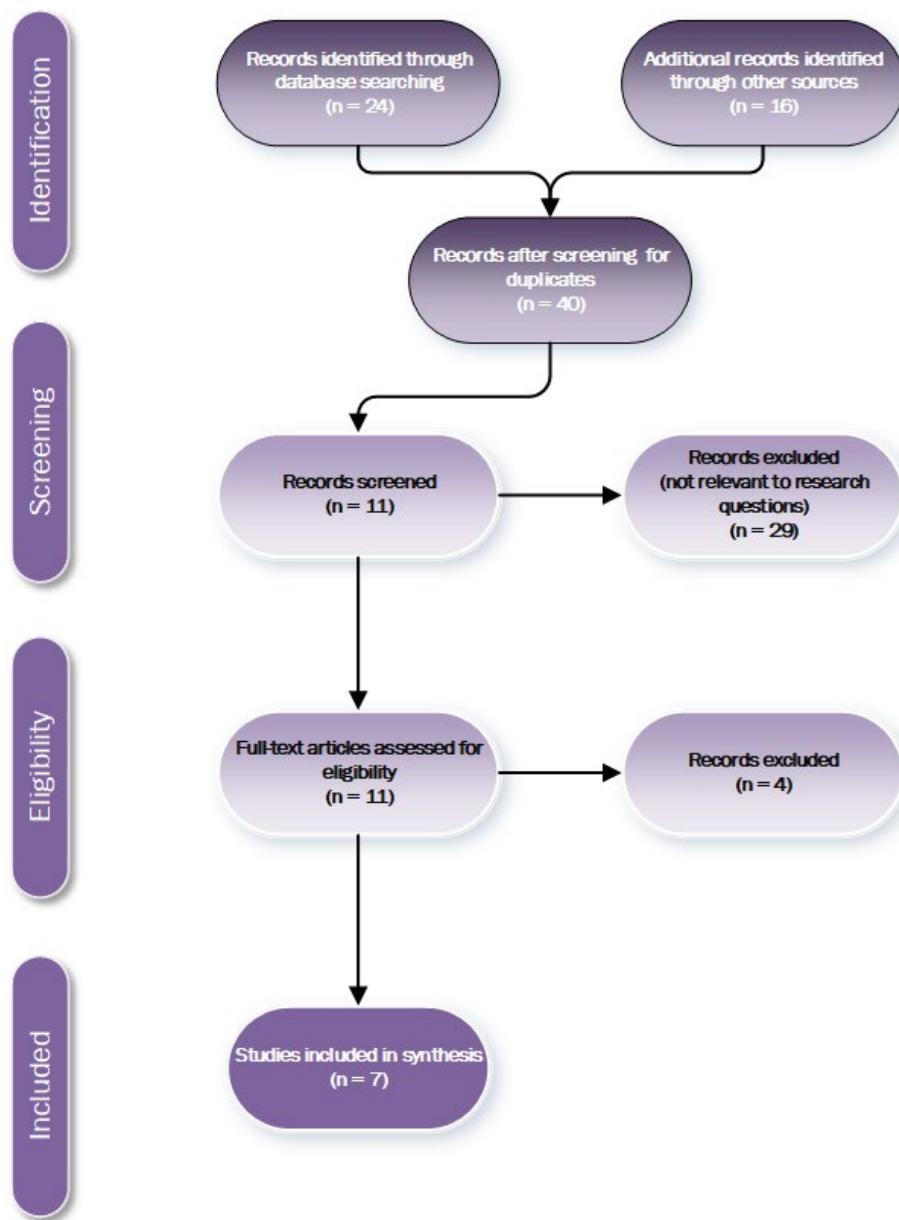


Figure 3-1. PRISMA summary of the citation review process for guidelines

3.2. Primary studies

Search results by database yielded 3523 citations. After removal of duplicates within each database (i.e. Scopus, Web of Science, PubMed) this number was reduced to 2486 citations (Table 3-1). After combining the lists, further removal of citations that were duplicated between the databases brought the number of citations down to 1769 (Table 3-2). Text recognition script in the programming language, R, was used to

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identify duplicates at this stage, although some duplicate records remained due to minor character differences that the script was not able to detect. These duplicates were removed in later screening using Excel tools (described in the next section).

Table 3-1. Primary literature search results summary by database and search strategies (see Table 2-1 for further details of keywords, search categories, and search strings).

Database	Search in key words, title and abstract unless specified (2003-2020)	Records
Scopus	Population (1) + location (2) in title + Outcomes (7.1-2 or) + pathway mode (9)	276
	Location (2) in title + study type (3) + Source (12) + carrier (8) + property/Attribute (4) + method (6)	222
	Population (1) + location (2) in title + study type (3) + Source (12) + exposure (10-11 or)	1,684
	Initial Number of Records	2,182
	No. of duplicates removed (via automatic text screening*)	901
	After removal of duplicates	1,281
Web of Science	Population (1) + location (2) in title + Outcomes (7.1-2 or) + pathway mode (9)	156
	Location (2) in title + study type (3) + carrier (8) + property/Attribute (4) + Source (12)	187
	Location (2) in title + study type (3) + carrier (8) + property/Attribute (4) + method (6)	12
	Population (1) + location (2) in title + study type (3) + Source (12) + exposure (10-11 or)	634
	Initial Number of Records	989
	No. of duplicates removed (via automatic screening*)	109
PubMed	After removal of duplicates	880
	Population (1) + location (2) in title + Outcomes (7.1-2 or) + pathway mode (9)	98
	Location (2) in title + study type (3) + Source (12) + carrier (8) + property/Attribute (4)	50
	Location (2) in title + study type (3) + carrier (8) + property/Attribute (4) + method (6)	6
	Population (1) + location (2) in title + study type (3) + Source (12) + exposure (10-11 or)	198
	Initial Number of Records	352
	Duplicates removed (via automatic screening*)	27
	After removal of duplicates	325

* A computer script was developed and used to remove records with duplicated fields at about 90% efficiency. Some duplicates remained after this process due to small differences (e.g. typographical differences or mistakes) and were removed in subsequent more detailed screening.

Table 3-2. Primary literature search summary

Item	Scopus	Web of Sci	Pub Med	Google Scholar	Totals
Initial no. of citations	2182	989	352	no additional records identified	3523
	1281	880	325		2486
<i>Lists combined and between list duplicates removed (via autotext screening)</i>					1769



3.2.1. Screening process and PRISMA diagram

All citations retrieved from the literature search were downloaded from the source database as CSV formatted files (i.e. comma separated values). These files were imported into a bibliographic database using the Zotero bibliographic software program which was used to manage the citations and assisted in generating citation records in a standard format. Standard format CSV files were exported from Zotero to Microsoft Excel which was used for sorting and filtering citations based on relevance. In practice, sorting and filtering was an iterative process where citations were allocated an initial classification of “relevant”, “possibly relevant”, and “clearly not relevant” based on the title alone. The former two categories were then subjected to additional screening through closer review of abstracts, and in some cases the full text document, to determine if they had any relevance to the primary and secondary research questions. If not, they were screened out.

Filtering out of duplicate records was also carried out iteratively during the screening process. An initial screen for duplicates was carried out in Excel which identified citations that were identical across several fields before importation into Zotero. Subsequent duplicate screening was carried out using Excel on the citation title field alone as this was the least variable of the fields. A number of passes for duplicate removal were required using logical text formulas, due to minor variations in the title field (e.g. citations differing on case). A description of the stepwise screening process is set out in Table 3-3 and the process is summarised graphically in Figure 3-2.

Table 3-3. Breakdown of screening and review strategy for primary studies

Description	n
Records identified through database searching	3523
Additional records identified through other sources (Google Scholar)	0
Records after duplicates removed (first pass)	2486
Records after duplicates removed (second pass)	1769
Records screened	1769
Records after duplicates removed (third pass)	1671
Records excluded based on screening titles, abstracts, or full text	
Screened on title: clearly not relevant to primary or secondary research questions	1487
Out of scope, incomplete, or not in English	20
Review of full text: water environment health studies, not clearly related to recreational water quality	141
Screened on abstract or full text, or excluded due to being out of review scope	17
Sum of excluded studies	1665
Full-text articles assessed for eligibility	6
Records excluded on quality (risk of bias)	3
Studies included synthesis	3



PRISMA Flow Diagram – Primary Studies

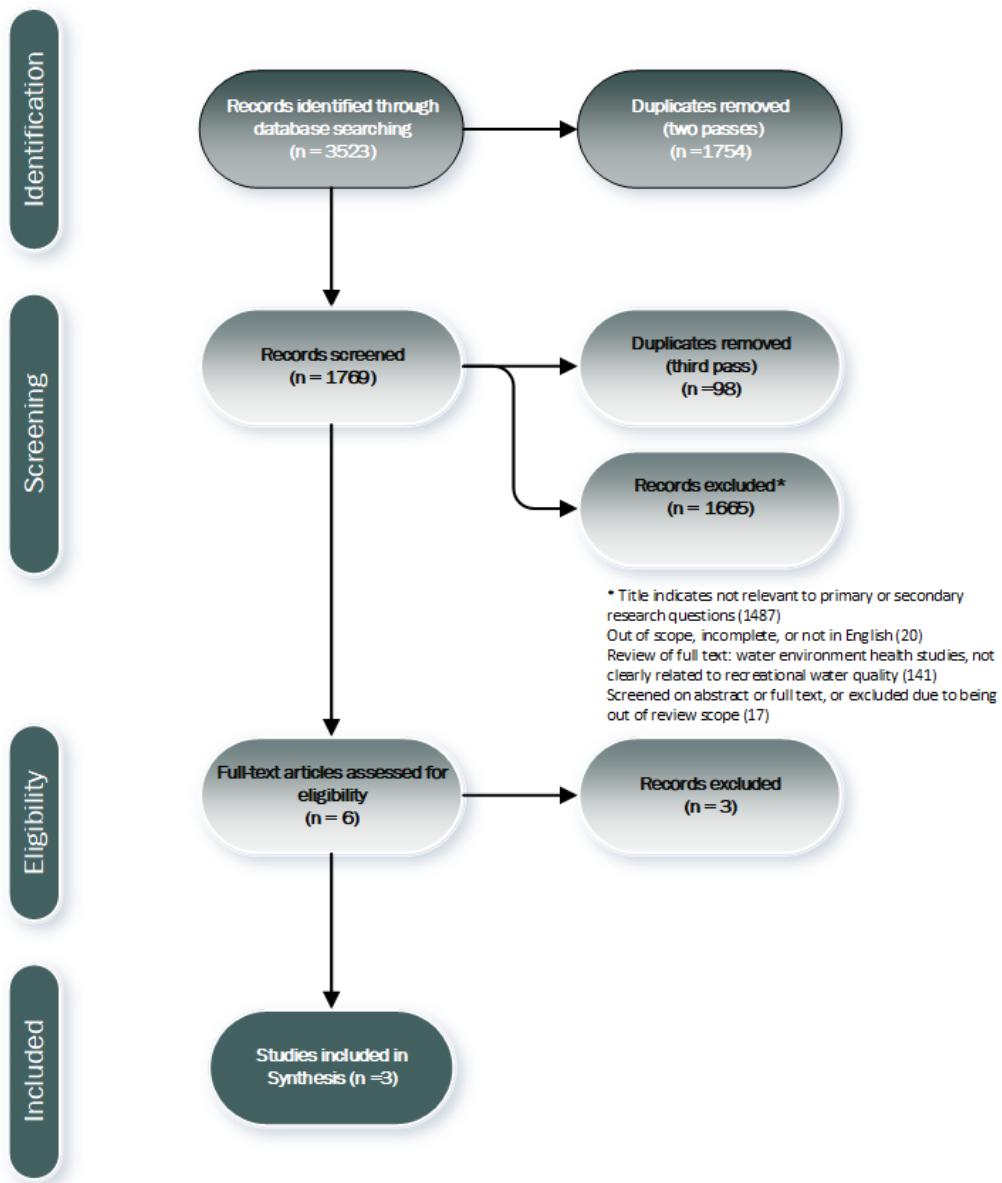


Figure 3-2. PRISMA summary of the citation review process for primary studies



4 Full list of included studies

4.1. Existing guidelines

Table 4-1. List of guidelines included after screening and quality assessment

ID	Title	Type of Study
G2: Health Canada (2012)	Health Canada (2012) Guidelines for Canadian recreational water quality. Third Edition, Ottawa, Health Canada. [online] https://central.bac-lac.gc.ca/.item?id=H129-15-2012-eng&op=pdf&app=Library (Accessed December 17, 2020).	Guidelines & Guidance
G3: HEPA (2020)	HEPA (2020) PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand (HEPA), [online] https://www.environment.gov.au/system/files/resources/2fadf1bc-b0b6-44cb-a192-78c522d5ec3f/files/pfas-nemp-2.pdf .	Guidelines & Guidance
G5: NRMMC, EPHC, and AHMC (2006)	NRMMC, EPHC, and AHMC (2006) Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1), Canberra, Australia, Natural Resource Management Ministerial Council. Environment Protection and Heritage Council Australian Health Ministers' Conference. [online] https://www.nhmc.gov.au/about-us/publications/australian-guidelines-water-recycling .	Guidance
G6: NRMMC, EPHC, and NHMRC (2008)	NRMMC, EPHC, and NHMRC (2008) Australian Guidelines for Water Recycling (Phase 2): Augmentation of Drinking Water Supplies, Canberra, Australia., Natural Resource Management Ministerial Council, Environmental Protection and Heritage Council and National Health and Medical Research Council.	Guidance
G9: US EPA (2019)	US EPA (2019) Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin. EPA Document Number: 822-R-19-001, and online at http://www.epa.gov/ncea/efh ., U.S. Environmental Protection Agency (EPA). [online] http://www.epa.gov/ncea/efh .	Guidance
G10: WHO (2016)	WHO (2016) Protecting surface water for health: Identifying, assessing and managing drinking-water quality risks in surface-water catchments, World Health Organization. [online] https://apps.who.int/iris/bitstream/handle/10665/246196/9789241510554-eng.pdf?sequence=1 .	Guidance
G11. NHMRC (2019)	NHMRC (2019) Guidance on Per- and Poly-fluoroalkyl Substances (PFAS) in Recreational Water, Canberra, A.C.T., National Health and Medical Research Council. [online] https://www.nhmc.gov.au/sites/default/files/documents/attachments/guidance-on-PFAS-in-recreational-water.pdf (Accessed October 18, 2020).	Guidelines

4.2. Primary studies

Table 4-2. List of primary studies included after consideration of risk of bias

Study ID	Citation
J2	Canpolat, Ozgur; Varol, Memet; Okan, Ozlem Oztekin; Eris, Kursad Kadir; Caglar, Metin (2020) A comparison of trace element concentrations in surface and deep water of the Keban Dam Lake (Turkey) and associated health risk assessment. <i>Environmental Research</i> 190 (2020) 110012
J3	Dor, F.; Bonnard, R.; Gourier-Frery, C.; Cicolella, A.; Dujardin, R.; Zmirou, D. (2003) Health risk assessment after decontamination of the beaches polluted by the wrecked ERIKA tanker. <i>Risk Analysis</i> 23(6)1199-1208
J5	Swartjes, Frank A.; Janssen, Paul J. C. M. (2016) Assessment of health risks due to arsenic from iron ore lumps in a beach setting. <i>The Science of the Total Environment</i> 563-564 (2016) 405-412



5 Completed quality assessment and data extraction for the included guidelines

The seven included guideline documents were considered to be of satisfactory quality. It should be noted that, due to the limited number of studies regarding chemical hazards from recreational water quality, the threshold for acceptance was weighted slightly towards inclusion in the review.

5.1. Health Canada (2012)

5.1.1. Quality assessment

G2: Canadian 2012 RWQ Guidelines		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The document was prepared by the Federal-Provincial-Territorial Working Group on Recreational Water Quality of the Federal-Provincial-Territorial Committee on Health and the Environment. The use of national working groups or advisory committees of state and commonwealth technical experts for the development of environmental and public health guidelines is a commonly used approach in Australia.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Yes	As noted above, the document was prepared by the Canadian Federal-Provincial-Territorial Working Group on Recreational Water Quality of the Federal-Provincial-Territorial Committee on Health and the Environment
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported, but likely funded by the Canadian Government.
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported, so cannot tell if public consultation occurred or not.
Is the advice peer reviewed?	Can't Tell	The list of members of Federal-Provincial-Territorial Working Group on Recreational Water Quality indicates that they are likely highly qualified scientists, so possibly some measure of peer-review was undertaken, however no clear reference to such a review is described in the document.
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	No	The guidance has not been updated since it was published in 2012 (9 years ago).
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported



G2: Canadian 2012 RWQ Guidelines

Criteria	Assessment	Notes
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	No	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	Reference is made to leading publications and guideline values produced by other international agencies, but there is no process described for review or selection of such material.
Can grey literature such as government reports and policy documents be included?	Yes	Such documents are listed in the reference section.
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	No	Not reported
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	No	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported

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G2: Canadian 2012 RWQ Guidelines		
Criteria	Assessment	Notes
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported
Are the parameter value assumptions documented and explained?	No	Not reported
Are the mathematical workings/algorithms clearly documented and explained?	No	Not reported
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not reported
If expert judgement is required, is the process documented and published?	No	Not reported
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	No	Not reported
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	Not reported
Comments		
Reviewer Comments		<p>The Canadian Recreational Water Quality Guidelines focus mainly on management of microbiological and cyanotoxin risks and make little mention of other types of water quality risks.</p> <p>The guidelines contain a basic description of how to develop a management plan for recreational water quality, plus more detailed technical review of recommended indicators of faecal contamination, pathogenic microorganisms. Also includes information on out of scope items like cyanobacteria, physical hazards, faecal contamination of sand, faecal pollution source tracking. Appendices contain further technical detail on sampling, checklists for surveys, example reporting forms and example beach signs.</p> <p>Provides good information on indicators and gaps in knowledge. Good descriptions of science-based evidence to develop guidelines.</p> <p>Focus is virtually all microbiological but chemical hazards are discussed briefly on pages 102-105</p>
Useful for answering primary research question?	Yes	
Useful for answering secondary research questions?	Partly	Quality is satisfactory and content is relevant.

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5.1.2. Data extraction

Type	Question	Canadian 2012 RWQ Guidelines
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	<p>The Canadian Guidelines state (p. 102-104) that</p> <ul style="list-style-type: none"> National surveys of the water quality of lakes and rivers used for recreational activities indicate that concentrations of organic and inorganic chemicals are low. Analyses for heavy metals and organic chemicals in waters that could be used for recreational purposes indicate that they are present in concentrations considerably below those recommended as guidelines for drinking water quality. Ingestion is considered the primary pathway of exposure and it is not likely that dermal exposure presents a significant risk due to the low concentrations of inorganic and organic chemical contaminants encountered in most natural waters and the typical exposure scenarios encountered during recreational water activities. there is insufficient information to support the establishment of guideline values for specific chemical parameters in recreational waters. risks associated with specific chemical water quality hazards are dependent on the particular circumstances of the area in question and should be assessed on a case-by-case basis. in general, the potential risks from exposure to chemical parameters will be much smaller than the risks from the microbiological hazards potentially present in recreational waters (citing the WHO 2003 Recreational Water Guidelines). with chemical concentrations typically found in water, most recreational water users will not be exposed to sufficient concentrations necessary to elicit either an acute or chronic illness response. consequently, the risk of human exposure to chemical contaminants in Canadian waters through recreational activities is considered low. scenarios do exist that may contribute to the presence of a chemical water quality hazard at a particular recreational water body and therefore, multi-barrier approaches are recommended as the most effective way of protecting recreational water users from the risk of exposure to chemical contamination at recreational water areas. Such approaches include the use of: <ul style="list-style-type: none"> Environmental Health and Safety Surveys to help recreational water area operators identify and assess potential sources of chemical contamination a case-by-case basis relevant to their beach area, and Application of precautionary measures such as restricting swimming to public beaches and showering with soap and water following recreational activity will further ensure that any risk is minimized.
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	No data
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	No data



Type	Question	G2	Canadian 2012 RWQ Guidelines
Secondary Q3.	Should the focus be on “hot spots” i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	No data	
Supporting information	Useful for answering primary research question?	Yes	
	Useful for answering secondary research questions?	No	
	<ul style="list-style-type: none"> Key contaminants of concern in recreational waters; 	No data	
	<ul style="list-style-type: none"> Risk assessment methods (including exposure assessment calculations and assumptions); 	No data	
	<ul style="list-style-type: none"> Consideration of short, medium- and long-term exposures; and 	No data	
	<ul style="list-style-type: none"> In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	No data	
	Overall Assessment	The document contains some useful information in support of the primary research question.	
Conclusions/ comments	Reviewer's comment (optional)	<p>Contains a basic description of how to develop a management plan for recreational water quality, plus more detailed technical review of recommended indicators of faecal contamination, pathogenic microorganisms (plus info on out-of-scope items like cyanobacteria, physical hazards, faecal contamination of sand, faecal pollution source tracking. Appendices contain further technical detail on sampling, checklists for surveys, example reporting forms and example beach signs.</p> <p>Provides good information on indicators and gaps in knowledge. Good descriptions of science-based evidence to develop guidelines.</p> <p>Focus is virtually all microbiological but chemical hazards are discussed briefly on pages 102-104</p>	

5.2. HEPA (2020)

5.2.1. Quality assessment

G3: HEPA 2020 Environmental Management Plan		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The PFAS National Environmental Management Plan (NEMP) was produced by the National Chemical Working Group of the Heads of EPAs Australia and New Zealand (HEPA) and this 2020 version is endorsed by the

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G3: HEPA 2020 Environmental Management Plan

Criteria	Assessment	Notes
		Commonwealth of Australia and each Australian State and Territory.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Can't Tell	It is arguable that the expert advisory committee is the National Chemical Working Group of the Heads of EPAs Australia and New Zealand (HEPA). However, the names of individual persons are not listed, so the process for expert review is unclear.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Yes	The public consultation process is described on the Australian Govt Dept of Agriculture, Water and Environment website at: https://environment.gov.au/protection/publications/pfas-nemp-2 The consultation process is not described in the document.
Is the advice peer reviewed?	Can't Tell	No peer-review process is described in the document on the Dept of Agriculture, Water and Environment website.
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	Yes	Updated in January 2020.
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	The PFAS Recreational Water Quality Guidelines are based on assumptions for the frequency and likelihood of exposure during recreational activities, but no detail is provided on the derivation process.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	No	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	PFAS Guidelines for Recreational Water Quality are based on the findings of NHMRC, 2019. Guidance on per- and poly-fluoroalkyl substances (PFAS) in recreational water (also described in this table). However, no process was undertaken to critically assess these findings.
Can grey literature such as government reports and policy documents be included?	Yes	Such documents are listed in the reference section.

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G3: HEPA 2020 Environmental Management Plan

Criteria	Assessment	Notes
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	No	Not reported
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	No	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported
Are the parameter value assumptions documented and explained?	No	Not reported
Are the mathematical workings/algorithms clearly documented and explained?	No	Not reported
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not reported
If expert judgement is required, is the process documented and published?	No	Not reported

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G3: HEPA 2020 Environmental Management Plan

Criteria	Assessment	Notes	
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported	
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	No	Not reported	
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	Not reported	
Comments			
Reviewer Comments		The PFAS Guidelines are a detailed methods manual for determining risks to human health from PFAS in the environment. The assessment methodology in this table is focussed on assessing reviews of epidemiological-type studies so many of the assessment questions are either not appropriate, or only have a minor relevance. The PFAS Guidelines are useful in providing background information on PFAS in an Australian context. They may provide relevant information to assist in answering the primary research question and may also contain some useful information to address some of the secondary questions.	
Useful for answering primary research question?	Partly	Quality is satisfactory and content is relevant.	
Useful for answering secondary research questions?	Partly		

5.2.2. Data extraction

Type	Question	HEPA 2020 Environmental Management Plan
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	Based on the published guideline values and the information cited in reference G11, it is reasonable to conclude that PFAS would generally occur well below guideline values and thus would not constitute a significant health risk in recreational waters.
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	No data on concentrations in recreational waters provided, but provides useful information on potential sources. Tables B1 and B2 in Appendix B of the document provide lists of activities associated with PFAS contamination due to fire risk (Table B1) and with PFAS contamination more broadly (B2). These tables provide guidance on potential sources of PFAS in catchment areas of recreational water bodies, and may be useful for guiding monitoring and risk management planning.
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	No data
Secondary Q3.	Should the focus be on "hot spots" i.e. site-specific rather than chemical specific, and/or	No data

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Type	Question	HEPA 2020 Environmental Management Plan	
		G3	
	include periodic toxicity screening of sites to complement chemical testing?		
Supporting information	Useful for answering primary research question?	Partly	
	Useful for answering secondary research questions?	Partly	
	<ul style="list-style-type: none"> Key contaminants of concern in recreational waters; 	Contains guidance for PFAS	
	<ul style="list-style-type: none"> Risk assessment methods (including exposure assessment calculations and assumptions); 		
	<ul style="list-style-type: none"> Consideration of short, medium- and long-term exposures; and 	Guidelines are based on chronic exposure	
	<ul style="list-style-type: none"> In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	Recommended indicators for total PFAS risk are PFOA, and sum of PFOS and PFHxS.	
Conclusions/ comments	Overall Assessment	The guideline value should be mentioned briefly and in conjunction with G11. Supports response to primary research question.	
	Reviewer's comment (optional)	Of minor relevance to the primary research question.	

5.3. NRMMC; EPHC; AHMC (2006)

5.3.1. Quality assessment

G5: AGWR Phase 1 2006		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The guidelines were developed by the Australian Government. They are not mandatory but rather have been developed as an authoritative reference that can be used to support beneficial and sustainable recycling.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Yes	The work was overseen by the Joint Steering Committee of The Natural Resource Management Ministerial Council and the Environment Protection and Heritage Council as well as working groups on Risk Management, Health Risk and Environmental Risk. The names of individual persons on the committee and working groups are listed in the document.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported



G5: AGWR Phase 1 2006

Criteria	Assessment	Notes
Is the advice peer reviewed?	Can't Tell	No peer-review process is described in the document or on the related website (https://www.waterquality.gov.au/guidelines/recycled-water#managing-health-and-environmental-risks-phase-1)
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	No	Last updated in 2006
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	No	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	Yes	With respect to chemicals, reference is made (in Section 3.5.4 to the Australian Drinking Water Guidelines (ADWG) and to Table 3.3 of the Recycled Water Guidelines which gives exposures for particular uses of recycled water. It is suggested that the risks of exposure to chemicals in recycled water can be determined by adjusting the expected daily dose in reference to the 2L per day used for drinking water. The same approach is proposed for the NHMRC 2008 recreational water quality guidelines. Since it was produced by another branch of the Commonwealth government, it could be argued that review findings and risk assessments have been adopted from other organisations.
Can grey literature such as government reports and policy documents be included?	Yes	Grey literature is cited in the chemical hazards section of the document (e.g. reference to the rescinded ADWG 2004 in Section 3.5.4).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	No	Not reported
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	No	Not reported

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G5: AGWR Phase 1 2006

Criteria	Assessment	Notes
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported
Are the parameter value assumptions documented and explained?	No	Not reported
Are the mathematical workings/algorithms clearly documented and explained?	No	Not reported
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not reported
If expert judgement is required, is the process documented and published?	No	Not reported
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported for chemicals although discussion is included for microbial pathogens.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	No	Not reported
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	No	Not reported
Comments		

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G5: AGWR Phase 1 2006

Criteria	Assessment	Notes
Reviewer Comments		The AGWR Phase 1 Guidelines are a detailed methods manual for determining risks to human health and environment from physical, chemical and microbiological constituents in recycled water. The assessment methodology in this table is focussed on assessing reviews of epidemiological-type studies so many of the assessment questions are either not appropriate, or only have a minor relevance. The AGWR Guidelines are useful in providing background information on chemical fate and risk assessment in an Australian context. They may provide relevant information to assist in answering the primary research question and may also contain some useful information to address some of the secondary questions.
Useful for answering primary research question?	Partly	Quality is satisfactory and content is relevant.
Useful for answering secondary research questions?	Partly	

5.3.2. Data extraction

Type	Question	G5	AGWR Phase 1 2006
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?		<p>The AGWR Phase 1 Guidelines include a brief discussion of chemical hazards in treated sewage effluent (i.e. recycled water) in section 3.5.4, pp. 109-111. Whilst there is no discussion of impacts of treated sewage discharges on recreational water quality from the perspective of chemical hazards, there is however some discussion of the quality of standard recycled water from sewage. [Reviewer's note: this is important since discharge of treated effluent in the vicinity of recreational bathing areas is not uncommon. Assuming a one to two log dilution, an understanding of the concentration of chemical substances in the treated effluent can provide some guidance on the likely concentrations in recreational waters in the vicinity of such discharges].</p> <ul style="list-style-type: none"> • The AGWR notes that sewage can contain a wide array of chemicals including inorganic and organic chemicals, pesticides, potential endocrine disruptors, pharmaceuticals and disinfection by-products. • Reference is made to the ADWG as a source of information to assist in assessing potential health risks associated with a broad range of inorganic and organic substances. • It is noted that the ADWG assume an oral intake of 2 L of drinking water per person per day for an adult, and 1 litre per person per day for a child. This equates to 350–700 litres per year, which is 500–1000 times the exposure associated with common uses of recycled water as described in Table 3.3, p 92 of the guidelines. • Consequently, chemical guideline values for these uses of recycled water can therefore be much higher than those used for drinking water. • Citing US data (NRC 1996, NRC 1998, USEPA 2004, see AGWR References), AGWR notes that analyses of recycled water indicate that chemical quality generally complies with drinking water quality requirements for most parameters, including heavy metals, organic chemicals, pesticides and disinfection by-products. • This is confirmed by unpublished Australian data, which show the following:



Type	Question	AGWR Phase 1 2006
		<ul style="list-style-type: none"> ○ Australian data (Adelaide, Melbourne), shows that average concentrations of nutrients, metals and disinfection by-products (DBPs) such as trihalomethanes (THMs) mostly conform with ADWG values, whilst concentrations of pesticides, polychlorinated biphenyls (PCBs), general organics and non-THM DBPs are generally below levels of detection. ○ Other chemicals tested included nutrients, heavy metals, phenol, toluene, benzene and total PAHs. These were mostly below ADWG values except nitrate and total PAHs which exceeded ADWG values on occasion. <p>AGWR concludes that the Australian data indicate a high rate of compliance with drinking water guideline values. Chemical concentrations that exceeded the values in the ADWG were acceptable, taking into account the reduced exposure compared with drinking water, discussed above.</p> <p><i>[Reviewer's note: based on these observations, the listed contaminants; nutrients, heavy metals, DBPs, PCBs, PAHs, phenol, toluene, and benzene, would not likely pose a risk to recreational water users]</i></p>
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	Note that the above discussion does not include "emerging chemicals and complex mixtures". These are addressed separately on p. 110 of the document. However, the discussion is brief and out of date.
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	AGWR notes that the presence of emerging compounds in treated sewage, such as endocrine-disrupting chemicals (EDCs), pharmaceuticals, new disinfection by-products (e.g. NDMA), and complex mixtures, was less well understood and required further research. [Reviewer's note: The guidelines were published in 2006 and this conclusion is out of date]
Secondary Q3.	Should the focus be on "hot spots" i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	<ul style="list-style-type: none"> ● AGWR concludes that the risk to human health from chemicals in treated sewage is low, providing that preventive measures (e.g. trade-waste programs) are established and maintained to ensure that industrial discharges do not lead to elevated chemical concentrations in recycled water. ● It is noted that small treatment plants and on-site recycled water treatment plants are more susceptible than large plants to unauthorised discharges of industrial and domestic origin. ● Greater vigilance is required to minimise the occurrence of unauthorised discharges if small plants are used as sources of recycled water. ● For on-site systems in particular, preventive measures should include providing owners of systems with educational material about the need to avoid inappropriate discharges of household chemicals.
Supporting information	Useful for answering primary research question?	Yes
	Useful for answering secondary research questions?	Yes
	<ul style="list-style-type: none"> ● Key contaminants of concern in recreational waters; 	Suggests EDCs, pharmaceuticals, new disinfection by-products (e.g. NDMA), and complex mixtures require further study - however this advice is out of date, as the AGWR was published in 2006.
	<ul style="list-style-type: none"> ● Risk assessment methods (including exposure) 	No data for chemical risk assessment

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Type	Question	G5	AGWR Phase 1 2006
	<p>assessment calculations and assumptions);</p> <ul style="list-style-type: none"> Consideration of short, medium- and long-term exposures; and In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	No data	
		No data	
		Section 3.1 to 3.4 (pp.83 to 97) describes quantitative microbial risk assessment (QRMA) methods and concept of tolerable risk and health-based targets (HBTs) incl. μ DALYs (disability-adjusted life years times 10^6) Section 3.5 p.98 describes pathogens in sewage and log reduction values (LRVs) that can be claimed by different treatment processes for V, P, B. Also discussed in the chapter are chemical hazards pp. 109-111	
Conclusions/ comments	Overall Assessment	Contains useful material in support of primary and secondary research questions	
	Reviewer's comment (optional)	Section 3.1 to 3.4 (pp.83 to 97) describes QRMA methods and concept of tolerable risk and HBTs incl. μ DALYs Section 3.5 p.98 describes pathogens in sewage and LRVs that can be claimed by different treatment processes for V, P, B. Also discussed in the chapter are chemical hazards pp. 109-111	

5.4. NRMMC; EPHC; NHMRC (2008)

5.4.1. Quality assessment

G6: AGWR Phase 2 2008		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The guidelines were developed by the Australian Government. They are not mandatory but rather have been developed as an authoritative reference that can be used to support beneficial and sustainable recycling.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Yes	The work was overseen by the Joint Steering Committee of The Natural Resource Management Ministerial Council and the Environment Protection and Heritage Council as well as a working group. The names of individual persons on the committee and working group are listed in the document.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported but the reviewer recalls seeing a draft version for discussion around 2007, so it is possible there was a public consultation phase, but that it is not described in the document or on the related website at www.waterquality.gov.au



G6: AGWR Phase 2 2008

Criteria	Assessment	Notes
Is the advice peer reviewed?	Can't Tell	No peer-review process is described in the document or on the related website (https://www.waterquality.gov.au/guidelines/recycled-water#augmentation-of-drinking-water-supplies-phase-2)
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	No	Last updated in 2008
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	n/a	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	Yes	With respect to chemicals, a detailed methodology is given in Appendix A (p. 101) "Setting guidelines for chemicals in drinking water augmented with recycled water". The methodology is based on the guidance in the Australian Drinking Water Guidelines and also makes reference to a hierarchy of other international drinking water guidelines (Box A2. p.103). No process is described for the critical assessment of the other international guidelines.
Can grey literature such as government reports and policy documents be included?	Yes	Grey literature is cited in the document (e.g. other international drinking water guidelines in Box A2. p.103).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	Yes	With respect to chemicals, a detailed methodology is given in Appendix A (p. 101) "Setting guidelines for chemicals in drinking water augmented with recycled water". The methodology is based on the guidance in the Australian Drinking Water Guidelines.
Evidence search		
Are databases and other sources of evidence specified?	n/a	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	n/a	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported

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G6: AGWR Phase 2 2008

Criteria	Assessment	Notes
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	Yes	Described in Appendix A (p. 101) "Setting guidelines for chemicals in drinking water augmented with recycled water".
Are the parameter value assumptions documented and explained?	Yes	Parameter value assumptions for toxicological data are listed and referenced.
Are the mathematical workings/algorithms clearly documented and explained?	Yes	Guideline derivation algorithms are clearly described.
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	A minor reference to mode of action occurs on p. 113 in reference to genotoxicity, however no clear reference to the use of mechanistic, or key events in adverse outcome pathways in deriving health-based guideline values is included.
If expert judgement is required, is the process documented and published?	No	Not reported
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported for chemicals (although it is considered for pathogens in the context for QMRA).
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	Yes	Appendix A (p. 101) provides alternative guideline derivations algorithms for threshold and non-threshold substances.
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	2×10^{-6} (p. 15 and p.110), refers to ADWG
Comments		

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G6: AGWR Phase 2 2008		
Criteria	Assessment	Notes
Reviewer Comments		The AGWR Phase 2 guidelines are a detailed methods manual for determining risks to human health and environment from physical, chemical and microbiological constituents in recycled water. The assessment methodology in this table is focussed on assessing reviews of epidemiological-type studies so many of the assessment questions are either not appropriate, or only have a minor relevance. The AGWR guidelines are useful for the current narrative review in providing background information on chemical fate and risk assessment in an Australian context. They may provide relevant information to assist in answering the primary research question, and may also contain some useful information to address some of the secondary questions.
Useful for answering primary research question?	Partly	
Useful for answering secondary research questions?	Partly	Quality is satisfactory and content is relevant.

5.4.2. Data extraction

G6		
Type	Question	AGWR Phase 2 2008
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	AGWR Phase 2 provides a more extensive list of contaminants of interest in recycled water than AGWR Phase 1 and furthermore provides guidelines for an additional list of substances that ADWG does not list (Table 4.4, pp.33-38). Appendix A, pp. 101 to 134, also provides a detailed methodology for the derivation of guidelines for substances for which there are currently ADWG values.
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	<p>The AGWR Phase 2 lists the following chemical groups as potentially present in recycled water (although in most cases, concentrations are expected to be below ADWG values where these exist):</p> <ul style="list-style-type: none"> • inorganic chemicals • nutrients (which could support or promote the development of cyanobacterial blooms in receiving waters) • pesticides • water treatment chemicals, chlorinated DBPs and DPBs from advanced oxidation processes. • industrial chemicals • household and garden chemicals • surfactants • flame retardants • human and veterinary pharmaceutical products • radiological contrast media • naturally occurring radionuclides • radionuclides from medical, industrial and research wastes and discharges • personal-care products (e.g. fragrances, cosmetics, antiperspirants, moisturizers, soaps, creams, whitening agents, dyes and shampoos) • natural hormones <p>In addition to the PCBs, PAHs and phenols listed in the AGWR phase 1 guidelines, AGWR Phase 2 lists other general organic chemicals, such as aliphatics, chlorobenzenes, monocyclic hydrocarbons, nitrosamines, organotins, phthalates, plasticizers, sterols and stanols.</p>



G6

Type	Question	AGWR Phase 2 2008
		<p>[Reviewers note: this list is from 2008 and is out of date]</p> <p>AGWR Phase 2 notes that the list of chemicals provided in Table 4.4 of the document is extensive; however, more than two-thirds of the chemicals for which tests were performed were reported in the available data sets as being below limits of detection. These included a large range of pharmaceuticals, pesticides, fragrances, fire retardants, surfactants, dioxins, phthalates and organotins.</p> <p>Elsewhere, AGWR Phase 2 states (p. 42) that data (not cited) for organic chemicals indicate exceedances for a number of disinfection by-products, pesticides and trace organics. The largest exceedances were for:</p> <ul style="list-style-type: none"> • benzo(a)pyrene (PAH) • bromodichloromethane, chloroform and NDMA (disinfection by-products) • demeton S (pesticide) • diatrizoic acid (contrast medium) • 2,6-di-tert-butyl-1,4-benzoquinone (antioxidant) • 5-methyl-1H-benzotriazole (industrial anticorrosive) • paraxanthine (caffeine metabolite) • propylenedinitrilotetraacetic acid (PDTA, chelating agent) <p>[Reviewer's note: concentrations of these compounds would be diluted 10-fold or more in the receiving waters and any recreational water quality guideline would also be based on an assumed dose of 10% or less than the drinking water guideline. Thus, additional safety factors of 100 or more would apply in a recreational water environment]</p>
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	No data
Secondary Q3.	Should the focus be on "hot spots" i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	No data
Supporting information	Useful for answering primary research question?	Yes
	Useful for answering secondary research questions?	Yes
	<ul style="list-style-type: none"> • Key contaminants of concern in recreational waters; 	Extensive listing of contaminants of concern in recycled waters. No specific reference to recreational water but treated wastewater (i.e. recycled water) discharges in the vicinity of recreational water use areas are common in Australia.
	<ul style="list-style-type: none"> • Risk assessment methods (including exposure assessment calculations and assumptions); 	No data on exposure, but detailed information for guideline derivation for chemicals in water.
	<ul style="list-style-type: none"> • Consideration of short, medium- and long-term exposures; and 	Guideline derivation is focussed on chronic exposure.
	<ul style="list-style-type: none"> • In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	No data

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Type	Question	G6
		AGWR Phase 2 2008
Conclusions/ comments	Overall Assessment	Contains useful material in support of primary and secondary research questions
	Reviewer's comment (optional)	<p>Provides further guidance in support of the Phase 1 AGWR guideline for Augmentation of Drinking Water Supplies with Recycled Water.</p> <p>Section 3 pp. 13-15 describes HBTs.</p> <p>Section 4.2.4 pp. 25-43 describes Hazard identification and risk assessment for pathogens and chemical hazards. Includes Table 4.4 Chemicals detected in secondary treated sewage, maximum concentrations and guideline values</p> <p>Section 4.3 pp. 44 to 55 described Preventative Measures for Recycled Water Management.</p> <p>Appendix A, pp. 101 to 134 describes methods for Setting guidelines for chemicals in drinking water augmented with recycled water</p>

5.5. US EPA (2019) (Cyanotoxins)

5.5.1. Quality assessment

G9: US EPA 2019 Algal toxins criteria		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	This document deals only with the cyanotoxins Microcystins and Cylindrospermopsin, however it provides detailed methods for chemical exposure assessment during recreational water use for ingestion, inhalation and dermal exposure pathways and so could be applied to other water-associated chemical toxins. The methods are consistent with the enHealth 2012 guidelines (and thus compatible with Australian processes) but provide more information on exposure rates.
Are the administrative processes documented and publicly available?	No	Appendix C provides a description of literature search processes including databases and search strings for 5 different research questions. The only research question relevant to the current narrative review was Research Question 4: "What new information, if any, is available regarding how aquatic recreational exposure ingestion rates in children differ among age groups between zero and 18 years?". The other questions were about cyanotoxin issues. Appendix F describes the results of the review of ingestion studies.
Was the work overseen by an expert advisory committee?	Can't Tell	Reference is made in the acknowledgements to some senior US EPA staff from the Office of Science and Technology and US EPA internal technical reviewers (unnamed), however there is no explicit reference to an expert committee overseeing the development of the guidelines.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported



G9: US EPA 2019 Algal toxins criteria

Criteria	Assessment	Notes
Is the advice peer reviewed?	Yes	The document foreword states that "this document has undergone an EPA intra-agency peer-review process. The Health and Ecological Criteria Division, Office of Science and Technology, Office of Water, U.S. Environmental Protection Agency has completed the final review and the document is approved for publication. The values were derived using the existing peer-reviewed and published science on the adverse human health effects of the toxins including previous EPA analysis, such as the EPA's Health Effects Support Document for the Cyanobacterial Toxin Microcystins and Health Effects Support Document for the Cyanobacterial Toxin Cylindrospermopsin (HESDs), and the EPA's Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins and Drinking Water Health Advisory for the Cyanobacterial Toxin Cylindrospermopsin (Drinking Water Health Advisories) (U.S. EPA 2015a, 2015b, 2015c, 2015d). The EPA used established criteria methodologies (U.S. EPA 2000) and recreation-specific exposure parameters from the EPA's Exposure Factors Handbook (EFH) (U.S. EPA 2011) to derive these values." See documents for cited references.
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	Yes	The document was published relevantly recently (May 2019).
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported. Research questions are listed in Appendix C but there is no clear documentation of definitions and evidence review parameters.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	Yes	Appendix C refers to Health Effects Support Documents (HESDs) which describe detailed search results and search methodology.
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	Not reported
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	Yes	Only articles in English are reviewed (e.g. p. C3, 3rd para from bottom). No justification is provided. Date ranges vary depending on question, but all cease in 2015.
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	The literature assessed appears to be primary research articles from peer-reviewed literature or other US EPA studies.
Can grey literature such as government reports and policy documents be included?	Yes	Certain sections of the report make use of grey literature sources e.g. Appendix B which lists State Recreational Water Guidelines for Cyanotoxins and Cyanobacteria. Also, the literature review on incidental ingestion (Appendix E) cites other US EPA documents such as the 2011 Exposure Factors Handbook.
Is there documentation and justification on the selection of a toxicological endpoint for use as point	n/a	With respect to recreational water contaminants, the document only deals with microcystins and cylindrospermopsins and in each case refers to other US

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G9: US EPA 2019 Algal toxins criteria		
Criteria	Assessment	Notes
of departure for health-based guideline derivation?		EPA Health Effects Support Document (HESD) reports for each toxin (Section 5.2, Dose-response assessment, p. 71)
Evidence search		
Are databases and other sources of evidence specified?	Yes	PubMed and Web of Science are cited as literature search engines in Appendix C.
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	Yes	PubMed and Web of Science are cited (Appendix C.)
Is it specified what date range the literature search covers? Is there a justification?	Yes	Date ranges vary depending on question, but all cease September 2015
Are search terms and/or search strings specified?	Yes	Search strings for the research questions in Appendix C are listed.
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	English only articles reviewed (e.g. p. C3, 3rd para from bottom). This is appropriate as the bulk of the scientific literature is in English.
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	No	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	Yes	Based on available noncancer health effects information, the document recommends concentrations of microcystins and cylindrospermopsin protective of primary contact recreation. But note that neither of these toxins is in the scope of the current narrative review.
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported
Are the parameter value assumptions documented and explained?	Yes	Recommendations for concentrations of Microcystins and Cylindrospermopsin protective of primary contact recreation are given (p.17).
Are the mathematical workings/algorithms clearly documented and explained?	Yes	Guideline derivation algorithms based on reference doses of Microcystins and Cylindrospermopsin are clearly described (p. 52).
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported



G9: US EPA 2019 Algal toxins criteria		
Criteria	Assessment	Notes
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	Can't Tell	There is some discussion of mechanistic outcome pathways and modes of action in the document, however the documents relies on RfDs from the US EPA's Health Effects Support Document for the Cyanobacterial Toxin Microcystins and Health Effects Support Document for the Cyanobacterial Toxin Cylindrospermopsin (HESDs), and the EPA's Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins and Drinking Water Health Advisory for the Cyanobacterial Toxin Cylindrospermopsin (Drinking Water Health Advisories) (U.S. EPA 2015a, 2015b, 2015c, 2015d). References cited within the HESD documents.
If expert judgement is required, is the process documented and published?	No	Not reported
Is dose response modelling (e.g. BMDL) routinely used?	Can't Tell	Not reported. May be addressed in HESD documents, but since the listed toxins are out of scope of the current narrative review, this has not been ascertained.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	Can't Tell	See above
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	Can't Tell	See above
Comments		
Reviewer Comments		Contains detailed methods for chemical exposure assessment during recreational water use. Committee comments: While this report is focussed on cyanotoxins (which are being considered in another narrative review), its approach can be applied to other water associated toxins.
Useful for answering primary research question?	No	Quality is satisfactory and content is relevant.
Useful for answering secondary research questions?	Partly	

5.5.2. Data extraction

Type	Question	G9 US EPA 2019 Algal toxins criteria
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	Although this document is focused on Microcystins and Cylindrospermopsin only, it provides detailed methods for chemical exposure assessment during recreational water use for ingestion, inhalation and dermal exposure pathways and so could be applied to other water-associated chemical toxins.
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	No data
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties	The document provides a method for quantifying chemical uptake due to ingestion, inhalation and dermal exposure for water-associated chemical toxins. Exposure formulas presented identify



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Type	Question	US EPA 2019 Algal toxins criteria
	<p>which may enhance their uptake via dermal, inhalation or ingestion exposure pathways?</p> <p>How can we adjust exposure assumptions for these chemicals?</p>	<p>the relevant physicochemical properties for which estimates are required. [Reviewer's note: exposure assumptions for chemicals would most likely only differ between substances due to different sources, or different physicochemical properties. The former can be determined by sanitary survey methods and the latter by reference to databases of chemical physicochemical properties such as the OECD's QSAR Toolbox, or US EPA's online Chemistry Dashboard, or other such databases].</p> <p>Exposure pathways</p> <p>The US EPA 2019 Cyanotoxins document notes that recreational exposure data available in the literature are expressed in two primary ways:</p> <ol style="list-style-type: none">1) the volume of water incidentally ingested during recreation (e.g. L/hr), and2) the duration of the recreational activity (e.g. minutes of recreation per day). <p>A daily incidental ingestion rate distribution was developed by combining these two distributions. The 90th percentile of the daily incidental ingestion rate distribution for children was selected for the derivation of the criteria and swimming advisories. This approach is slightly different from the US EPA 2019 Chapter 3 update of the Exposure Factors Handbook [EFH].</p> <p>Duration of the recreational activity</p> <p>The EPA identified the following sources of data on the duration of the recreational activity: the US EPA's 2011 version of the EFH; Schets et al. (2011); and DeFlorio-Barker et al. (2017). The US EPA considered these three studies and selected the 2011 EFH for use in deriving the criteria and swimming advisories primarily because the EFH dataset represents exposures in minutes per day. Other datasets measured the duration of recreational exposure on an event basis, which require assumptions about how many recreational events occur per day to create the relevant distribution.</p> <p>Note that the 2019 update to Chapter 3 of the EFH addressed ingestion rates during swimming and relied heavily on the study by Dufour et al. (2006) "Water Ingestion during Swimming Activities in a Pool: A Pilot Study"; and Dufour et al. (2017) "Ingestion of Swimming Pool Water by Recreational Swimmers". It is apparent that the US EPA 2019 algal toxins document was produced before the 2019 update to Chapter 3 of the EFH was available.</p> <p>Dermal and inhalation pathways</p> <p>Dermal and inhalation pathways were also reviewed, and methodologies provided for computing exposure to cyanotoxins in recreational waters.</p> <p>Inhalation</p> <p>Inhalation rates (Section 7.4.1, p.87) were obtained from the US EPA's 2011 Exposure Factors Handbook. The methodology for determining the inhaled dose is as follows:</p> $\text{Inhalation dose (ng/day)} = \text{Inhalation rate} \times \text{Inhalation duration} \times \text{Concentration}_{\text{air}}$ <p>Where:</p> <p>Inhalation rate = inhalation rate from the US EPA's 2011 EFH (U.S. EPA 2011; Table 6-2) (m^3/min)</p> <p>Inhalation duration = inhalation exposure duration from the EPA's</p>

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Type	Question	US EPA 2019 Algal toxins criteria
		<p>EFH (U.S. EPA 2011;Table 16-20) (minutes/day)</p> <p>Concentration_{air} = concentration in air (for Cyanotoxins this is 0.08 ng/m³, assumed from Cheng et al., 2007) (ng/m³). [Reviewers note: for other chemicals this could be calculated for other chemicals given Henry's Law Constant, estimates of water concentrations and assumptions on air exchange at the water recreation site]</p> <p>Different rates are reported for children and adults.</p> <p>Dermal</p> <p>For dermal absorption (Section 7.4.2, p. 91), no peer-reviewed studies were identified and therefore a comparative screening analysis was undertaken to estimate the potential dermal absorbed dose of microcystins and compare it to the incidentally ingested dose</p> <p>The EPA's Dermal Exposure Assessment: A Summary of EPA Approaches (U.S. EPA 2007) states that to get through the skin, a chemical must dissolve into the stratum corneum, which is a stabilized lipid barrier; therefore, lipid solubility is required initially (U.S. EPA 2007).</p> <p>To estimate the potential dermal absorbed dose, the EPA used exposure equations in its Risk Assessment Guidance for Superfund (U.S. EPA 2004). The first step was to use chemical-specific octanol-water partition coefficient and molecular weight values to estimate dermal permeability, a parameter needed for the equation to estimate dermally absorbed dose.</p> <p>The equation to estimate skin permeability coefficient from U.S. EPA (2004) is:</p> $\text{Log Kp} = -2.80 + 0.66 \times \log \text{Kow} - 0.0056 \times \text{MW}$ <p>Where:</p> <p>Kp = dermal permeability coefficient of compound in water (cm/hour)</p> <p>Kow = octanol-water partition coefficient (dimensionless)</p> <p>MW = molecular weight (g/mole)</p> <p>Dermal absorbed dose = Kp × Concentration_{water} × t</p> <p>Where:</p> <p>Dermal absorbed dose = dermal absorbed dose per event (mg/cm²-event)</p> <p>Kp = dermal permeability coefficient of compound in water (cm/hour)</p> <p>Concentration_{water} = chemical concentration in water (mg/cm³)</p> <p>t = event duration (hour/event)</p>
Secondary Q3.	Should the focus be on "hot spots" i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	No data
Supporting information	Useful for answering primary research question?	Partly
	Useful for answering secondary research questions?	Yes
	• Key contaminants of concern in recreational waters;	No data

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Type	Question	US EPA 2019 Algal toxins criteria
	<ul style="list-style-type: none"> • Risk assessment methods (including exposure assessment calculations and assumptions); • Consideration of short, medium- and long-term exposures; and • In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	Contains useful guidance on calculation of risk
	Overall Assessment	No data
	Reviewer's comment (optional)	No data
Conclusions/ comments	Overall Assessment	Provides some material in support of secondary research question 2.
	Reviewer's comment (optional)	Contains detailed methods for chemical exposure assessment during recreational water use. Committee comments: While this report is focussed on cyanotoxins (which are being considered in another narrative review), its approach can be applied to other water associated toxins.

5.6. WHO (2016)

5.6.1. Quality assessment

G10: WHO 2016 Surface Water RA		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The document provides general technical reference for assessing the risks to water quality for a water body. The emphasis is on the protection of drinking water quality, however the risk-based approach described is well laid out and consistent with Australian processes for water quality risk assessment and could be used as a guide to assessing water quality risks at Australian water recreation sites.
Are the administrative processes documented and publicly available?	No	Not reported. A large list of contributors and reviewers is listed in the acknowledgements.
Was the work overseen by an expert advisory committee?	Yes	Reference is made in the acknowledgements to lead editors, key contributor and to reviewers, all of which are likely to be experts in the area. Of the many key contributors that are known to the reviewer, all are water quality and public health experts of high standing. In a strict sense, no reference is made to an expert advisory committee, however, the role of the lead editors and key contributors is considered to meet this criterion.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	No	Not reported
Is the advice peer reviewed?	Yes	A list of technical reviewers is listed in the acknowledgements.
If so, is the peer review outcome documented and/or published?	No	Not reported



G10: WHO 2016 Surface Water RA

Criteria	Assessment	Notes
Was the guidance/advice developed or updated recently? Provide details.	No	The document was published in 2016 and has not been updated since that time.
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	Can't Tell	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	Can't Tell	Not reported
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	Can't Tell	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	Not reported
Can grey literature such as government reports and policy documents be included?	Yes	Grey literature is cited throughout the document (e.g. WHO and US EPA publications).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	n/a	The document does not contain health-based guidelines.
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	Can't Tell	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported

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G10: WHO 2016 Surface Water RA

Criteria	Assessment	Notes
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	n/a	The document does not contain health-based guidelines.
Are the parameter value assumptions documented and explained?	n/a	The document does not contain health-based guidelines.
Are the mathematical workings/algorithms clearly documented and explained?	n/a	The document does not contain health-based guidelines.
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	n/a	The document does not contain health-based guidelines.
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	n/a	The document does not contain health-based guidelines.
If expert judgement is required, is the process documented and published?	n/a	The document does not contain health-based guidelines.
Is dose response modelling (e.g. BMDL) routinely used?	n/a	The document does not contain health-based guidelines.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	n/a	The document does not contain health-based guidelines.
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	The document does not contain health-based guidelines.
Comments		
Reviewer Comments		Although the current narrative review is in support of an update of the water quality component of the recreational water guidelines, it is useful to consider the information on the existing guidelines as a baseline for comparison with any new findings, data, or scientific consensus from the current period.
Useful for answering primary research question?	Partly	Quality is satisfactory and content is relevant.
Useful for answering secondary research questions?	Partly	

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5.6.2. Data extraction

Type	Question	G10 WHO 2016 Surface Water RA
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	<p>Section 2.1.2 p.20 of the document discusses "Chemical hazards in surface waters". A very general discussion on sources and types of substances is presented, followed by slightly more focused discussion on key chemical groups. The groupings are listed below and in the case of volatile and semi-volatile organic compounds (VOCs and SVOCs) includes some additional supporting information that may be useful in support of the update to the NHMRC Guidelines.</p> <p>The document had a number of limitations regarding the technical depth. Its focus is on general surface water quality, rather than on the quality of recreational waters, so much of the content is tangential to the topic of this current narrative review and developed for a more general I audience.</p>
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	<p>The document provides some general commentary on broad classes of chemicals, with some specific substances listed, and potential sources in surface waters.</p> <p>Key chemical groups discussed are:</p> <ul style="list-style-type: none"> • Inorganic chemicals <ul style="list-style-type: none"> ○ Major ions ○ Nitrogen ○ Arsenic ○ Metals • Anthropogenic organic substances <ul style="list-style-type: none"> ○ Pesticides ○ Volatile organic compounds (VOCs) <p>§ VOCs are small, often relatively polar, molecules that are sparingly to very soluble in water, with solubilities spanning 100–20 000 mg/L [Reviewer's note: although not stated, commercial analytical laboratories often provide screening analyses for this class of compounds, hence its popular use in environmental water quality assessments]</p> <p>§ VOCs are poorly sorbed to solids (due to their low Log Kow) and are primarily attenuated in surface waters by simple volatilisation to the atmosphere. This significantly reduces VOC risks to surface waters.</p> <ul style="list-style-type: none"> ○ Semi-volatile organic compounds (SVOCs) <p>§ SVOCs have been variously defined as organic compounds that have boiling points higher than water.</p> <p>§ The most widely used SVOC analytical methods are those developed by the US EPA. These methods tend to screen a wide range of SVOCs and include a diversity of compound types such as PAHs, chloro- and nitro-phenols, anilines, phthalates, halogenated benzenes and ethers.</p> <p>§ As a generalization, with increasing molecular weight (size), SVOCs are likely to be less volatile, have lower aqueous solubility, be increasingly hydrophobic (higher Log Kow) and prone to greater sorption to sediments. They will also be less bioavailable for biodegradation, and undergo greater partitioning to biota and to "bioaccumulation" (i.e. the accumulation of a compound in the tissue of an organism over time). An approximate trigger value of Log Kow >3 is used to identify compounds that may bioaccumulate or significantly sorb to sediments.</p> <ul style="list-style-type: none"> ○ Natural organic substances (NOM) • Emerging issues in relation to chemical hazards in surface-water catchments <ul style="list-style-type: none"> ○ Pharmaceutically active compounds ○ Endocrine-disrupting compounds



G10		
Type	Question	WHO 2016 Surface Water RA
		<p>Section 2.2.3, p.49 discusses "Transport and attenuation processes influencing pollution" and provides general discussion on the following processes</p> <ul style="list-style-type: none"> • Dispersion and dilution • Volatilization • Sedimentation • Sedimentation after sorption to solids or colloids • Chemical reaction (transformation)
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	Compounds with a log Kow < 3 are more likely to be found in surface waters as above this value, the compounds are likely to sorb to sediments [Reviewers note: another pathway to the sediments is to bind to particulate organic matter and settle to the sediments with the rate governed by Stoke's Law].
Secondary Q3.	Should the focus be on "hot spots" i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	No data. [Reviewers note: The broader catchment or source water safety plan development described in the document would be a useful approach to consider for management of recreational water quality areas]
Supporting information	Useful for answering primary research question?	Yes
	Useful for answering secondary research questions?	Yes
	<ul style="list-style-type: none"> • Key contaminants of concern in recreational waters; 	Some general discussion provided.
	<ul style="list-style-type: none"> • Risk assessment methods (including exposure assessment calculations and assumptions); 	Provides useful general guidance on development of a catchment water safety plan.
	<ul style="list-style-type: none"> • Consideration of short, medium- and long-term exposures; and 	No data
	<ul style="list-style-type: none"> • In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring. 	No data
	Overall Assessment	Lists some classes of contaminants of concern in surface waters
Conclusions/ comments	Reviewer's comment (optional)	<p>Detailed methods for surface water health assessment. Section 2.1.2, p. 20 discusses Chemical Hazards in surface waters including inorganics, anthropogenic, natural organic substances, and Emerging issues including pharmaceutically active compounds (PhACs) and Endocrine disrupting compounds (EDCs). Box 2.3 on p. 32 discusses trace chemicals for which there are no regulatory limits or drinking-water guideline values</p>



5.7. 11 NHMRC (2019)

5.7.1. Quality assessment

G11: NHMRC 2019 PFAS Recreational WQ Guidance		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The PFAS guidelines were developed by the Australian Government. They are not mandatory but rather have been developed as a tool for state and territory governments to develop legislation and standards appropriate for local conditions and circumstances.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Yes	Reference is made to the National Health and Medical Research Council's Water Quality Advisory Committee although the role of the committee is not clearly described, nor are the member's identities listed.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported
Is the advice peer reviewed?	Yes	According to the NHMRC website (https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs , accessed 21 March 2021) "NHMRC's Water Quality Advisory Committee, the experts on public health issues related to water quality, developed the guidance. The guidance is also informed by the risk assessment on PFAS undertaken by Food Standards Australia New Zealand. The Environmental Health Standing Committee was also consulted in the development of this guidance".
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	Yes	The document was published relatively recently (2019).
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	Can't Tell	The guidance is informed by the risk assessment on PFAS undertaken by Food Standards Australia New Zealand (FSANZ). The listed reference is: Food Standards Australia New Zealand (2017), Hazard Assessment Report: Perfluorooctane sulfonate (PFOS), Perfluorooctanoic acid (PFOA) and Perfluorohexane sulfonate (PFHxS) (https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-hbvg.htm , accessed 21 March 2021). Decisions about scope, definitions and evidence review parameters may be documented in the FSANZ report, but consideration of that document is beyond the scope of this review.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	Can't Tell	The guidance is informed by the FSANZ risk assessment on PFAS. Consideration of the FSANZ document is beyond the scope of this review. It is understood that the FSANZ review includes international hazard reviews of PFAS.



G11: NHMRC 2019 PFAS Recreational WQ Guidance

Criteria	Assessment	Notes
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	Can't Tell	The guidance is informed by the FSANZ risk assessment on PFAS. Consideration of the FSANZ document is beyond the scope of this review.
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	Can't Tell	The guidance is informed by the FSANZ risk assessment on PFAS. Consideration of the FSANZ document is beyond the scope of this review.
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	Can't Tell	The guidance is informed by the FSANZ risk assessment on PFAS. Consideration of the FSANZ document is beyond the scope of this review.
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	Can't Tell	The guidance is informed by the FSANZ risk assessment on PFAS. Consideration of the FSANZ document is beyond the scope of this review.
Can grey literature such as government reports and policy documents be included?	Yes	Grey literature is cited in the document (e.g. FSANZ 2017).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	No	The guidance is informed by the FSANZ risk assessment on PFAS. Documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation may be included in the FSANZ document, but review of that document is beyond the scope of this review.
Evidence search		
Are databases and other sources of evidence specified?	n/a	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review.
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	n/a	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review.
Is it specified what date range the literature search covers? Is there a justification?	No	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review.
Are search terms and/or search strings specified?	No	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review.
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review.
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	The guidance is informed by the FSANZ risk assessment on PFAS (FSANZ 2017) but review of that document is beyond the scope of this review. It is noted that the FSANZ document does include consideration of risk of bias.
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported. May be addressed in FSANZ 2017.
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	Can't Tell	Not reported. May be addressed in FSANZ 2017.

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G11: NHMRC 2019 PFAS Recreational WQ Guidance

Criteria	Assessment	Notes
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	Can't Tell	Not reported. May be addressed in FSANZ 2017.
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported. May be addressed in FSANZ 2017.
Are the parameter value assumptions documented and explained?	No	Not reported. May be addressed in FSANZ 2017.
Are the mathematical workings/algorithms clearly documented and explained?	Yes	The algorithms for determining the value of recreational water guideline for PFOS and PFOA are given. Algorithms for point of departure, etc. are not presented but may be included in FSANZ 2017.
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not reported. May be addressed in FSANZ 2017.
If expert judgement is required, is the process documented and published?	No	Not reported. May be addressed in FSANZ 2017.
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported. May be addressed in FSANZ 2017.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	No	Not reported. May be addressed in FSANZ 2017.
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	Not reported. May be addressed in FSANZ 2017.
Comments		
Reviewer Comments		Brief document describing the development of the guideline
Useful for answering primary research question?	Partly	Quality is satisfactory and content is relevant.
Useful for answering secondary research questions?	Partly	

5.7.2. Data extraction

Type	Question	G11
		NHMRC 2019 PFAS Recreational WQ Guidance
Primary Q.	Are exposures to the hazards outlined in the PECO Table below likely to give rise to any significant human health risks given that chemical concentrations in recreational waters are generally low?	<ul style="list-style-type: none"> While some water near contaminated sites has been monitored for PFAS, this has not been done routinely for Australian recreational water. The guidelines note that published data on recreational water samples are scarce. Reference is made to environmental studies including a study on the Brisbane River undertaken to provide an estimate of the release of PFAS from flooded urban areas. PFOA (mean 0.0001- 0.006 µg/L) and PFOS (mean 0.0002 - 0.02 µg/L) were the most frequently detected and abundant PFAS (citing

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G11

Type	Question	NHMRC 2019 PFAS Recreational WQ Guidance
		<p>Gallen et al. 2014).</p> <ul style="list-style-type: none"> Elsewhere, a study of PFAS (citing Thompson et al., 2011) in environmental samples taken from Homebush Bay in the upper reaches of Sydney Harbour and Parramatta River Estuary, both urban/industrial areas, detected concentrations of PFOA 0.004-0.006 µg/L and PFOS 0.007-0.2 µg/L respectively. <p>These measurements suggest background concentrations of PFAS at recreational water areas, would be generally well below guideline levels, unless a major source, such as a contaminated site, was present in the water catchment area.</p>
Secondary Q1.	What chemicals (that potentially pose a risk to humans) are present at elevated concentrations in recreational waters and what are their sources?	No data
Secondary Q2.	What chemicals are of most concern due to their physicochemical properties which may enhance their uptake via dermal, inhalation or ingestion exposure pathways? How can we adjust exposure assumptions for these chemicals?	No data
Secondary Q3.	Should the focus be on “hot spots” i.e. site-specific rather than chemical specific, and/or include periodic toxicity screening of sites to complement chemical testing?	<ul style="list-style-type: none"> No data
Supporting information	Useful for answering primary research question?	Yes
	Useful for answering secondary research questions?	Yes
	<ul style="list-style-type: none"> Key contaminants of concern in recreational waters; 	PFAS risks are determined by measurement of PFOA and sum of PFOS and PFHxS
	<ul style="list-style-type: none"> Risk assessment methods (including exposure assessment calculations and assumptions); 	<p>Exposure routes</p> <ul style="list-style-type: none"> The major pathway for human exposure to PFAS is via food and consumer products. With respect to recreational water, ingestion is considered the most significant exposure pathway, whereas dermal exposure and inhalation are considered negligible due to the high molecular weight and low volatility of key PFAS such as PFOS and PFOA (studies cited in report). Other studies cited indicated that under typical conditions, skin is resistant to PFOS and PFOA transport. <p>Guideline derivation</p> <ul style="list-style-type: none"> FSANZ concluded that available human epidemiology data are not suitable to support the derivation of tolerable daily intakes (TDIs) for PFOS or PFOA, which is consistent with the findings of other regulatory agencies. Therefore, FSANZ has recommended TDIs based on extensive toxicological databases in laboratory animals (FSANZ, 2017). TDIs for PFOS and PFHxS combined is 0.02 µg/kg/bw/day, whilst for PFOA it is 0.16 µg/kg/bw/day (citing FSANZ, 2017).
	<ul style="list-style-type: none"> Consideration of short, medium- and long-term exposures; and 	Revised methodology for recreational water quality guideline derivation

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Type	Question	NHMRC 2019 PFAS Recreational WQ Guidance
		<ul style="list-style-type: none">The NHMRC's Water Quality Advisory Committee recommended an alternative methodology to calculate the recreational water guideline value.Instead of basing it on an ingestion rate of 0.2 litres of water per day as per the ADWG formula, a calculated ingestion volume per water-based recreational event (0.2 L/event) is used in combination with an assumed number of water-based recreational events per year (event frequency = 150 events/year).Numerous conservative assumptions are applied such that this approach is designed to protect the majority of the population.NHMRC acknowledge that there is currently limited data available, particularly data that can be assumed to appropriately relate to recreational use of water bodies in Australia.These include locally relevant 'event frequency' data and representative rates of accidental ingestion during these events.NHMRC's Recreational Water Quality Advisory Committee will review this methodology as part of updating the Guidelines.
	<ul style="list-style-type: none">In addition to the last point, consideration of the use of indicator substances for chemical risk assessment and monitoring.	PFOA and sum of PFOS and PFHxS
Conclusions/ comments	Overall Assessment	Contains relevant information in support of primary and secondary research questions.
	Reviewer's comment (optional)	Although this document is produced by NHMRC and will be very familiar to the Committee, it was considered useful to include it in this review to support a thorough response to the primary and secondary research questions.



6 Completed quality assessment and data extraction for the included primary studies

6.1. Canpolat et al. (2020)

6.1.1. Quality assessment

J2, Canpolat et al., (2020) A comparison of trace element concentrations in surface and deep water of the Keban Dam Lake (Turkey) and associated health risk assessment				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Yes		
1	Was there a clear statement of the aims of the research?	Yes	The main objectives of the study are described in the last paragraph of the introduction. These were to compare the levels of trace metal elements with both international and national water quality guidelines and to assess cancer and non-cancer health risks of the metals for recreational use by adults and children through oral and dermal contact pathways.	Probably low risk of bias (+)
2	Is the methodology appropriate?	Yes	A risk assessment methodology is considered appropriate since it addresses a health response to a potential exposure.	Definitely low risk of bias (++)
	Section A2: Is it worth continuing?	Yes		
3	Was the research design appropriate to address the aims of the research?	Yes	The study makes extensive use of US EPA guidance (references cited in document) and in particular utilised US EPA exposure assessment tools and regional screening level equations (RSLs) (as described in US EPA 2020 [a to g] cited in document).	Definitely low risk of bias (++)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	Yes	Subpopulations (recreator-adult, recreator-child) were chosen based on US EPA standard exposure assumptions (reference cited in document, including US EPA Exposure factors handbook). Other subpopulations (e.g. "Residents") are also described, but this group is not part of the scope of the current narrative review.	Definitely low risk of bias (++)
5	Was the data collected in a way that addressed the research issue?	Yes	Data collection methods are described in the document with adequate detail to understand what was done and the data is appropriate for addressing the research issue. However, measures to reduce risk of contamination could be more clearly described and if included, would provide more confidence in the study outcomes.	Probably low risk of bias (+)
6	Has the relationship between researcher and participants been adequately considered?	n/a	Question 6 is not applicable since there is no real population of study participants. Rather, the population assessed is a hypothetical population of adults and children exposed to lake water during recreational water use.	n/a
	Section B: What are the results?			



J2, Canpolat et al., (2020) A comparison of trace element concentrations in surface and deep water of the Keban Dam Lake (Turkey) and associated health risk assessment

Q.	Criteria	Assessment	Comments	Risk of bias rating
7	Have ethical issues been taken into consideration?	n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. Instead hypothetical populations of adult and child recreators are utilised for the assessment.	n/a
8	Was the data analysis sufficiently rigorous?	Yes	The study is rigorous (Q.8) as it follows conventional US EPA methods for Quantitative Risk Assessment. Standardised equations developed by the US EPA are used to determine exposure and risk. The study involved measurement of 17 "Trace Elements" or TEs (Pb, Hg, Cd, As, Cr, Ni, Co, Mn, Cu, Fe, Al, Sr, U, V, Zn, Zr and Ba) in surface and deep water samples and their assessment for health risks to residential and recreational receptors (adults and children).	Definitely low risk of bias (++)
9	Is there a clear statement of findings?	Yes	The findings indicated that TEs in surface and deep water of the Keban Dam Lake (Turkey: Anatolia) do not pose health risks to residential and recreational users. This is clearly stated in the abstract, but not quite as clearly described in the results and conclusion.	Probably low risk of bias (+)
	Section C: Will the results help locally?	Yes		
10	How valuable is the research?	n/a	The study demonstrates a method for developing recreational water guidelines for trace metals. However the methodology is based on the US EPA guidance and local data would be required to apply the same methods in the Australian context. As a relatively rare example of a good quality risk assessment of chemical risks to recreational water quality, the study provides some support for the development of risk-based approaches for the protection of recreational water quality - although the level of quantification and method described is likely to be too complex for local authorities without the support of external expertise.	Probably low risk of bias (+)
-	Overall risk of bias rating		The study is rigorous, clear and well-written and follows a standard risk assessment methodology. It is classed as having a "Probably low risk of bias".	Probably low risk of bias (+)
-	Reviewer's conclusion	n/a	Include in review - probable low risk of bias	

6.1.2. Data extraction

Category	Item	Study ID: J2
General information	Date template completed	23-Dec-20
	Authors	Canpolat, Ozgur; Varol, Memet; Okan, Ozlem Oztekin; Eris, Kursad Kadir; Caglar, Metin
	NOC Comments	Risk assessment - does exposure assessment and comparison to tox guidelines. Links to recreational uses
	Title	A comparison of trace element concentrations in surface and deep water of the Keban Dam Lake (Turkey) and associated health risk assessment

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Category	Item	Study ID: J2
Study characteristics	Publication Title	Environmental Research
	Reference (Vol., pages)	190, Article No. 110012
	Publication date	2020
	Publication type	Journal Article
	Peer reviewed	Yes
	Country of origin	Turkey
	Source of funding	Scientific and Technological Research Council of Turkey (114Y091).
	Possible conflicts of interest	No apparent conflicts of interest. The authors also declare no conflict of interest.
Population characteristics	Aim/objectives of study	Main objectives of this study were (1) to measure the levels of 17 TEs (trace elements) in both surface and deep waters of the dam lake in wet and dry seasons; (2) to compare their concentrations between surface and deep water samples and between wet and dry seasons; (3) to determine seasonal and spatial variations of TEs; (4) to compare the levels of TEs with both international and national water quality guidelines; and (5) to assess cancer and non-cancer health risks of TEs for residential and recreational adults and children through oral and dermal contact pathways
	Study type/design	Quantitative risk assessment
	Study duration	n/a (Desktop study)
Exposure and setting	Population/s studied	Recreational receptors (adult and child). Residential receptors also studied (i.e. use of lake water as drinking water, but this is out of scope for the review)
	Selection criteria for population	Standard human health risk assessment population (i.e. adults) and sensitive subpopulation (i.e. children)
	Subgroups reported	Children
	Size of study	10 sampling sites in the northwest region of the Keban Dam Lake (KDL). Water samples were collected from surface and from 30 m depth in May 2015 (wet season) and October 2015 (dry season) when the KDL was at high and low water levels.
Study methods	Type of water source/water body	Water supply reservoir (impoundment on Euphrates River)
	Exposure scenario	Ingestion and dermal exposure for recreational swimmers as per standard US EPA methods.
	Exposure pathway	Ingestion and dermal exposure for recreational swimmers
	Source of contamination	Trace elements (TEs) (all metals)
	Causal chemical(s)	Hg, Cd, Pb, As, Cr, Al, Cu, Mn, Co, Ba, Ni, Fe, Zn, U, V, Zr and Sr
	Comparison group(s)	No control group. Comparison was with guidelines
Data synthesis	Water quality measurement used	Concentration of trace metals in water samples
	Method of chemical detection (if applicable)	ICP-MS
	Water sampling methods (monitoring, surrogates). Was there sufficient replication in number of samples taken, what steps were taken to reduce contamination (especially for metals)?	2L water samples collected. No replicates stated. Samples collected by Nansen bottle (material not stated). Plastic bottles used.
	Limits of reporting for the chemical of concern	Limits of Detection (LODs) not stated. For calculations, when the concentration of a trace element was below the LOD, the concentration was assumed to be half of the respective LOD and if more than 60% of the water samples were lower than the LOD, these values below the LOD were replaced with zero.
	Consideration of quality assurance such as field and lab blanks, reference sites, and reporting on related physico-chemical parameters	Quality assurance and quality control for water samples were carried out using duplicates, method blanks and standard reference material (STD TMDA-70.2). The recovery for all TEs ranged from 92.9% to 104.1%

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Category	Item	Study ID: J2
Statistics	Statistical methods used	Non-carcinogenic health risks of TEs were quantified using the hazard quotients (HQs). The carcinogenic risks (CRs) were estimated only for TEs having carcinogenic slope factors (CSF). Non-carcinogenic and carcinogenic health risks of TEs via ingestion and dermal absorption of dam lake water were separately calculated for residential and recreational receptors (adult and child)
	Details on statistical analysis (if any)	US EPA standardized equations used to assess risks posed by each individual chemical, with HQs and CRs as above. One-way ANOVA was applied to determine differences in TE concentrations among sampling sites ($p < 0.05$, Duncan's test). Also, Student's t-test was used to determine significant differences in TE concentrations between seasons and between surface water samples and deep water samples ($p < 0.05$).
	Relative risk/odds ratio, confidence interval?	n/a
Results	Outcome	<p>Copper, Zn, Ba, Ni, Mn and Pb levels in deep water were higher than those in surface water. Total TE level measured in deep water (30m) was higher in wet season, whereas that in surface water was higher in dry season.</p> <p>All HQ (hazard quotient) and HI (hazard index) values were below the risk threshold of unity. HI values for child were significantly higher than those for adult, although still at safe levels. As and U for water ingestion were the primary contributors to total risk (HI), while V and Cr were highest for the dermal pathway.</p> <p>Carcinogenic risk values of As and Cr in surface and deep water were below the US EPA target risk of 1×10^{-4} (life time risk of cancer)</p>
	How outcome was assessed	<p>Hazard Quotients (HQs) and Hazard Index (HI) = \sum HQs for all TEs Carcinogenic Risks (CRs). Separate values of each metric computed for ingestion and dermal pathways.</p> <p>References cited in the paper for the equations described in the paper (section 2.3) for determining non-carcinogenic and carcinogenic health risks of trace elements (TEs) via ingestion and dermal absorption of dam lake water were recreational receptors (adult and child) were:</p> <ul style="list-style-type: none"> USEPA, 2020a. Exposure Assessment Tools by Media - Water and Sediment. Accessed date: 08 January 2020. https://www.epa.gov/expobox/exposure-assessment-tools-media-water-and-sediment. USEPA, 2020b. Regional Screening Levels (RSLs) – Equations. Accessed date: 08 January 2020. https://www.epa.gov/risk/regional-screening-levels-rsls-equations. <p>Source of reference dose for non-carcinogenic metals and slope factors for carcinogenic metals:</p> <ul style="list-style-type: none"> USEPA, 2020e. Regional Screening Level (RSL) Summary Table (TR=1E-06 THQ=1.0). Accessed date: 08 January 2020. https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide
	Method of measurement	HQs, HIs, CRs
	Number participants (exposed/non-exposed, missing/excluded) (if applicable)	n/a (Desktop study)
CASP Category and OHAT Risk of Bias	Critical Appraisal Skills Programme (CASP) or Cochrane/OHAT definitions of study types as follows:	

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Category	Item	Study ID: J2
	1. Case control study	
	2. Cohort study	
	3. Diagnostic test study	
	4. Systematic review	
	5. Qualitative research	Yes
	6. Randomised controlled trial	
	7. Cross-sectional study (mix of case-control and cohort)	
Author's conclusion	Interpretation of results	Findings indicated that TEs in surface and deep water of the KDL do not pose health risks to recreational users. Children were more sensitive than adults (higher HI values)
	Assessment of uncertainty (if any)	No discussion of uncertainty.
Reviewer comments	Reviewer comments	Although only single samples of lake water were taken at each depth at each site, it can be assumed that the samples were representative of the lake water quality since metal ions and molecules would be expected to be well mixed and not stratified greatly within narrow depth categories.
	Results included/excluded in review (if applicable)	n/a
	Notes on study quality e.g. gaps, methods	There is no discussion of the source catchment for the dam and why there may or may not be elevated risk factors for the metals in the lake water (although it is likely to be an open catchment). The study appears to be a baseline study to gauge the likely background health risks to recreational water users from trace metals (a.k.a. heavy metals) in the lake water. Some early discussion in the paper mentions concerns about bioaccumulation, however, this is not discussed further.

6.2. Dor et al. (2003)

6.2.1. Quality assessment

J3, Dor et al., (2003) Health risk assessment after decontamination of the beaches polluted by the wrecked ERIKA tanker				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Yes		
1	Was there a clear statement of the aims of the research?	Yes	The statement of aims was extracted from the abstract and introduction and could have been more clearly reported. The aim of the study was to identify short- and long-term health risks for future bathers from residual PAHs at oil spill-affected beaches, in order to assist local health authorities to plan risk management policies and inform the public.	Probably low risk of bias (+)
2	Is the methodology appropriate?	Yes	A risk assessment methodology is considered appropriate since it addresses a health response to a potential exposure.	Definitely low risk of bias (++)
	Section A2: Is it worth continuing?	Yes		



J3, Dor et al., (2003) Health risk assessment after decontamination of the beaches polluted by the wrecked ERIKA tanker

Q.	Criteria	Assessment	Comments	Risk of bias rating
3	Was the research design appropriate to address the aims of the research?	Yes	The study draws on US EPA guidance (mainly the 1996 version of the Exposure Factors Handbook and the 1992 "Dermal Exposure Assessment: Principles and Application".)	Definitely low risk of bias (++)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	Yes	Subpopulations chosen were children and adults undertaking various activities with exposures determined via reference to contaminant concentrations measured in the habitat and the US EPA Exposure Factors Handbook). The chosen subpopulations were logical and appropriate for addressing the study aims	Definitely low risk of bias (++)
5	Was the data collected in a way that addressed the research issue?	Yes	Clear data collection methods are described in the document.	Definitely low risk of bias (++)
6	Has the relationship between researcher and participants been adequately considered?	n/a	Question 6 is not applicable since there is no real population of study participants. Rather, the population assessed is a hypothetical population of adults and children exposed to marine beach sands, oil-contaminated rocks, and adjacent marine waters during recreational water use.	n/a
Section B: What are the results?				
7	Have ethical issues been taken into consideration?	n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. Instead hypothetical populations of adult and child recreators are utilised for the assessment.	n/a
8	Was the data analysis sufficiently rigorous?	Yes	The study is rigorous (Q.8) as it follows conventional US EPA methods for Quantitative Risk Assessment.	Definitely low risk of bias (++)
9	Is there a clear statement of findings?	Yes	The study finds that risks were low, both in the long-term and short-term future, for holidaymakers and for people working at cleaned beaches during the summer period following a tanker oil spill event.	Definitely low risk of bias (++)
Section C: Will the results help locally?		Yes		
10	How valuable is the research?	n/a	Although the reported methods could be more current, the results support the view that recreational activities at beaches that have been subjected to oil spills and subsequent clean ups are safe within 4 months of the event. At this time PAH concentrations expressed as "Equivalent BaP" in seawater were in median (90th%ile) 13.1 (41.8) ng/L at soiled beaches vs 9.5(11.2) at control beaches.	Probably low risk of bias (+)
-	Overall risk of bias rating		The study is rigorous and although the methods could be more current, the study follows a standard risk assessment methodology. It is classed as having a "Probably low risk of bias".	Probably low risk of bias (+)
-	Reviewer's conclusion	n/a	Include in review - probable low risk of bias	

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6.2.2. Data extraction

Category	Item	Study ID: J3
General information	Date template completed	24-Dec-20
	Authors	Dor, F.; Bonnard, R.; Gourier-Frery, C.; Cicolella, A.; Dujardin, R.; Zmirou, D.
	NOC Comments	Oil spill follow up study. Links to recreational uses
	Title	Health risk assessment after decontamination of the beaches polluted by the wrecked ERIKA tanker
	Publication Title	Risk Analysis
	Reference (Vol., pages)	236, 1199-1208
	Publication date	2003
	Publication type	Journal Article
	Peer reviewed	Yes
	Country of origin	France
Study characteristics	Source of funding	Not stated
	Possible conflicts of interest	No apparent conflicts of interest.
	Aim/objectives of study	The aim of the study was to identify short- and long-term health risks for future bathers from remaining PAHs at oil spill affected beaches, in order to assist local health authorities' to plan risk management policies and inform the public.
Population characteristics	Study type/design	Quantitative risk assessment
	Study duration	n/a (Desktop study)
	Population/s studied	Exposure scenarios for young children and adults visiting the beaches were constructed
	Selection criteria for population	Standard human health risk assessment population (i.e. adults) and sensitive subpopulation (i.e. children)
	Subgroups reported	Children
Exposure and setting	Size of study	Thirty-six beaches on coast of Brittany, France, affected by the 1999 oil spill from the tanker "ERIKA", and representing a sample of the most frequently encountered topographic and beach usage situations; seven "control" beaches, unspoiled by the oil spill, were also investigated. Samples of water and sand were taken from each site, as well as from the surface of rocks
	Type of water source/water body	Marine sandy beaches and adjacent bathing waters
	Exposure scenario	Ingestion and dermal exposure for recreational swimmers as per standard US EPA methods. Several scenarios of exposure were contemplated: (1) a child between 2 and 4 years accidentally ingesting a small ball of fuel, (2) a child daily exposed throughout his holiday-time stay, (3) an adult (including a pregnant woman) spending his/her holidays on the coast, (4) an adult working on the beach, (5) and an adult practicing water sports.
	Exposure pathway	Ingestion and dermal exposure for recreational swimmers and beach goers
	Source of contamination	PAHs in oil spill residues
Study methods	Causal chemical(s)	16 suspected carcinogenic PAHs of the U.S. EPA list
	Comparison group(s)	Health risks of recreational users at 36 oil impacted beaches were compared to those of seven control beaches, unimpacted by oil.
	Water quality measurement used	Medians and 90th percentiles of the PAHs concentrations in the various environments of the cleaned and control beaches, expressed in BaP equivalent (via use of toxicity equivalence factors or TEFs)
Method of chemical detection (if applicable)	PAHs extracted with solvent (cyclohexane for water, dichloromethane for sand) and quantified by HPLC and detected by fluorescence except for acenaphthylene which was by UV absorption at 254 nm. Rock wipe samples (see below) extracted with 50:50 hexane/acetone and analysed by GC/MS	
	Water sampling methods (monitoring, surrogates). Was there sufficient replication in number of	1L water samples collected from bathing areas of beaches 4 months after spill event. 10 cm diameter cores to 10 to 20 cm depth beach sand samples collected from 100m ² quadrats above tidal and in intertidal and later homogenised (due to similarity).



Category	Item	Study ID: J3
	samples taken, what steps were taken to reduce contamination (especially for metals)?	Rocks wiped with 1m ² cotton cloth soaked in a mixture of half acetone and half n-hexane, respectively, in a zone where pollution was not visible and in a zone where pollution was still visible.
	Limits of reporting for the chemical of concern	Not stated
	Consideration of quality assurance such as field and lab blanks, reference sites, and reporting on related physico-chemical parameters	Not stated
Statistics	Statistical methods used	Individual risks were estimated for each health effect by combining exposures for each scenario and toxicological values for each effect. For noncarcinogenic effects, a "hazard quotient" (exposure dose/toxicological value) was calculated. For all cancers, individual excess risk was calculated.
	Details on statistical analysis (if any)	For all cancers, individual excess risk was calculated according to the following equation: $ERI = ERU \times NA/70 \times \sum DEi \times TEFi$ <p>where ERI: individual excess risk for cancer following pollutant intake, ERU: oral unit risk of benzo(a)pyrene (mg/kg bw/d)⁻¹, DEi: exposure dose for each route of exposure (mg/kg/j), TEF: toxic equivalent factor of PAH in reference to BaP, NA: duration of exposure (year), and 70: the average time exposure (year).</p>
	Relative risk/odds ratio, confidence interval?	n/a
Results	Outcome	The sand and water, after decontamination, were slightly polluted (respectively, 7.8 µg/kg and 23.3 ng/l of total 16 PAHs), with values similar to those found in the control beaches (Note: both decontaminated and control beaches reported some minor exceedance of the BaP equivalent HBT of 1×10^{-5} excess lifetime risk of cancer). By contrast, the rocky areas in some places were still highly polluted (up to 23 mg/kg on the surface layer). No lethal risk was found for a young child who had accidentally ingested a small ball of fuel. The life-long excess risks for skin cancer and for all other cancers were about 10^{-5} in scenarios including contact with the polluted rocks. In all other cases, excess risks were considerably lower. The hazard quotient for teratogenic effects was very small, except in scenarios where pregnant women would walk among rocks containing high pollution levels.
	How outcome was assessed	Excess cancer risk (all cancers and cutaneous cancers) were calculated as lifetime probabilities and compared against a reference value of 1×10^{-5} . Values lower than this threshold were deemed to be excessive. Values were presented using medians and 90th percentiles.
	Method of measurement	Excess risk of cancer
CASP Category and OHAT Risk of Bias	Number participants (exposed/non-exposed, missing/excluded) (if applicable)	n/a (Desktop study)
	Critical Appraisal Skills Programme (CASP) or Cochrane/OHAT definitions of study types as follows:	
	1. Case control study	
	2. Cohort study	
	3. Diagnostic test study	
	4. Systematic review	
	5. Qualitative research	Yes

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Category	Item	Study ID: J3
	6. Randomised controlled trial	
	7. Cross-sectional study (mix of case-control and cohort)	
Author's conclusion	Interpretation of results	Risks were low, both in the long-term and short-term future, for holidaymakers and for people working at these cleaned beaches during the summer period following the oil slick caused by the oil tanker ERIKA. Cancer risks did not differ substantially from those estimated on control beaches, except when depollution work had not been completed, as observed in some rocky areas. Consequently, it could be hypothesized that risks of cancer at beaches not cleaned yet, or recently spoiled by fuel deposits, would be of concern and would justify temporary closing of the beaches.
	Assessment of uncertainty (if any)	Population exposure was characterized by medians and 90th percentiles of the PAHs' concentration distributions, expressed in BaP equivalent
Reviewer comments	Reviewer comments	The study is a fairly standard human health risk assessment of recreational swimmers and beach goers exposures to PAHs following an oil spill event. The methods follow standard US EPA approaches from the late 1990s. Although the reported methods could be more current, the results support the view that recreational activities at beaches that have been subjected to oil spills and subsequent clean ups are safe within 4 months of the event. At this time PAH concentrations expressed as "Equivalent BaP" in seawater were in median (90th%ile) 13.1 (41.8) ng/L at soiled beaches vs 9.5(11.2) at control beaches. For sand the comparisons were 1.5(14.4) ug/kg vs 0.6(1.6), for rocks at soiled beaches 14.7(70.0) ug/m ² depolluted, 10,201(23,780) polluted, vs 0.5(0.7) at control beaches.
	Results included/excluded in review (if applicable)	n/a
	Notes on study quality e.g. gaps, methods	The paper is generally well written and discusses a broad range of issues including various specific exposure scenarios related to children and exposure pathways.

6.3. Swartjes and Janssen (2016)

6.3.1. Quality assessment

J5, Swartjes and Janssen (2016) Assessment of health risks due to arsenic from iron ore lumps in a beach setting				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Yes		
1	Was there a clear statement of the aims of the research?	Yes	A clear statement of aims is given in the introduction (section 1.3). The objective of the study was to investigate human health risks from the presence of arsenic-containing iron ore lumps in a beach setting. The lumps are naturally occurring rocks present in marine sands dredged from the sea bed of the North Sea and used in land and beach reclamation	Definitely low risk of bias (++)
2	Is the methodology appropriate?	Yes	A risk assessment methodology is considered appropriate since it addresses a health response to a potential exposure.	Definitely low risk of bias (++)



J5, Swartjes and Janssen (2016) Assessment of health risks due to arsenic from iron ore lumps in a beach setting

Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A2: Is it worth continuing?	Yes		
3	Was the research design appropriate to address the aims of the research?	Yes	The assessment methodology is based on European Food Safety Authority (EFSA) guidance, which follows a standard quantitative risk assessment approach.	Definitely low risk of bias (++)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	Yes	The population assessed is a hypothetical population of a sensitive subgroup (children) that have the expected greatest exposure to contaminated rocks and beach sand.	Definitely low risk of bias (++)
5	Was the data collected in a way that addressed the research issue?	Yes	Clear data collection methods are described in the document.	Definitely low risk of bias (++)
6	Has the relationship between researcher and participants been adequately considered?	n/a	Question 6 is not applicable since there is no real population of study participants. Rather, the population assessed is a hypothetical population of children playing on sandy beaches.	n/a
	Section B: What are the results?			
7	Have ethical issues been taken into consideration?	n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. Instead, hypothetical population of a sensitive subgroup, i.e. children, is utilised for the assessment.	n/a
8	Was the data analysis sufficiently rigorous?	Yes	The study is rigorous (Q.8) as it follows conventional EU and international methods for Quantitative Risk Assessment.	Definitely low risk of bias (++)
9	Is there a clear statement of findings?	Yes	Clear statements of findings are presented in the abstract and conclusions. Abstract and conclusions clearly state that from the perspective of the conservative exposure assessment, that unacceptable human health risks due to exposure to arsenic from the iron ore lumps are unlikely and there is no need for risk management actions.	Definitely low risk of bias (++)
	Section C: Will the results help locally?	Yes		
10	How valuable is the research?	n/a	High quality QRA of arsenic exposure to young children on reclaimed Dutch beaches. The paper is well written but focuses on a less common exposure pathway that may have low relevance to the Australian context, except where rocks with high natural levels of heavy metals occur on beaches and may be handled by children during beach play.	Probably low risk of bias (+)
-	Overall risk of bias rating		The study is rigorous, clear and well-written and follows a standard risk assessment methodology. It is classed as having a "Probably low risk of bias".	Probably low risk of bias (+)
-	Reviewer's conclusion	n/a	Include in review - probable low risk of bias	

6.3.2. Data extraction

Category	Item	Study ID: J5
	Date template completed	26-Dec-20

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Category	Item	Study ID: J5
General information	Authors	Swartjes, Frank A.; Janssen, Paul J. C. M.
	NOC Comments	Risk assessment of naturally occurring arsenic containing iron ore stones on an artificial Dutch beach. Recreational users exposed, particularly children. Study shows levels are safe.
	Title	Assessment of health risks due to arsenic from iron ore lumps in a beach setting
	Publication Title	The Science of the Total Environment
	Reference (Vol., pages)	563-564, 405-412
	Publication date	2016
	Publication type	Journal Article
	Peer reviewed	Yes
	Country of origin	Netherlands
	Source of funding	Funding for this study was provided by the Dutch Ministry of Infrastructure and the Environment
Study characteristics	Possible conflicts of interest	No apparent conflicts of interest.
	Aim/objectives of study	The objective of the study was to investigate human health risks from the presence of arsenic-containing iron ore lumps in a beach setting.
	Study type/design	Quantitative risk assessment
Population characteristics	Study duration	n/a (Desktop study)
	Population/s studied	Children on sandy beaches
	Selection criteria for population	Sensitive subpopulation
	Subgroups reported	Children of age group of 2–12 years on sandy beaches
Exposure and setting	Size of study	This is predominantly a desktop risk assessment
	Type of water source/water body	Marine sandy beaches
	Exposure scenario	Children 2-12 years of age with average residence time on beach of 4 hrs/day Two scenarios (i) Conservative assumption: 21 days (daily during three weeks holidays; worst case exposure scenario) and (2) Precautionary assumption: 42 days (most of the days that beach recreation is possible and likely; precautionary exposure scenario)
	Exposure pathway	Soil ingestion of soft grit coating the lumps that adheres to childrens' hands when they handle the iron ore lumps. This results in a "hand loading". The higher of 95 th percentile estimate was used of 1.7 mg/cm ² due to the efficacy of the soil attachment.
	Source of contamination	Arsenic occurring as a natural constituent of iron ore rocks used in beach reclamation
	Causal chemical(s)	Arsenic (As)
	Comparison group(s)	The exposure is compared with the average arsenic background exposure to children in The Netherlands in the age of 2 to 6 years of 0.56 µg/kgBW/day
Study methods	Water quality measurement used	Concentration of arsenic in grit covering iron ore lumps on beach
	Method of chemical detection (if applicable)	XRF (X-ray fluorescence) confirmed by ICP-MS
	Water sampling methods (monitoring, surrogates). Was there sufficient replication in number of samples taken, what steps were taken to reduce contamination (especially for metals)?	The five XRF measurements showed total arsenic concentrations in the iron ore lumps ranging from 196 to 427 mg/kgDW
	Limits of reporting for the chemical of concern	Not stated

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Category	Item	Study ID: J5
	Consideration of quality assurance such as field and lab blanks, reference sites, and reporting on related physico-chemical parameters	Not stated
Statistics	Statistical methods used	Highly detailed quantitative risk assessment of exposure consistent with European Food Safety Authority (EFSA) methods
	Details on statistical analysis (if any)	The estimated exposure was compared with the BMDL [95% lower confidence limit of the BMD - Benchmark-dose]. The appraisal of the contaminated site depended on the Margin of Exposure (MoE), i.e., the quotient between the BMDL and estimated exposure. Generally speaking, a lower MoE implies higher health concern.
	Relative risk/odds ratio, confidence interval?	n/a
Results	Outcome	The conservative and precautionary scenarios gave an estimated exposure of 0.045–0.091 µg/kgBW/day which implies an increase in background exposure of 8 to 16% due to exposure to arsenic in the iron ore lumps. The estimated exposure gave a calculated Margin of Exposure (MoE) range 33–67. The authors note the lack of a widely accepted benchmark MoE, the predicted range was considered to indicate a relatively low health concern compared to MoEs for background exposure via food and drinking water in the Netherlands. The calculated risk indices (the estimated exposure divided by the PTDI) of 0.045 to 0.09 show that it is unlikely that the current Dutch PTDI of 1.0 µg/kgBW/day is exceeded [where PTDI = Provisional Tolerable Daily Intake [µg/kgBW/day]]
	How outcome was assessed	The estimated exposure was compared with the BMDL [95% lower confidence limit of the BMD - Benchmark-dose]. The appraisal of the contaminated site depended on the Margin of Exposure (MoE), i.e., the quotient between the BMDL and estimated exposure. Generally speaking, a lower MoE implies higher health concern.
	Method of measurement	Margin of Exposure (MoE) with "low values" as reported (33 to 67) considered safe
	Number participants (exposed/non-exposed, missing/excluded) (if applicable)	n/a (Desktop study)
	Critical Appraisal Skills Programme (CASP) or Cochrane/OHAT definitions of study types as follows:	
CASP Category and OHAT Risk of Bias	1. Case control study	
	2. Cohort study	
	3. Diagnostic test study	
	4. Systematic review	
	5. Qualitative research	Yes
	6. Randomised controlled trial	
	7. Cross-sectional study (mix of case-control and cohort)	
Author's conclusion	Interpretation of results	Results reported for two scenarios were (1) conservative and (2) precautionary. When interpreting the extra exposure of 0.045–0.091 µg/kgBW/day against the BMDL _{0.5} of 3 µg/kgBW/day within the framework of reference cancer risks as defined within Dutch environmental health policy, the additional cancer risk due to

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Category	Item	Study ID: J5
		exposure to arsenic in the iron ore lumps would be in the same order of magnitude as the Maximal Permissible Risk level of one out of ten thousand lifelong exposed individuals. Given the results from these three different assessments, certainly from the perspective of the conservative exposure assessment, it can be concluded that unacceptable human health risks due to exposure to arsenic from the iron ore lumps are unlikely. As overall conclusion, there is no need for risk management actions to protect children against contact with the iron ore lumps on the Dutch beach.
	Assessment of uncertainty (if any)	Uncertainty accounted for by use of the 95th percentile BMDL. The two scenarios were (1) conservative and (2) precautionary
Reviewer comments	Reviewer comments	High quality QRA of arsenic exposure to young children on reclaimed Dutch beaches. This is an unusual exposure pathway (iron ore rocks naturally containing arsenic) so may have limited applicability to the Australian context. The exposure assessment is of high quality in terms of method and clearness of explanation in the paper.
	Results included/excluded in review (if applicable)	n/a
	Notes on study quality e.g. gaps, methods	The paper is well written but focuses on a less common exposure pathway that may have low relevance to the Australian context, except where rocks with high natural levels of heavy metals occur on beaches and may be handled by children during beach play.



7 Studies excluded in final quality assessment stage

7.1. Existing guidelines

Following application of the quality assessment method for existing guidelines, four documents were excluded (Table 7-1). These documents had satisfactory quality but, on closer inspection of the full text, either did not contain sufficient relevant information or were obsolete.

Note that the quality assessment focuses on the quality of evidence in the documents to contribute to responses to the primary and secondary research questions. Where the quality of such evidence is considered to be unsatisfactory, then the document is excluded from further review. Excluded documents may be important documents in other contexts and the Committee may wish to assess them further if required.

The completed quality assessment tables for each of the four documents are set out in the following sections.

Table 7-1. List of existing guidelines excluded following quality assessment

ID	Title	Type of Study
G1: EnHealth (2012)	EnHealth (2012) Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards, [online] https://www1.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-publicat-environ.htm .	Methods manual
G4: NHMRC (2008)	NHMRC (2008) Guidelines for managing risks in recreational water. <i>National Health and Medical Research Council (Australia)</i> , Canberra, A.C.T., National Health and Medical Research Council. [online] http://www.nhmrc.gov.au/publications/synopses/_files/eh38.pdf (Accessed October 18, 2012).	Guidelines & Guidance
G7: US EPA (2017)	US EPA (2017) 2017 Five-Year Review of the 2012 Recreational Water Quality Criteria, Washington, DC, United States, US Environmental Protection Agency, Office of Water, Office of Science and Technology. [online] https://www.epa.gov/sites/production/files/2018-05/documents/2017-five-year-review-rwqc.pdf .	Review
G8: US EPA (2019)	US EPA (2019) Update for Chapter 3 of the Exposure Factors Handbook: Ingestion of Water and Other Select Liquids. Exposure Factors Handbook: 2011 Edition. National Center for Environmental Assessment, Washington, DC; EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and online at http://www.epa.gov/ncea/efh , U.S. Environmental Protection Agency (EPA). [online] https://www.epa.gov/sites/production/files/2019-02/documents/efh - chapter_3_update.pdf .	Guidance



7.1.1. enHealth (2012)

7.1.1.1. Quality assessment

G1: enHealth 2012 Risk Assessment Guidelines		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The enHealth guidelines are produced by Environmental Health Standing Committee (enHealth), which is a subcommittee of the Australian Health Protection Principal Committee (AHPPC) which is facilitated by the Commonwealth Department of Health.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Yes	The Environmental Health Standing Committee (enHealth) oversaw the work
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported, but it is almost certain that the Commonwealth Government has funded the work.
Was there public consultation on this work? If so, provide details.	Can't Tell	It is not stated if public consultation was undertaken or not
Is the advice peer reviewed?	Yes	In the Acknowledgements section, it is stated that international peer review on the draft document was provided by Professor Steve Hrudey, University of Alberta, and ChemRisk LLC, San Francisco (Ellen Donovan and Hugh Scobie).
If so, is the peer review outcome documented and/or published?	No	No reference to publishing of the peer review is provided and it is assumed that the material has not been published.
Was the guidance/advice developed or updated recently? Provide details.	No	The document was published in 2012 and as of March 2012 no further updates are reported on the Commonwealth Department of Health website https://www1.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-publicat-environ.htm
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	The enHealth guidelines do not address individual contaminants, but rather detail risk assessment methods for chemical and microbial contaminants. No formal evidence review material is described.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	The enHealth guidelines clearly draw on international guidance, but this is not always referenced so the contribution of earlier methodologies is not clear.
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	No	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What	No	The proposed methodology is reported as an Australian approach, but reference is made to the US National Research Council publication "National Research Council

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G1: enHealth 2012 Risk Assessment Guidelines

Criteria	Assessment	Notes
process was used to critically assess these external findings?		(NRC) (2008). Science and decisions: Advancing risk assessment. Washington, DC: National Academy Press."
Can grey literature such as government reports and policy documents be included?	Yes	Such documents are listed in the reference section.
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	Yes	The guidelines discuss the selection of toxicological endpoints and point of departure (POD) in detail from a methodological perspective. Values are not supplied for individual contaminants.
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	No	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	n/a	The enHealth guidelines do not address individual contaminants, but rather detail risk assessment methods for chemical and microbial contaminants. Methodological discussion and recommendations are given for the use of uncertainty and safety factors (e.g. page 72, Figure 23).
Are the parameter value assumptions documented and explained?	n/a	Discussion is limited to methodology rather than documenting values of particular parameters.
Are the mathematical workings/algorithms clearly documented and explained?	Yes	The guidelines contain detailed descriptions of algorithms and methods used for guideline derivation.

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G1: enHealth 2012 Risk Assessment Guidelines		
Criteria	Assessment	Notes
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	There is discussion in section 8.7 "Censored Data" on limits of reporting but no discussion on feasibility of implementation (e.g. as part of a compliance assessment).
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	Yes	Mechanistic, Mode of Action (MOA) and Key Events are discussed in detail from a methodological perspective.
If expert judgement is required, is the process documented and published?	Yes	Expert Judgement is discussed in detail from a methodological perspective.
Is dose response modelling (e.g. BMDL) routinely used?	Yes	Dose response modelling is discussed in detail from a methodological perspective.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	Yes	Consideration of non-threshold mode of action is discussed in detail from a methodological perspective.
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	A daily intake at the threshold of toxicological concern (TTC) of $0.02 \mu\text{g/kg bw}$ corresponds to a 96 per cent probability that the lifetime risk of cancer would be less than one in a million (1×10^{-6} (p.82, citing Munro 1990, see enHealth 2012 for reference.)
Comments		
Reviewer Comments		The enHealth guidelines are a detailed methods manual for determining risks to human health from toxins and pathogens in the environment. The enHealth guidelines are useful in providing clear methodologies for risk assessment. They do not provide relevant information to assist in answering the primary or secondary research questions.
Useful for answering primary research question?	No	
Useful for answering secondary research questions?	No	Quality is satisfactory but content is not relevant.

7.1.2. NHMRC (2008)

7.1.2.1. Quality assessment

G4: NHMRC Aust 2008 Guidelines for Managing Risks in Recreational Water		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The 2008 NHMRC Guidelines were developed by the Australian Government. They are not mandatory but rather have been developed as a tool for state and territory governments to develop legislation and standards appropriate for local conditions and circumstances.
Are the administrative processes documented and publicly available?	Partly	Some details of the guideline development process are reported in a Process Report



G4: NHMRC Aust 2008 Guidelines for Managing Risks in Recreational Water

Criteria	Assessment	Notes
Was the work overseen by an expert advisory committee?	Yes	The work was overseen in stages by the NHMRC Working Group on Healthy Recreational Water Use and the NHMRC Guidelines for Managing Risks in Recreational Water Working Committee.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	No details are reported in the 2008 publication.
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Yes	Two rounds of public consultation were undertaken in 2004 and 2006. A summary of changes made as a result of public consultation and a list of individuals and organisations who provided submissions is detailed in a Process Report.
Is the advice peer reviewed?	Yes	The 2008 NHMRC Guidelines underwent peer-review in 2007.
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	No	Last updated in 2008. Currently under review
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	Not reported
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	Not reported
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	No	Not reported
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is considered to the reviewer's knowledge
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	No	Not reported
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	With respect to chemicals, reference is made to the Australian Drinking Water Guidelines (section 9.3, Table 9.3, p.151). These are also produced by the NHMRC, so no reference is made to the findings or risk assessments from other organisations.
Can grey literature such as government reports and policy documents be included?	Yes	Such documents are cited in Section 9.3 and listed in the references section (e.g. WHO 2003 Guidelines for Safe Recreational Water Environments. Volume 1. Coastal and Fresh Waters. WHO, Geneva).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	No	Not reported

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G4: NHMRC Aust 2008 Guidelines for Managing Risks in Recreational Water

Criteria	Assessment	Notes
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	No	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Not reported
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	No	Not reported
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	No	Not reported
Are the parameter value assumptions documented and explained?	No	Not reported
Are the mathematical workings/algorithms clearly documented and explained?	No	Not reported
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	No	Not reported
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not reported
If expert judgement is required, is the process documented and published?	No	Not reported
Is dose response modelling (e.g. BMDL) routinely used?	No	Not reported

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G4: NHMRC Aust 2008 Guidelines for Managing Risks in Recreational Water		
Criteria	Assessment	Notes
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	No	Not reported
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	Not reported
Comments		
Reviewer Comments	Although the current narrative review is in support of an update of the water quality component of the recreational water guidelines, the document was initially included in the screening process as it could be considered to contain information as a baseline for comparison with any new findings, data, or scientific consensus from the current period. On that basis it can be excluded from further critical appraisal but will be useful in discussion of review findings.	
Useful for answering primary research question?	No	Quality is satisfactory but content is obsolete as it is currently under review. Exclude from further review but can be discussed in comparison against review findings.
Useful for answering secondary research questions?	No	Quality is satisfactory but content is obsolete as it is currently under review. Exclude from further review but can be discussed in comparison against review findings.

7.1.3. US EPA (2017)

7.1.3.1. Quality assessment

G7: US EPA 2017 Review		
Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	The US EPA's review is based on a detailed and systematic review of the scientific literature and can be considered an authoritative report on the subject. Although the review process could be more clearly reported, the report contains useful, high quality summaries of the review findings. Given that the report is informed by critical analysis of the scientific literature and follows a systematic review process, it can be considered compatible with Australian processes.
Are the administrative processes documented and publicly available?	Yes	The administrative processes for the review are described in the document on page 8. A number of a review processes were undertaken including an EPA review of recreational water research, a systematic review of available peer-reviewed literature on a subset of specific topics, and a review of literature resulting from the systematic searches and from materials available from other sources such as technical documents from US States and the United States Geological Survey (USGS).
Was the work overseen by an expert advisory committee?	Can't Tell	Not reported
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported



G7: US EPA 2017 Review

Criteria	Assessment	Notes
Was there public consultation on this work? If so, provide details.	Yes	A public consultation process is described in Section III E on p.9. It states "The EPA held a public webinar in July 2017 on the review for any interested stakeholders. Participants included stakeholders from across the spectrum of environmental, industry, local government, and public health stakeholder groups. The webinar provided an overview of the review the EPA has undertaken and enabled stakeholders to provide input on the topics included in the review. The EPA communicated some of the initial findings of the review of the science and the timeline for completing the review"
Is the advice peer reviewed?	Can't Tell	It is likely that the document and advice within was subject to peer-review but no process is described in the document or on the US EPA website (https://www.epa.gov/wqc/five-year-review-2012-recreational-water-quality-criteria).
If so, is the peer review outcome documented and/or published?	No	Not reported
Was the guidance/advice developed or updated recently? Provide details.	No	No updates have been issued since the production of the 2017 report.
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	No	The scope and methods of review are documents in section III of the report, however, there is no description of the decisions behind the scope, definitions and evidence review parameters.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	No	No evidence is supplied that indicates a preference for studies that follow agreed international protocols or meet appropriate industry standards
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	Yes	The methods are documented in Section III Scope and Methods of Review on p.8 and in Appendices A and C.
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No such studies or data is discussed.
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	Yes	The literature search was limited to English-language, peer-reviewed citations, published between 2010 and March 2017.
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	Not reported
Can grey literature such as government reports and policy documents be included?	Yes	Grey literature is cited in the document (e.g. EPA Method A, 1611, and 1609 listed in Appendix A, Table A-1, p. 83).
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	n/a	Not reported
Evidence search		
Are databases and other sources of evidence specified?	Yes	The literature databases PubMed and Web of Science are cited as information sources on p.8 including for Appendix C, and for Appendix A on p. 84.

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G7: US EPA 2017 Review

Criteria	Assessment	Notes
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	Yes	The literature databases PubMed and Web of Science are cited as information sources (e.g. p. 8).
Is it specified what date range the literature search covers? Is there a justification?	Yes	The literature search was limited to English-language, peer-reviewed citations, published between 2010 and March 2017.
Are search terms and/or search strings specified?	Yes	Search terms are specified for only for Appendix A "Advancements in Mitigating Interference in Quantitative Polymerase Chain Reaction (qPCR) Methods for Microbial Water Quality Monitoring". No search terms or search strings are provided for the other reviews.
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	No	Aside from the exclusion criteria already listed above, no other criteria are listed.
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	No	Not reported
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	Yes	Review results tabulated in Appendix C with the headings: Location, Study Type, Contamination Source, Health Effects Evaluated, Water Quality Metrics, Charges, Conclusions.
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	Yes	Extensive review of the overall body of evidence. Results described elsewhere in this review.
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	n/a	No information on chemical hazards to recreational water quality is included in the review. Section IV, D.1 contains a short discussion on the use of chemical host-identifiers for faecal source identification (p. 28).
Are the parameter value assumptions documented and explained?	n/a	No chemical hazards parameter values are presented since chemical hazards are not specifically addressed in the review.
Are the mathematical workings/algorithms clearly documented and explained?	n/a	No mathematical workings/algorithms are presented since chemical hazards are not specifically addressed in the review.
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not applicable since chemical hazards are not specifically addressed in the review.
If expert judgement is required, is the process documented and published?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Is dose response modelling (e.g. BMDL) routinely used?	n/a	Not applicable since chemical hazards are not specifically addressed in the review. Dose-response for microbial pathogens in the context of QMRA is discussed in the report.

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G7: US EPA 2017 Review

Criteria	Assessment	Notes
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
If applicable: For carcinogens, what is the level of cancer risk used by the organisation to set the health-based guideline value?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Comments		
Reviewer Comments	n/a	No discussion of chemical hazards in recreational water
Useful for answering primary research question?	No	Quality is satisfactory but content is not relevant to current narrative review. Exclude from further review.
Useful for answering secondary research questions?	Partly	

7.1.4. US EPA (2019) (Exposure factors)

7.1.4.1. Quality assessment

G8: US EPA 2019 Exposure Factors HB update

Criteria	Assessment	Notes
Overall guidance/advice development process		
Are the key stages of the organisation's advice development processes compatible with Australian processes?	Yes	Section 3.7 provides a detailed review of water ingestion while swimming and diving. This is the main section of interest for the current narrative review and may assist in responding to some of the secondary questions.
Are the administrative processes documented and publicly available?	No	Not reported
Was the work overseen by an expert advisory committee?	Can't Tell	No information on the existence of an expert advisory committee is provided in the document. However, it is an update of chapter in a larger US EPA document (Exposure Factors Handbook, 2011). That document lists authors, contributors and reviewers but does not clearly indicate the presence of an advisory committee. It is likely that the US EPA reviewers listed on page v played this role.
Are potential conflicts of interest of committee members declared, managed and/or reported?	No	Not reported
Are funding sources declared?	No	Not reported
Was there public consultation on this work? If so, provide details.	Can't Tell	Not reported
Is the advice peer reviewed?	Can't Tell	The document is an update of chapter in a larger US EPA document (Exposure Factors Handbook, 2011). That document lists authors, contributors, and reviewers, including an external panel of experts who reviewed the document (p. vi). It is likely that the 2019 chapter update has gone through a review process however this is not documented.
If so, is the peer review outcome documented and/or published?	No	Not reported



G8: US EPA 2019 Exposure Factors HB update

Criteria	Assessment	Notes
Was the guidance/advice developed or updated recently? Provide details.	Yes	The document was published relevantly recently (2019).
Evidence review parameters		
Are decisions about scope, definitions and evidence review parameters documented and publicly available?	Can't Tell	The scope and methods of review are documented in the introduction of the larger 2011 report. The 2011 introduction also includes a description of the decisions behind the scope, definitions and evidence review parameters. The 2019 report does not mention this material but is likely consistent with the 2011 report.
Is there a preference for data from studies that follow agreed international protocols or meet appropriate industry standards?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document Section 1.5.2. subsection 3c on p. 1-7 lists the following Quality Assurance measure: "Studies with documented quality assurance/quality control measures were preferred. Higher confidence ratings were given to exposure factors that were based on studies where appropriate quality assurance/quality control measures were used."
Does the organisation use or undertake systematic literature review methods to identify and select data underpinning the advice? Are the methods used documented clearly?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document 1.5.2. "Selection Criteria" provides a detailed list of criteria for study selection. The methods used are clearly documented.
If proprietary/confidential studies or data are considered by the agency, are these appropriately described/recorded?	n/a	No discussion of proprietary/confidential studies or data is contained in the document.
Are inclusion/exclusion criteria used to select or exclude certain studies from the review? If so, is justification provided?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document 1.5.2. "Selection Criteria" provides a detailed list of criteria for study selection. The methods used are clearly documented.
Does the organisation use or adopt review findings or risk assessments from other organisations? What process was used to critically assess these external findings?	No	The literature assessed appears to be primary research articles from peer-reviewed literature.
Can grey literature such as government reports and policy documents be included?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document Section 1.5.2. subsection 5a on p. 1-7 states "Studies selected were those from the peer-reviewed literature and final government reports. Unpublished and internal or interim reports were avoided, where possible. but were used in some cases to supplement information in published literature or government reports"
Is there documentation and justification on the selection of a toxicological endpoint for use as point of departure for health-based guideline derivation?	n/a	The document is focussed on exposure volumes to water including recreational uses and does not deal with toxicants.
Evidence search		
Are databases and other sources of evidence specified?	No	Not reported
Does the literature search cover at least more than one scientific database as well as additional sources (which may include government reports and grey literature)?	n/a	Not reported
Is it specified what date range the literature search covers? Is there a justification?	No	Not reported
Are search terms and/or search strings specified?	No	Not reported

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G8: US EPA 2019 Exposure Factors HB update

Criteria	Assessment	Notes
Are there any other exclusion criteria for literature (e.g. publication language, publication dates)? If so, what are they and are they appropriate?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document 1.5.2. "Selection Criteria" provides a detailed list of criteria for study selection. The methods used are clearly documented.
Critical appraisal methods and tools		
Is risk of bias of individual studies taken into consideration to assess internal validity?	Can't Tell	Not discussed in the 2019 update, but in the 2011 document Section 1.5.2, subsection 1b, p.1-6, states that "Studies were sought that were designed with minimal bias, or at least if biases were suspected to be present, the direction of the bias (i.e., an overestimate or underestimate of the parameter) was either stated or apparent from the study design. More confidence was placed on exposure factors based on studies that minimized bias."
If so, what tools are used? If not, was any method used to assess study quality?	n/a	Not reported
Does the organisation use a systematic or some other methodological approach to synthesise the evidence (i.e. to assess and summarise the information provided in the studies)? If so, provide details.	No	Not reported
Does the organisation assess the overall certainty of the evidence and reach recommendations? If so, provide details.	Can't Tell	Not discussed in the 2019 update, but in the 2011 document Section 1.6, p.1-7, "Approach used to develop recommendations for exposure factors" assesses overall certainty of evidence used to develop recommendations by reference to key attributes, variability, uncertainty, and assignation of confidence ratings.
Derivation of health-based guideline values		
Is there justification for the choice of uncertainty and safety factors?	n/a	No information on chemical hazards to recreational water quality is included in the review as the only topic of relevance to this NHMRC review is Section 3.2.4. Water Ingestion While Swimming or Diving (p. 3-3).
Are the parameter value assumptions documented and explained?	n/a	No chemical hazards parameter values are presented since chemical hazards are not specifically addressed in the review.
Are the mathematical workings/algorithms clearly documented and explained?	n/a	No mathematical workings/algorithms are presented since chemical hazards are not specifically addressed in the review.
Does the organisation take into consideration non-health related matters to account for feasibility of implementing the guideline values (e.g. measurement attainability)?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Is there documentation directing use of mechanistic, mode of action, or key events in adverse outcome pathways in deriving health-based guideline values?	No	Not applicable since chemical hazards are not specifically addressed in the review.
If expert judgement is required, is the process documented and published?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Is dose response modelling (e.g. BMDL) routinely used?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
Has the organisation's policy for dealing with substances for which a non-threshold mode of action may be applicable in humans been articulated and recorded?	n/a	Not applicable since chemical hazards are not specifically addressed in the review.
If applicable: For carcinogens, what is the level of cancer risk used by the	n/a	Not applicable since chemical hazards are not specifically addressed in the review.

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G8: US EPA 2019 Exposure Factors HB update		
Criteria	Assessment	Notes
organisation to set the health-based guideline value?		
Comments		
Reviewer Comments	n/a	No discussion of chemical hazards in recreational water
Useful for answering primary research question?	No	Quality is satisfactory but content is not relevant. Exclude from further review.
Useful for answering secondary research questions?	Partly	

7.2. Primary studies

Table 7-2. List of primary studies excluded after risk of bias assessment

Study ID	Citation
J1	Black, Jennifer C.; Welday, Jennifer N.; Buckley, Brian; Ferguson, Alesia; Gurian, Patrick L.; Mena, Kristina D.; Yang, Ill; McCandlish, Elizabeth; Solo-Gabriele, Helena M. (2016) Risk Assessment for Children Exposed to Beach Sands Impacted by Oil Spill Chemicals. <i>International Journal of Environmental Research and Public Health</i> 13(9)
J4	Li, Peiyue; Feng, Wei; Xue, Chenyang; Tian, Rui; Wang, Siting (2017) Spatiotemporal Variability of Contaminants in Lake Water and Their Risks to Human Health: A Case Study of the Shahu Lake Tourist Area, Northwest China. <i>Exposure and Health</i> 9(3)213-225
J6	Björklund, K., Bondelind, M., Karlsson, A., Karlsson, D., and Sokolova, E. (2018) Hydrodynamic modelling of the influence of stormwater and combined sewer overflows on receiving water quality: Benzo(a)pyrene and copper risks to recreational water. <i>Journal of Environmental Management</i> 207, 32-42

7.2.1. Black et al. (2016)

7.2.1.1. Quality assessment

J1, Black et al., (2016) Risk Assessment for Children Exposed to Beach Sands Impacted by Oil Spill Chemicals				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Yes		
1	Was there a clear statement of the aims of the research?	Yes	The aims of the research are set out in the introduction could be more clearly reported. The aim of the study was to evaluate the health risk to children who potentially contact beach sands impacted by oil spill chemicals from the Deepwater Horizon (DWH) disaster. Children were chosen because they were considered the highest risk group	Definitely low risk of bias (++)
2	Is the methodology appropriate?	Yes	A risk assessment methodology is considered appropriate since it addresses a health response to a potential exposure.	Definitely low risk of bias (++)
	Section A2: Is it worth continuing?	Yes		

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J1, Black et al., (2016) Risk Assessment for Children Exposed to Beach Sands Impacted by Oil Spill Chemicals

Q.	Criteria	Assessment	Comments	Risk of bias rating
3	Was the research design appropriate to address the aims of the research?	Yes	The study followed a standard risk assessment framework based on the US EPA Risk Assessment Guidance for superfunds (reference 28 cited in document) and US National Academy of Science methods (reference 29).	Definitely low risk of bias (++)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	Yes	Children were chosen because they potentially represent a more susceptible population for exposure and vulnerability to adverse health outcomes following a spill	Definitely low risk of bias (++)
5	Was the data collected in a way that addressed the research issue?	Yes	Clear data collection methods are described in the document.	Definitely low risk of bias (++)
6	Has the relationship between researcher and participants been adequately considered?	n/a	Question 6 is not applicable since there is no real population of study participants. Rather, the population assessed is a hypothetical population of children playing on sandy beaches.	n/a
Section B: What are the results?				
7	Have ethical issues been taken into consideration?	n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. Instead, hypothetical population of a sensitive subgroup, i.e. children, is utilised for the assessment.	n/a
8	Was the data analysis sufficiently rigorous?	Yes	The study is rigorous (Q.8) as it follows conventional US EPA methods for Quantitative Risk Assessment. Standardised equations developed by the US EPA are used to determine exposure and risk. Chemicals assessed were those measured above detection limits and Florida Soil Cleanup Target Levels (SCTLs) and thus constitute the highest risk group of substances. It is common practice in chemical risk assessment to focus on highest risk substances in the first instance. Uncertainty is considered through the use of 95% upper confidence limits (UCLs) in risk modelling to ensure conservative assessments	Definitely low risk of bias (++)
9	Is there a clear statement of findings?	Yes	Explicit statements of findings are presented in the document discussion along with consideration of various factors that could influence the results. For example, although the risk assessment resulted in hazard quotients less than one, suggesting no adverse effects due to acute or, sub chronic exposure to weathered oil, impacted sediments, or tar balls, the authors acknowledge that the majority of oxidative by-products are of unknown toxicity. As a result, the authors recommend more research be undertaken on the potential health impacts of degraded weathered oil chemicals.	Definitely low risk of bias (++)
Section C: Will the results help locally?		No		



J1, Black et al., (2016) Risk Assessment for Children Exposed to Beach Sands Impacted by Oil Spill Chemicals				
Q.	Criteria	Assessment	Comments	Risk of bias rating
10	How valuable is the research?	n/a	Although a good quality study, the authors undermine the wider applicability of the findings with a statement to the effect that the risk assessment conducted should be considered preliminary and specific to the nature of the DWH oil spill due to considerable weathering of the oil prior to beaching. Thus, the results do not have wider applicability in relation to re-opening beaches for recreational use following an oil spill event.	Probably high risk of bias (-)
-	Overall risk of bias rating		Although the study is rigorous, clear and well-written and follows a standard risk assessment methodology, the authors explicitly state that the risk assessment should be considered preliminary and specific to the nature of the DWH oil spill. Given the authors' statement that the results are specific to the particular events studied, the study can be considered to be "biased" towards those events. Consequently, it is classified as having a Probably high risk of bias.	Probably high risk of bias (-)
-	Reviewer's conclusion	n/a	Exclude from further review due to probable high risk of bias	

7.2.2. Li et al. (2017)

7.2.2.1. Quality assessment

J4, Li et al., (2017) Spatiotemporal Variability of Contaminants in Lake Water and Their Risks to Human Health: A Case Study of the Shahu Lake Tourist Area, Northwest China				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Yes		
1	Was there a clear statement of the aims of the research?	Yes	Aims are described in the introduction. The objectives of the study relevant to this review were (i) to analyse the spatiotemporal variability of contaminants, including ammonia-N, fluoride, phenol, and selected heavy metals (As, Hg, and Cr ⁶⁺) in a shallow temperate arid zone saline lake with recharge water that includes municipal and industrial wastewater and agricultural return water, and (ii) to evaluate health risks to tourists and workers who are exposed to lake water through the dermal contact pathway.	Definitely low risk of bias (++)
2	Is the methodology appropriate?	Yes	A risk assessment methodology is considered appropriate since it addresses a health response to a potential exposure.	Definitely low risk of bias (++)
	Section A2: Is it worth continuing?	Yes		



J4, Li et al., (2017) Spatiotemporal Variability of Contaminants in Lake Water and Their Risks to Human Health: A Case Study of the Shahu Lake Tourist Area, Northwest China

Q.	Criteria		Assessment	Comments	Risk of bias rating
3	Was the research design appropriate to address the aims of the research?		Yes	The risk assessment methodology is based on guidance published by the Ministry of Environmental Protection of the P.R. China (2014). The methodology as described in the document is very similar to US EPA standard methods for health risk assessments although this is not acknowledged.	Probably high risk of bias (-)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?		Yes	The population assessed is a hypothetical population of adult tourists exposed to the water via dermal contact only during a single lifetime visit to the lake. This population is considered appropriate for the lake due its remote, elevated location in a high latitude region of China.	Definitely low risk of bias (++)
5	Was the data collected in a way that addressed the research issue?		Yes	Data collection methods are described in the document with adequate detail to understand what was done and the data is appropriate for addressing the research issue. However, measures to reduce risk of contamination could be more clearly described and if included, would provide more confidence in the study outcomes.	Probably low risk of bias (+)
6	Has the relationship between researcher and participants been adequately considered?		n/a	Question 6 is not applicable since there is no real population of study participants. Rather, the population assessed is a hypothetical population of adult tourists exposed to the water via dermal contact only during a single lifetime visit to the lake (local worker dermal exposure is also assessed)	n/a
Section B: What are the results?					
7	Have ethical issues been taken into consideration?		n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. Instead hypothetical population of tourists is utilised for the assessment.	n/a
8	Was the data analysis sufficiently rigorous?		Yes	The study is rigorous (Q.8) as it uses QRA models recommended by the Ministry of Environmental Protection of the P.R. China. These appear consistent with similar US EPA models, but note that Body Weight is assumed to be 56.8 kg rather than 70 kg)	Probably low risk of bias (+)
9	Is there a clear statement of findings?		Yes	Clear statements of findings are presented in the abstract and conclusions. Samples were analysed for pH, total dissolved solids, temperature, EC, major ions (Na^+ , K^+ , Ca^{2+} , Mg^{2+} , SO_4^{2-} , Cl^- , HCO_3^- , and CO_3^{2-}), ammonia nitrogen ($\text{NH}_4\text{-N}$), fluoride (F^-), phenol, and heavy metals (As, Hg, and Cr^{6+}). Concentrations of all these substances are within the acceptable limits for recreational water use (1.5, 1.5, 0.1, 0.001, 0.05, and 0.01 mg/L for $\text{NH}_4\text{-N}$, F^- , As, Hg, Cr^{6+})	Definitely low risk of bias (++)
Section C: Will the results help locally?		No			

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J4, Li et al., (2017) Spatiotemporal Variability of Contaminants in Lake Water and Their Risks to Human Health: A Case Study of the Shahu Lake Tourist Area, Northwest China

Q.	Criteria	Assessment	Comments	Risk of bias rating
10	How valuable is the research?	n/a	The study demonstrates a method for developing recreational water guidelines for trace metals. However, the methodology is based on P.R China guidance and local data (and probably slightly different model assumptions, e.g. standard body weight, etc.) would be required to apply the same methods in the Australian context. So, the study is of low relevance to the development and application of Australian recreational water guidelines.	Probably high risk of bias (-)
-	Overall risk of bias rating		Although the study is rigorous, clear and follows a standard risk assessment methodology, the methodology is based on P.R China guidance with slightly different model assumptions, e.g. standard body weight, etc.) and is set in an environment not found in Australia (high elevation, arid zone lake that freezes over in winter). Since the results are specific to the particular country and environment studied, the study can be considered to be "biased" towards those conditions. Consequently, it is classified as having a "Probably high risk of bias".	Probably high risk of bias (-)
-	Reviewer's conclusion	n/a	Exclude from further review due to probable high risk of bias and relevance.	

7.2.3. Björklund et al. (2018)

7.2.3.1. Quality assessment

J6, Björklund et al., (2018) Hydrodynamic modelling of the influence of stormwater and combined sewer overflows on receiving water quality: Benzo(a)pyrene and copper risks to recreational water				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A1: Are the results valid?	Can't Tell		
1	Was there a clear statement of the aims of the research?	Yes	The aims are clearly described in the last paragraph of the introduction. The aim of the study was to investigate the influence of urban stormwater discharges and CSOs on receiving water in the context of chemical risks and recreational water quality by simulating the transport of copper (Cu) and benzo[a]pyrene (BaP) in the Göta River (Gothenburg, Sweden) using a hydrodynamic model.	Definitely low risk of bias (++)
2	Is the methodology appropriate?	No	The methodology is not deemed appropriate, since there was limited measurement data and most of the analysis is based on concentrations predicted by modelling. The attempt at validating the modelling predictions for Cu and BaP had limitations due to the limited sampling of each parameter and the fact that the sampling events did not match the time period simulated.	Definitely high risk of bias (--)



J6, Björklund et al., (2018) Hydrodynamic modelling of the influence of stormwater and combined sewer overflows on receiving water quality: Benzo(a)pyrene and copper risks to recreational water				
Q.	Criteria	Assessment	Comments	Risk of bias rating
	Section A2: Is it worth continuing?			
3	Was the research design appropriate to address the aims of the research?	Yes	The hydrological modelling is useful since it provides a lot of detail and despite the limitations with the validation efforts, provides useful assessments of the effects of Cu and BaP via urban stormwater discharges and CSOs.	Probably low risk of bias (+)
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	n/a	There was no hypothetical population or subpopulation since the risk assessment is based on the predicted concentrations of copper and PAHs (as Benzo(a)Pyrene [BaP] equivalents) being compared with local receiving water guidelines.	Probably low risk of bias (+)
5	Was the data collected in a way that addressed the research issue?	Yes	The data collection methods were considered satisfactory except for the monitoring data for Cu and BaP which was inadequate.	Probably high risk of bias (-)
6	Has the relationship between researcher and participants been adequately considered?	n/a	Question 6 is not applicable since there is no real population of study participants. Predicted concentrations of copper and PAHs (as Benzo(a)Pyrene [BaP] equivalents) are compared with local receiving water guidelines.	n/a
	Section B: What are the results?			
7	Have ethical issues been taken into consideration?	n/a	There are no ethical issues (Q.7) since the study does not make use of real participants. It is assumed that local receiving water guidelines can be substituted in the absence of recreational guidelines for copper and PAHs.	n/a
8	Was the data analysis sufficiently rigorous?	No	The study has limitations due to the lack of adequate validation of model predictions.	Definitely high risk of bias (-)
9	Is there a clear statement of findings?	Yes	Clear statements of findings are presented in the conclusions. There are too many to include here.	Definitely low risk of bias (++)
	Section C: Will the results help locally?	Yes		
10	How valuable is the research?	n/a	The study models the impact of copper and PAHs in discharges of stormwater drains, CSOs and WWTPs in an urban river on recreational water quality. All these factors apply to Australian urban rivers except for CSOs which are not so common. For Australian conditions, local data and modelling would be required, so the findings of this study have low relevance to the Australian context.	Probably high risk of bias (-)
-	Overall risk of bias rating		The study has limitations regarding methodological rigour due to the model validation. It was also noted by the authors that the developed model may overestimate the concentrations of Cu and BaP in the water phase due to the exclusion of settling and particle-bound pollutants. The funding and authoring agencies also have a vested interest in the research results.	Definitely high risk of bias (-)
-	Reviewer's conclusion	n/a	Exclude from further review due to high risk of bias	



8 Studies excluded in screening

8.1. Guidelines, reviews and other citations screened out on relevance

The following list of guidelines and grey literature citations were scanned for relevance to the primary and secondary research questions and deemed not to be relevant. Scanning involved accessing the full text document and checking through the document sections for any sections that may have some content relevant to the primary and secondary research questions. Although it was clear from the title of many of the citations that they dealt primarily with the microbial risk aspects of recreational water quality, they were considered worthy of checking in the event that some relevant material on chemical hazards was also included.

List of grey literature, guidelines, reviews and other citations screened out on relevance to research questions (i.e. did not contain information relevant to the research questions).

Deere, D., Billington, K., McCarthy, D., McBride, G., and Crosbie, N. (2015) Microbial indicators and objectives review for Victoria's State Environment Protection Policy (Waters), Melbourne Water.

ECDC (2020) Final joint report in respect of a one health country visit to Ireland from 07 October 2019 to 11 October 2019 to discuss policies relating to antimicrobial resistance, European Centre for Disease Prevention and Control (ECDC) and European Commission Directorate-General for Health and Food Safety. [online] <https://www.ecdc.europa.eu/sites/default/files/documents/antimicrobial-resistance-one-health-ireland-country-visit.pdf>.

EPA Victoria (2019) Quantitative Microbial Risk Assessment (QMRA) for assessing risks to recreational users in Port Phillip Bay. Technical report, EPA Victoria.

Hawaii DoH (2014) Water Quality Standards, Hawaii Administrative Rules (HAR), Chapter 11-54, State of Hawaii, Department of Health, [online] <https://health.hawaii.gov/cwb/clean-water-branch-home-page/water-quality-standards/>.

Health Canada (2020) Guidelines for Canadian Recreational Water Quality: Cyanobacteria and their Toxins. Guideline Technical Document For Public Consultation, Ontario, Canada, Health Canada. [online] <https://www.canada.ca/content/dam/hc-sc/documents/programs/consultation-cyanobacteria-toxins-recreational-water/consultation-cyanobacteria-toxins-recreational-water.pdf>.

Health Protection Branch, B. (2018) Decision Protocol for Cyanobacterial Toxins in B.C. Drinking Water and Recreational Water, British Columbia, Canada, Health Protection Branch. [online] https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/how-drinking-water-is-protected-in-bc/cyanobacteria_decision_protocol_2018.pdf.

Health Protection NSW (2013) Public Swimming Pool and Spa Pool Advisory Document, Sydney, Health Protection NSW. [online] <https://www.health.nsw.gov.au/environment/Publications/swimming-pool-and-spa-advisory-doc.pdf>.

Health Protection Service (2014) ACT Guidelines for Recreational Water Quality, ACT, Health Protection Service, ACT Government. [online] <https://www.health.act.gov.au/sites/default/files/2018-09/ACT%20Guidelines%20for%20Recreational%20Water%20Quality.pdf>.

King, S., Exley, J., Wipenny, E., Alves, L., Henham, M.-L., and Larkin, J. (2014) The health risks of bathing in recreational waters. A rapid evidence assessment of water quality and gastrointestinal illness. Final report WT1530. A report of research carried out by RAND Europe, on behalf of the UK Department for Environment, Farming and Rural Affairs (DEFRA), United Kingdom, Department of Environment, Food and Rural Affairs (DEFRA). [online] https://www.rand.org/content/dam/rand/pubs/research_reports/RR600/RR698/RAND_RR698.pdf.

McBride, G., Yalden, S., and Milne, J. R. (2019) National Microbiological Water Quality Guidelines for Marine Recreational Areas: Implications from a Review of Recent Research. NIWA Client Report 2018-333HN: 93. Prepared for Envirolink, NIWA. [online] <https://www.envirolink.govt.nz/assets/R12-2-National-Microbiological-Water-Quality-Guidelines-for-Marine-Recreational-Areas-Implications-from-a-Review-of-Recent-Research-v2.pdf>.

McCarthy, D. T. (2017) Epidemiological evidence between water quality measures and illnesses in bathers of marine waters, EPA Victoria.

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Milne, J. R., Madarasz-Smith, A., and Davies, T. (2017) Recreational water quality monitoring and reporting in New Zealand: A discussion paper for Regional and Unitary Councils. NIWA Science and Technology Series Report No. 82., Wellington, New Zealand, National Institute of Water & Atmospheric Research Ltd. [online] <https://niwa.co.nz/sites/niwa.co.nz/files/FWWQ1720-2017-82-Recreational-Water-Quality-Monitoring-Reporting-V2-May-2018.pdf>.

NSW DPIE (2020) Protocol for Assessment and Management of Microbial Risks in Recreational Waters. NSW Department of Planning, Industry & Environment, [online] <https://www.environment.nsw.gov.au/research-and-publications/publications-search/protocol-for-assessment-and-management-of-microbial-risks-in-recreational-waters>.

NZMoE (2003) Microbiological water quality guidelines for marine and freshwater recreational areas. New Zealand Ministry of the Environment, [online] <https://www.mfe.govt.nz/publications/fresh-water/microbiological-water-quality-guidelines-marine-and-freshwater-0>.

NZMoH (2018) Regional information for setting draft targets for swimmable lakes and rivers: a report on work underway to improve water quality in terms of effects on human health. New Zealand Ministry of Health, [online] <https://www.mfe.govt.nz/publications/fresh-water/regional-information-setting-draft-targets-swimmable-lakes-and-rivers> (Accessed December 15, 2020).

Ontario MHLTC (2018) Recreational Water Protocol, 2018, Ontario, Canada, Ministry of health and Long-Term Care. [online] http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Recreational_Water%20Protocol_2018_en.pdf.

Queensland Health (2019) Water quality guidelines for public aquatic facilities, Queensland, Queensland Health. [online] https://www.health.qld.gov.au/__data/assets/pdf_file/0021/444612/water-quality-guidelines.pdf.

State of Connecticut (2016) State of Connecticut Guidelines for Monitoring Swimming Water and Closure Protocol, State of Connecticut, United States, Connecticut Department of Public Health, Connecticut Department of Energy & Environmental Protection. [online] https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/recreation/pdf/030316GuidelinesforMonitoringSwimmingWaterpdf.pdf?la=en&hash=28975D4D6BE95D44707D551DEDAF7C50.

US EPA (2016) 2016 Coliphage Experts Workshop: Discussion Topics and Findings, Washington D.C., US EPA Office of Water. [online] <https://www.epa.gov/wqc/2016-coliphage-experts-workshop>.

US EPA (2014) Microbiological Risk Assessment (MRA) Tools, Methods, and Approaches for Water Media, Washington, DC, United States, US Environmental Protection Agency, Office of Water, Office of Science and Technology. [online] <https://www.epa.gov/wqc/microbiological-risk-assessment-mra-tools-methods-and-approaches-water-media>.

US EPA (2010) Quantitative Microbial Risk Assessment to Estimate Illness in Freshwater Impacted by Agricultural Animal Sources of Fecal Contamination, Washington, DC, United States, US Environmental Protection Agency, Office of Water, Office of Science and Technology. [online] <https://www.epa.gov/sites/production/files/2015-11/documents/quantitative-microbial-risk-fecal.pdf>.

US EPA (2012) Recreational Water Quality Criteria, Washington, DC, United States, US Environmental Protection Agency, Office of Water, Office of Science and Technology. [online] <https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf>.

US EPA (2015) Review of Coliphages as Possible Indicators of Fecal Contamination for Ambient Water Quality., Washington, DC, USA, US EPA Office of Water. [online] <https://www.epa.gov/wqc/review-coliphages-possible-indicators-fecal-contamination-ambient-water-quality>.

Visby, I. and Weller-Wong, A. (2020) Derwent Estuary Recreational Water Quality Program. Annual Report 2019-20, Tasmania, Derwent Estuary Program. [online] https://www.derwentestuary.org.au/assets/2019-20_End_of_season_RWQ_report_2.pdf.

WHO (2014) Briefing Note. Antimicrobial Resistance: An Emerging Water, Sanitation and Hygiene Issue, Switzerland, World Health Organization. [online] https://apps.who.int/iris/bitstream/handle/10665/204948/WHO_FWC_WSH_14.7_eng.pdf?sequence=1.

WHO (2009) Guidelines for safe recreational water environments. Addendum to Volume 1 - List of agreed updates, World Health Organization. [online] https://www.who.int/water_sanitation_health/publications/recreational-environments-addendum/en/.

WHO (2016b) Quantitative microbial risk assessment: Application for water safety management, World Health Organization. [online] <https://apps.who.int/iris/bitstream/handle/10665/246195/9789241565370-eng.pdf?sequence=1>.

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WHO (2018) WHO recommendations on scientific, analytical and epidemiological developments relevant to the parameters for bathing water quality in the Bathing Water Directive (2006/7/EC): Recommendations, World Health Organization. [online] https://www.who.int/water_sanitation_health/publications/who-recommendations-to-european-water-directive/en/.

Wymer, L., Brenner, K., Martinson, J., Stutts, W. R., Schaub, S. A., Dufour, A., Hamel, D., Wilde, K., Brown, S., and Siefring, S. C. (2006) The EMPICT Beaches Project Results from a Study on Microbiological Monitoring in Recreational Waters, Cincinnati, Ohio, USA, US Environmental Protection Agency, Office of Research and Development, National Exposure Research Laboratory.

8.2. Systematic review of primary studies

8.2.1. Studies excluded after full text review

8.2.1.1. Screened on review of full text: water environment health studies, not relevant to recreational water quality

This group of references consists of water quality studies that were classified as possibly relevant to the primary or secondary research questions based on the title or title/abstract screening. However, on subsequent review of the abstract or full text document it was determined that they should be excluded as they were not relevant to recreational water quality or not useful for answering the research questions for various reasons. In practice, most of the studies were screened on a review of the full text document.

Abdallah, M. A. M. (2015) Endocrine disruptors as pollutants in marine ecosystem: A case study in Egypt. Open Biotechnology Journal 9(1) [Water environment health studies, not relevant to recreational water quality]

Abraham, T. J. (2011) Food safety hazards related to emerging antibiotic resistant bacteria in cultured freshwater fishes of Kolkata, India. Advance Journal of Food Science and Technology 3(1)69-72 [Water environment health studies, not relevant to recreational water quality]

Adhani, R. (2016) South Kalimantan wetlands community empowerment in reducing tooth decay index. Research Journal of Applied Sciences 11(8)577-580 [Water environment health studies, not relevant to recreational water quality]

Affum, Andrews Obeng; Acquaah, Samuel Osafo; Osae, Shiloh Dede; Kwaansa-Ansah, Edward Ebow (2018) Distribution and risk assessment of banned and other current-use pesticides in surface and groundwaters consumed in an agricultural catchment dominated by cocoa crops in the Ankobra Basin, Ghana. The Science of the Total Environment 633: 630-640 [Water environment health studies, not relevant to recreational water quality]

Ajibesin, K. K.; Bala, D. N.; Umoh, U. F. (2012) Ethno medicinal survey of plants used by the indigenes of Rivers State of Nigeria. Pharmaceutical Biology 50(9)1123-1143 [Water environment health studies, not relevant to recreational water quality]

Al-Badaii, Fawaz; Shuhaimi-Othman, Mohammad (2015) Water Pollution and its Impact on the Prevalence of Antibiotic-Resistant E-coli and Total Coliform Bacteria: A Study of the Semenyih River, Peninsular Malaysia. Water Quality Exposure and Health 7(3)319-330 [Water environment health studies, not relevant to recreational water quality]

Albanis, T.; Vosniakos, F.; Nikolaou, K.; Vasiliotis, G.; Kochubovski, M.; Gjorgjef, D.; Diamantopoulos, Ch; Lampropoulou, D.; Zavlaris, K.; Selimi, P. (2009) Axios River Pollution. Part I. the Pesticides. Journal of Environmental Protection and Ecology 10(1)32-36 [Water environment health studies, not relevant to recreational water quality]

Albanis, T.; Vosniakos, F.; Nikolaou, K.; Vasiliotis, G.; Kochubovski, M.; Gjorgjef, D.; Diamantopoulos, Ch; Lampropoulou, D.; Zavlaris, K.; Selimi, P. (2009) Axios River Pollution. Part II: Polychlorinated Biphenyls and Heavy Metals. Journal of Environmental Protection and Ecology 10(1)37-41 [Water environment health studies, not relevant to recreational water quality]

Alekhina, I. A.; Moskvin, A. L.; Ekaykin, A. A.; Lipenkov, V. Ya (2017) Phenol compounds in the borehole 5G, Vostok station, after the unlocking of the subglacial lake. Led I Sneg-Ice and Snow 57(3)417-426 [Water environment health studies, not relevant to recreational water quality]



Alfonso, María Belén; Arias, Andrés Hugo; Piccolo, María Cintia (2020) Microplastics integrating the zooplanktonic fraction in a saline lake of Argentina: influence of water management. *Environmental Monitoring and Assessment* 192(2)117 [Water environment health studies, not relevant to recreational water quality]

Alla, A. A.; Mouneyrac, C.; Durou, C.; Moukrim, A.; Pellerin, J. (2006) Tolerance and biomarkers as useful tools for assessing environmental quality in the Oued Souss estuary (Bay of Agadir, Morocco). *Comparative Biochemistry and Physiology C-Toxicology & Pharmacology* 143(1)23-29 [Water environment health studies, not relevant to recreational water quality]

Alonso, E.; Santos, A.; Callejon, M.; Jimenez, J. C. (2004) Speciation as a screening tool for the determination of heavy metal surface water pollution in the Guadiana river basin. *Chemosphere* 56(6)561-570 [Water environment health studies, not relevant to recreational water quality]

Alvarado, Claudia; Martin Ramirez, Jose; Herrera-Lopez, Enrique J.; Cortez-Valladolid, Diego; Ramirez, Gerardo (2020) Bioaccumulation of Metals in Cultured Carp (*Cyprinus carpio*) from Lake Chapala, Mexico. *Biological Trace Element Research* 195(1)226-238 [Water environment health studies, not relevant to recreational water quality]

Alvarez, David A.; Maruya, Keith A.; Dodder, Nathan G.; Lao, Wenjian; Furlong, Edward T.; Smalling, Kelly L. (2014) Occurrence of contaminants of emerging concern along the California coast (2009-10) using passive sampling devices. *Marine Pollution Bulletin* 81(2)347-354 [Water environment health studies, not relevant to recreational water quality]

Ammann, A. A.; Macikova, P.; Groh, K. J.; Schirmer, K.; Suter, M. J. F. (2014) LC-MS/MS determination of potential endocrine disruptors of cortico signalling in rivers and wastewaters. *Analytical and Bioanalytical Chemistry* 406(29)7653-7665 [Water environment health studies, not relevant to recreational water quality]

Ancion, Pierre-Yves; Lear, Gavin; Lewis, Gillian D. (2010) Three common metal contaminants of urban runoff (Zn, Cu & Pb) accumulate in freshwater biofilm and modify embedded bacterial communities. *Environmental Pollution* 158(8)2738-2745 [Water environment health studies, not relevant to recreational water quality]

Anderson, P. D.; D'Aco, V. J.; Shanahan, P.; Chapra, S. C.; Buzby, M. E.; Cunningham, V. L.; Duplessie, B. M.; Hayes, E. P.; Mastrocco, F. J.; Parke, N. J.; Rader, J. C.; Samuelian, J. H.; Schwab, B. W. (2004) Screening analysis of human pharmaceutical compounds in US surface waters. *Environmental Science & Technology* 38(3)838-849 [Water environment health studies, not relevant to recreational water quality]

Annamalai, Jayshree; Vasudevan, Namasivayam (2020) Detection of phthalate esters in PET bottled drinks and lake water using esterase/PANI/CNT/CuNP based electrochemical biosensor. *Analytica Chimica Acta* 1135: 175-186 [Water environment health studies, not relevant to recreational water quality]

Anorlu, Geophrey; Gibrilla, Abass; Adomako, Dickson (2017) Tracking nitrate sources in groundwater and associated health risk for rural communities in the White Volta River basin of Ghana using isotopic approach (delta N-15, delta O-18-NO3 and H-3). *Science of the Total Environment* 603: 687-698 [Water environment health studies, not relevant to recreational water quality]

Archer, Edward; Wolfaardt, Gideon M.; van Wyk, Johannes H. (2017) Pharmaceutical and personal care products (PPCPs) as endocrine disrupting contaminants (EDCs) in South African surface waters. *Water SA* 43(4)684-706 [Water environment health studies, not relevant to recreational water quality]

Arlos, M. J.; Bragg, L. M.; Parker, W. J.; Servos, M. R. (2015) Distribution of selected antiandrogens and pharmaceuticals in a highly impacted watershed. *Water Research* 72: 40-50 [Water environment health studies, not relevant to recreational water quality]

Azeredo, A.; Torres, J. P. M.; de Freitas Fonseca, M.; Britto, J. L.; Bastos, W. R.; Azevedo e Silva, C. E.; Cavalcanti, G.; Meire, R. O.; Sarcinelli, P. N.; Claudio, L.; Markowitz, S.; Malm, O. (2008) DDT and its metabolites in breast milk from the Madeira River basin in the Amazon, Brazil. *Chemosphere* 73(1 SUPPL.)S246-S251 [Water environment health studies, not relevant to recreational water quality]

Bąk, Ł; Górska, J.; Górska, K.; Szeląg, B. (2012) Suspended solids and heavy metals content of selected rainwater waves in an urban catchment area: A case study. *Ochrona Środowiska* 34(2)49-52 [Water environment health studies, not relevant to recreational water quality]

Baralkiewicz, Danuta; Chudzinska, Maria; Szpakowska, Barbara; Swierk, Dariusz; Goldyn, Ryszard; Dondajewska, Renata (2014) Storm water contamination and its effect on the quality of urban surface waters. *Environmental Monitoring and Assessment* 186(10)6789-6803 [Water environment health studies, not relevant to recreational water quality]

Barhoumi, Badreddine; Tedetti, Marc; Peris, Andrea; Guigue, Catherine; Aznar-Alemany, Oscar; Touil, Soufiane; Driss, Mohamed Ridha; Eljarrat, Ethel (2020) Halogenated flame retardants in atmospheric particles from a North African coastal city (Bizerte, Tunisia): Pollution characteristics

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and human exposure. *Atmospheric Pollution Research* 11(4) [Water environment health studies, not relevant to recreational water quality]

Barra, R.; Quiroz, R.; Saez, K.; Araneda, A.; Urrutia, R.; Popp, P. (2009) Sources of polycyclic aromatic hydrocarbons (PAHs) in sediments of the Biobio River in south central Chile. *Environmental Chemistry Letters* 7(2)133-139 [Water environment health studies, not relevant to recreational water quality]

Bastos, Patricia Moreira; Haglund, Peter (2012) The use of comprehensive two-dimensional gas chromatography and structure-activity modeling for screening and preliminary risk assessment of organic contaminants in soil, sediment, and surface water. *Journal of Soils and Sediments* 12(7)1079-1088 [Water environment health studies, not relevant to recreational water quality]

Beale, David J.; Karpe, Avinash V.; Ahmed, Warish; Cook, Stephen; Morrison, Paul D.; Staley, Christopher; Sadowsky, Michael J.; Palombo, Enzo A. (2017) A Community Multi-Omics Approach towards the Assessment of Surface Water Quality in an Urban River System. *International Journal of Environmental Research and Public Health* 14(3)303 [Water environment health studies, not relevant to recreational water quality]

Bebianno, M. J.; Garcia da Fonseca, T. (2020) Fate and effects of cytostatic pharmaceuticals in the marine environment. *Fate and Effects of Anticancer Drugs in the Environment*: 295-330 [Water environment health studies, not relevant to recreational water quality]

Begum, A.; Harikrishna (2008) Study on the quality of water in some streams of cauvery river. *E-Journal of Chemistry* 5(2)377-384 [Water environment health studies, not relevant to recreational water quality]

Begum, A.; Harikrishna, S.; Khan, I. (2009) Analysis of heavy metals in water, sediments and fish samples of Madivala Lakes of Bangalore, Karnataka. *International Journal of ChemTech Research* 1(2)245-249 [Water environment health studies, not relevant to recreational water quality]

Ben Chabchoubi, Imen; Mtibaa, Slim; Ksibi, Mohamed; Hentati, Olfa (2020) Health risk assessment of heavy metals (Cu, Zn, and Mn) in wild oat grown in soils amended with sediment dredged from the Joumine Dam in Bizerte, Tunisia. *Euro-Mediterranean Journal for Environmental Integration* 5(3)60 [Water environment health studies, not relevant to recreational water quality]

Bersuder, P.; Smith, A. J.; Hynes, C.; Warford, L.; Barber, J. L.; Losada, S.; Limpenny, C.; Khamis, A. S.; Abdulla, K. H.; Le Quesne, W. J. F.; Lyons, B. P. (2020) Baseline survey of marine sediments collected from the Kingdom of Bahrain: PAHs, PCBs, organochlorine pesticides, perfluoroalkyl substances, dioxins, brominated flame retardants and metal contamination. *Marine Pollution Bulletin* 161(Pt A)111734 [Water environment health studies, not relevant to recreational water quality]

Bloom, M. S.; Vena, J. E.; Swanson, M. K.; Moysich, K. B.; Olson, J. R. (2005) Profiles of ortho-polychlorinated biphenyl congeners, dichlorodiphenyldichloroethylene, hexachlorobenzene, and mirex among male lake Ontario sportfish consumers: the New York State Angler Cohort Study. *Environmental Research* 97(2)178-194 [Water environment health studies, not relevant to recreational water quality]

Bonotto, D. M. (2011) The physical and chemical characterization of some ground and surface waters in São Paulo state, Brazil. *Water Quality: Physical, Chemical and Biological Characteristics* 14977 [Water environment health studies, not relevant to recreational water quality]

Brankov, Jovana; Milijasevic, Dragana; Milanovic Pesic, Ana (2012) The Assessment of the Surface Water Quality Using the Water Pollution Index: A Case Study of the Timok River (the Danube River Basin), Serbia. *Archives of Environmental Protection* 38(1)49-61 [Water environment health studies, not relevant to recreational water quality]

Burgin, Shelley; Hardiman, Nigel (2011) The direct physical, chemical and biotic impacts on Australian coastal waters due to recreational boating. *Biodiversity and Conservation* 20(4)683-701 [Water environment health studies, not relevant to recreational water quality]

Burns, E. E.; Carter, L. J.; Kolpin, D. W.; Thomas-Oates, J.; Boxall, A. B. A. (2018) Temporal and spatial variation in pharmaceutical concentrations in an urban river system. *Water Research* 137: 72-85 [Water environment health studies, not relevant to recreational water quality]

Cai, W.; Li, Y.; Wang, P.; Niu, L.; Zhang, W.; Wang, C. (2016) Revealing the relationship between microbial community structure in natural biofilms and the pollution level in urban rivers: A case study in the Qinhuai River basin, Yangtze River Delta. *Water Science and Technology* 74(5)1163-1176 [Water environment health studies, not relevant to recreational water quality]

Caiaffo, V.; de Oliveira, B. D. R.; de Sá, F. B.; Evêncio Neto, J.; da Silva Júnior, V. A. (2017) Marine food protection in testicular damages caused by diabetes mellitus. *Current Diabetes Reviews* 13(6)566-572 [Water environment health studies, not relevant to recreational water quality]

Callahan, C. L.; Vena, J. E.; Green, J.; Swanson, M.; Mu, L.; Bonner, M. R. (2017) Consumption of Lake Ontario sport fish and the incidence of colorectal cancer in the New York State Angler Cohort

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Study (NYSACS). Environmental Research 154: 86-92 [Water environment health studies, not relevant to recreational water quality]

Camilleri, Julien; Baudot, Robert; Wiest, Laure; Vulliet, Emmanuelle; Cren-Olive, Cecile; Daniele, Gaelle (2015) Multiresidue fully automated online SPE-HPLC-MS/MS method for the quantification of endocrine-disrupting and pharmaceutical compounds at trace level in surface water. International Journal of Environmental Analytical Chemistry 95(1)67-81 [Water environment health studies, not relevant to recreational water quality]

Cano-Sancho, German; Perello, Gemma; Maulvaut, Ana Luisa; Marques, Antonio; Nadal, Marti; Domingo, Jose L. (2015) Oral bioaccessibility of arsenic, mercury and methylmercury in marine species commercialized in Catalonia (Spain) and health risks for the consumers. Food and Chemical Toxicology 86: 34-40 [Water environment health studies, not relevant to recreational water quality]

Cao, Suzhen; Duan, Xiaoli; Ma, Yingqun; Zhao, Xiuge; Qin, Yanwen; Liu, Yan; Li, Sai; Zheng, Binghui; Wei, Fusheng (2017) Health benefit from decreasing exposure to heavy metals and metalloid after strict pollution control measures near a typical river basin area in China. Chemosphere 184: 866-878 [Water environment health studies, not relevant to recreational water quality]

Carney, Richard L.; Brown, Mark V.; Siboni, Nachshon; Raina, Jean-Baptiste; Kahlke, Tim; Mitrovic, Simon M.; Seymour, Justin R. (2020) Highly heterogeneous temporal dynamics in the abundance and diversity of the emerging pathogens Arcobacter at an urban beach. Water Research 171: 115405 [Water environment health studies, not relevant to recreational water quality]

Causer, L. M.; Handzel, T.; Welch, P.; Carr, M.; Culp, D.; Lucht, R.; Mudahar, K.; Robinson, D.; Neavear, E.; Fenton, S.; Rose, C.; Craig, L.; Arrowood, M.; Wahlquist, S.; Xiao, L.; Lee, Y. M.; Mirel, L.; Levy, D.; Beach, M. J.; Poquette, G.; Dworkin, M. S. (2006) An outbreak of Cryptosporidium hominis infection at an Illinois recreational waterpark. Epidemiology and Infection 134(1)147-156 [Water environment health studies, not relevant to recreational water quality]

Ceballos, B. S. O.; Soares, N. E.; Moraes, M. R.; Catão, R. M. R.; Konig, A. (2003) Microbiological aspects of an urban river used for unrestricted irrigation in the semi-arid region of north-east Brazil. Water Science and Technology 47(3)51-57 [Water environment health studies, not relevant to recreational water quality]

Chakraborti, Dipankar; Singh, Sushant K.; Rahman, Mohammad Mahmudur; Dutta, Rathindra Nath; Mukherjee, Subhas Chandra; Pati, Shyamapada; Kar, Probir Bijoy (2018) Groundwater Arsenic Contamination in the Ganga River Basin: A Future Health Danger. International Journal of Environmental Research and Public Health 15(2) [Water environment health studies, not relevant to recreational water quality]

Chandroth, S. V.; Venugopal, H. K.; Puthenveetil, S.; Jayaram, A.; Mathews, J.; Suresh, N.; Al Kheraif, A. A.; Ramakrishnaiah, R.; Divakar, D. D.; Asawa, K.; Tak, A.; Tak, M. (2014) Prevalence of oral mucosal lesions among fishermen of Kutch coast, Gujarat, India. International maritime health 65(4)192-198 [Water environment health studies, not relevant to recreational water quality]

Choukr-Allah, R.; Belouali, H.; Nghira, A. (2017) Environmental risk assessment of the reuse of treated wastewaters in the Souss-Massa River Basin. 53 [Water environment health studies, not relevant to recreational water quality]

Chukmasov, Pavel; Aksenov, Andrey; Sorokina, Tatiana; Varakina, Yulia; Sobolev, Nikita; Nieboer, Evert (2019) North Pacific Baleen Whales as a Potential Source of Persistent Organic Pollutants (POPs) in the Diet of the Indigenous Peoples of the Eastern Arctic Coasts. Toxics 7(4)65 [Water environment health studies, not relevant to recreational water quality]

Cloern, James E.; Jassby, Alan D. (2012) Drivers of Change in Estuarine-Coastal Ecosystems: Discoveries from Four Decades of Study in San Francisco Bay. Reviews of Geophysics 50: RG4001 [Water environment health studies, not relevant to recreational water quality]

Cui, Jiao; Fu, Lingfang; Tang, Bing; Bin, Liying; Li, Ping; Huang, Shaosong; Fu, Fenglian (2020) Occurrence, ecotoxicological risks of sulfonamides and their acetylated metabolites in the typical wastewater treatment plants and receiving rivers at the Pearl River Delta. Science of the Total Environment 709: 136192 [Water environment health studies, not relevant to recreational water quality]

Cui, Z.; Wang, Y.; Zhao, N.; Yu, R.; Xu, G.; Yu, Y. (2018) Spatial Distribution and Risk Assessment of Heavy Metals in Paddy Soils of Yongshuyu Irrigation Area from Songhua River Basin, Northeast China. Chinese Geographical Science 28(5)797-809 [Water environment health studies, not relevant to recreational water quality]

Cunha, Â; Almeida, A.; Ré, A.; Martins, A.; Alcântara, F. (2006) Perylene toxicity in the estuarine environment of Ria de Aveiro (Portugal). Ecotoxicology 15(2)171-185 [Water environment health studies, not relevant to recreational water quality]

D'Alessandro, Michela; Porporato, Erika M. D.; Esposito, Valentina; Giacobbe, Salvatore; Deidun, Alain; Nasi, Federica; Ferrante, Larissa; Auriemma, Rocco; Berto, Daniela; Renzi, Monia; Scotti, Gianfranco; Consoli, Pierpaolo; Del Negro, Paola; Andaloro, Franco; Romeo, Teresa (2020)

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Common patterns of functional and biotic indices in response to multiple stressors in marine harbours ecosystems. *Environmental Pollution* (Barking, Essex: 1987) 259: 113959 [Water environment health studies, not relevant to recreational water quality]

Davutluoglu, O. I.; Seckin, G.; Ersu, C. B.; Yilmaz, T.; Sari, B. (2011) Assessment of Metal Pollution in Water and Surface Sediments of the Seyhan River, Turkey, Using Different Indexes. *Clean - Soil, Air, Water* 39(2)185-194 [Water environment health studies, not relevant to recreational water quality]

Denadai, M. R.; Jacobucci, D. F. C.; Fontana, I.; Taniguchi, S.; Turra, A. (2015) Assessment of contamination of the beach clam *tivela mactroides*: Implications for food safety of a recreational and subsistence marine resource in caraguatatuba bay, Brazil. *International Journal of Food Contamination* 2(1) [Water environment health studies, not relevant to recreational water quality]

Devlin, M. J.; Le Quesne, W. J. F.; Lyons, B. P. (2015) The Marine Environment of Kuwait-Emerging issues in a rapidly changing environment. *Marine Pollution Bulletin* 100(2)593-596 [Water environment health studies, not relevant to recreational water quality]

Di Marzio, W. D.; Castaldo, D.; Di Lorenzo, T.; Di Cioccio, A.; Saenz, M. E.; Galassi, D. M. P. (2013) Developmental endpoints of chronic exposure to suspected endocrine-disrupting chemicals on benthic and hyporheic freshwater copepods. *Ecotoxicology and Environmental Safety* 96: 86-92 [Water environment health studies, not relevant to recreational water quality]

Ding, Y.; Wu, Z.; Zhang, R.; Yu, K.; Wang, Y.; Zou, Q.; Zeng, W.; Han, M. (2019) Organochlorines in fish from the coastal coral reefs of Weizhou Island, south China sea: Levels, sources, and bioaccumulation. *Chemosphere* 232: 44044 [Water environment health studies, not relevant to recreational water quality]

Donovan, E. P.; Staskal, D. F.; Unice, K. M.; Roberts, J. D.; Haws, L. C.; Finley, B. L.; Harris, M. A. (2008) Risk of gastrointestinal disease associated with exposure to pathogens in the sediments of the Lower Passaic River. *Applied and Environmental Microbiology* 74(4)1004-1018 [Water environment health studies, not relevant to recreational water quality]

Dosunmu, Miranda I.; Oyo-Ita, Inyang O.; Oyo-Ita, Orok E. (2016) Risk assessment of human exposure to polycyclic aromatic hydrocarbons via shrimp (*Macrobrachium falcicarinum*) consumption along the Imo River catchments, SE Nigeria. *Environmental Geochemistry and Health* 38(6)1333-1345 [Water environment health studies, not relevant to recreational water quality]

Dudarev, A. A.; Chupakhin, V. S.; Vlasov, S. V.; Yamin-Pasternak, S. (2019) Traditional diet and environmental contaminants in coastal chukotka II: Legacy POPs. *International Journal of Environmental Research and Public Health* 16(5) [Water environment health studies, not relevant to recreational water quality]

Dudarev, A. A.; Yamin-Pasternak, S.; Pasternak, I.; Chupakhin, V. S. (2019) Traditional diet and environmental contaminants in coastal chukotka IV: Recommended intake criteria. *International Journal of Environmental Research and Public Health* 16(5) [Water environment health studies, not relevant to recreational water quality]

Evrenoglou, L.; Partsinevelou, A. S.; Nicolopoulou-Stamati, P. (2017) Correlation between concentrations of heavy metals in children's scalp hair and the environment. A case study from Kifissos River in Attica, Greece. *Global Nest Journal* 19(4)592-600 [Water environment health studies, not relevant to recreational water quality]

Fan, Ruifang; Yu, Zhiqiang; Sheng, Guoying; Fu, Jiamo (2010) Profile assessment of students non-occupationally exposed to PAHs in Pearl River Delta. 2010 4th International Conference on Bioinformatics and Biomedical Engineering (icbbe 2010) [Water environment health studies, not relevant to recreational water quality]

Fantini, F.; Porta, D.; Fano, V.; De Felip, E.; Senofonte, O.; Abballe, A.; D'Ilio, S.; Ingelido, A. M.; Mataloni, F.; Narduzzi, S.; Blasetti, F.; Forastiere, F. (2012) Epidemiologic studies on the health status of the population living in the Sacco River Valley. *Epidemiologia e Prevenzione* 36(5)44-52 [Water environment health studies, not relevant to recreational water quality]

Ferré-Huguet, N.; Martí-Cid, R.; Schuhmacher, M.; Domingo, J. L. (2008) Risk assessment of metals from consuming vegetables, fruits and rice grown on soils irrigated with waters of the Ebro River in Catalonia, Spain. *Biological Trace Element Research* 123(1-3)66-79 [Water environment health studies, not relevant to recreational water quality]

Finley, B. L.; Iannuzzi, T. J.; Wilson, N. D.; Kinnell, J. C.; Craven, V. A.; Lemeshow, S.; Teaf, C. M.; Calabrese, E. J.; Kostecki, P. T. (2003) The Passaic River Creel/Angler Survey: Expert panel review, findings, and recommendations. *Human and Ecological Risk Assessment* 9(3)829-855 [Water environment health studies, not relevant to recreational water quality]

Florescu, D.; Ionete, R. E.; Iordache, A.; Horj, E.; Stefanescu, I.; Culea, M. (2011) Optimal Measurements of Surface Water Pollution-Case Study on Southern Part of Romania. *Asian Journal of Chemistry* 23(12)5209-5212 [Water environment health studies, not relevant to recreational water quality]

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Fonseca, T. G.; Carriço, T.; Fernandes, E.; Abessa, D. M. S.; Tavares, A.; Bebianno, M. J. (2019) Impacts of in vivo and in vitro exposures to tamoxifen: Comparative effects on human cells and marine organisms. *Environment International* 129: 256-272 [Water environment health studies, not relevant to recreational water quality]

Funari, Enzo; Manganelli, Maura; Testai, Emanuela (2015) *Ostreosporis cf. ovata* blooms in coastal water: Italian guidelines to assess and manage the risk associated to bathing waters and recreational activities. *Harmful Algae* 50: 45-56 [Water environment health studies, not relevant to recreational water quality]

Galaon, Toma; Petre, Jana; Iancu, Vasile Ion; Stanescu, Elena (2015) Lc-Ms/Ms Determination of Eight Pharmaceuticals and Two Disinfectants in the Danube River and Three Major Tributaries from Romania. *Ecology, Economics, Education and Legislation*, Vol II: 301-308 [Water environment health studies, not relevant to recreational water quality]

Gandhi, N.; Drouillard, K. G.; Arhonditsis, G. B.; Gewurtz, S. B.; Bhavsar, S. P. (2017) Are fish consumption advisories for the great lakes adequately protective against chemical mixtures? *Environmental Health Perspectives* 125(4)586-593 [Water environment health studies, not relevant to recreational water quality]

Gao, M.; Wu, X.; Klerks, P. L.; Chen, H. X.; Xie, L. T. (2016) Metal levels in seafood of the Huludao coast and associated health risks. *Chinese Journal of Ecology* 35(1)205-211 [Water environment health studies, not relevant to recreational water quality]

Garcia-Hernandez, Jaqueline; Ortega-Velez, Maria Isabel; Contreras-Paniagua, Alma Delia; Aguilera-Marquez, Daniela; Leyva-Garcia, German; Torre, Jorge (2018) Mercury concentrations in seafood and the associated risk in women with high fish consumption from coastal villages of Sonora, Mexico. *Food and Chemical Toxicology* 120: 367-377 [Water environment health studies, not relevant to recreational water quality]

Garnero, Paola L.; de los Angeles Bistoni, Maria; Monferran, Magdalena (2020) Trace element concentrations in six fish species from freshwater lentic environments and evaluation of possible health risks according to international standards of consumption. *Environmental Science and Pollution Research* 27(22)27598-27608 [Water environment health studies, not relevant to recreational water quality]

Garvin, Ean M.; Bridge, Cas F.; Garvin, Meredith S. (2018) Edible wild plants growing in contaminated floodplains: implications for the issuance of tribal consumption advisories within the Grand Lake watershed of northeastern Oklahoma, USA. *Environmental Geochemistry and Health* 40(3)999-1025 [Water environment health studies, not relevant to recreational water quality]

Giri, S.; Singh, A. K. (2015) Human health risk assessment via drinking water pathway due to metal contamination in the groundwater of Subarnarekha River Basin, India. *Environmental Monitoring and Assessment* 187(3) [Water environment health studies, not relevant to recreational water quality]

González-Merizalde, Max V.; Menezes-Filho, José A.; Cruz-Erazo, Claudia Teresa; Bermeo-Flores, Santos Amable; Sánchez-Castillo, María Obdulia; Hernández-Bonilla, David; Mora, Abraham (2016) Manganese and Mercury Levels in Water, Sediments, and Children Living Near Gold-Mining Areas of the Nangaritza River Basin, Ecuadorian Amazon. *Archives of Environmental Contamination and Toxicology* 71(2)171-182 [Water environment health studies, not relevant to recreational water quality]

Grote, M.; Altenburger, R.; Brack, W.; Moschutz, S.; Mothes, S.; Michael, C.; Narten, C. B.; Paschke, A.; Schirmer, K.; Walter, H.; Wennrich, R.; Wenzel, K. D.; Schuurmann, G. (2005) Ecotoxicological profiling of transect river Elbe sediments. *Acta Hydrochimica Et Hydrobiologica* 33(5)555-569 [Water environment health studies, not relevant to recreational water quality]

Guruge, K. S.; Goswami, P.; Watanabe, I.; Abeykoon, S.; Prabhasankar, V. P.; Binu, K. R.; Joshua, D. I.; Balakrishna, K.; Akiba, M.; Munuswamy, N. (2017) Trace element distribution and risk assessment in South Indian surface waterways. *International Journal of Environmental Science and Technology* 14(1)43101 [Water environment health studies, not relevant to recreational water quality]

Habibullah-Al-Mamun, M.; Ahmed, M. K.; Islam, M. S.; Tokumura, M.; Masunaga, S. (2019) Distribution of polycyclic aromatic hydrocarbons (PAHs) in commonly consumed seafood from coastal areas of Bangladesh and associated human health implications. *Environmental Geochemistry and Health* 41(3)1105-1121 [Water environment health studies, not relevant to recreational water quality]

Halvorson, Sarah J.; Williams, Ashley L.; Ba, Sidy; Dunkel, Florence V. (2011) Water quality and waterborne disease in the Niger River Inland Delta, Mali: A study of local knowledge and response. *Health & Place* 17(2)449-457 [Water environment health studies, not relevant to recreational water quality]

He, L.; Hu, W.; Wang, X.; Liu, Y.; Jiang, Y.; Meng, Y.; Xiao, Q.; Guo, X.; Zhou, Y.; Bi, Y.; Lu, Y. (2020) Analysis of heavy metal contamination of agricultural soils and related effect on population

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health—a case study for east river Basin in China. *International Journal of Environmental Research and Public Health* 17(6) [Water environment health studies, not relevant to recreational water quality]

Heikens, A.; Widianarko, B.; Dewi, I. C.; de Boer, J. L. M.; Seinen, W.; van Leeuwen, K. (2005) The impact of the hyperacid Ijen Crater Lake. Part II: A total diet study. *Environmental Geochemistry and Health* 27(5-6):475-483 [Water environment health studies, not relevant to recreational water quality]

Herrera-Herrera, Claudia; Fuentes-Gandara, Fabio; Zambrano-Arevalo, Alejandra; Bernal Higuera, Faisal; Pinedo Hernandez, Jose; Marrugo-Negrete, Jose (2019) Health Risks Associated with Heavy Metals in Imported Fish in a Coastal City in Colombia. *Biological Trace Element Research* 190(2):526-534 [Water environment health studies, not relevant to recreational water quality]

Hopkins, J.; Hague, H.; Hudgin, G.; Ross, L.; Moore, D. (2013) An outbreak of Cryptosporidium at a recreational water park in Niagara Region, Canada. *Journal of Environmental Health* 75(9):28-33 [Water environment health studies, not relevant to recreational water quality]

Huang, X.; Li, Y.; Huang, Q.; Liang, J.; Liang, C.; Chen, B.; Lu, L.; Deng, X.; Chen, Z.; Zhang, Y.; Wu, Y.; Shao, B. (2013) A past Haff disease outbreak associated with eating freshwater pomfret in South China. *BMC Public Health* 13(1) [Water environment health studies, not relevant to recreational water quality]

Islam, Abu Reza Md Towfiqul; Islam, H. M. Touhidul; Mia, Md Uzzal; Khan, Rahat; Habib, Md Ahosan; Bodrud-Doza, Md; Siddique, Md Abu Bakar; Chu, Ronghao (2020) Co-distribution, possible origins, status and potential health risk of trace elements in surface water sources from six major river basins, Bangladesh. *Chemosphere* 249: 126180 [Water environment health studies, not relevant to recreational water quality]

Knobeloch, L.; Turyk, M.; Imm, P.; Schrank, C.; Anderson, H. (2009) Temporal changes in PCB and DDE levels among a cohort of frequent and infrequent consumers of Great Lakes sportfish. *Environmental Research* 109(1):66-72 [Water environment health studies, not relevant to recreational water quality]

Koeck, D. E.; Huber, S.; Hanifi, N.; Köster, M.; Schierling, M. B.; Höller, C. (2018) Occurrence of antibiotic-resistant bacteria in therapy pools and surrounding surfaces. *International Journal of Environmental Research and Public Health* 15(12) [Water environment health studies, not relevant to recreational water quality]

Liang, Zhishu; Yu, Yun; Ye, Zikai; Li, Guiying; Wang, Wanjun; An, Taicheng (2020) Pollution profiles of antibiotic resistance genes associated with airborne opportunistic pathogens from typical area, Pearl River Estuary and their exposure risk to human. *Environment International* 143: 105934 [Water environment health studies, not relevant to recreational water quality]

Lin, Q.; Liu, E.; Zhang, E.; Li, K.; Shen, J. (2016) Spatial distribution, contamination and ecological risk assessment of heavy metals in surface sediments of Erhai Lake, a large eutrophic plateau lake in southwest China. *Catena* 145: 193-203 [Water environment health studies, not relevant to recreational water quality]

Liu, Enfeng; Shen, Ji; Yang, Xiangdong; Zhang, Enlou (2012) Spatial distribution and human contamination quantification of trace metals and phosphorus in the sediments of Chaohu Lake, a eutrophic shallow lake, China. *Environmental Monitoring and Assessment* 184(4):2105-2118 [Water environment health studies, not relevant to recreational water quality]

Liviac, D.; Wagner, E. D.; Mitch, W. A.; Altonji, M. J.; Plewa, M. J. (2010) Genotoxicity of water concentrates from recreational pools after various disinfection methods. *Environmental Science and Technology* 44(9):3527-3532 [Water environment health studies, not relevant to recreational water quality]

Lorenzo-Márquez, H.; Torres-Dosal, A.; Barba Macías, E.; Ilizaliturri Hernández, C. A.; Martínez-Salinas, R. I.; Morales López, J. J.; Sánchez Moreno, I. (2016) Estimating risk of exposure to heavy metals by consumption of invasive fish (*Pterygoplichthys* spp.) in infants in riparian communities of the Grijalva and Usumacinta rivers, Mexico. *Revista Internacional de Contaminación Ambiental* 32(2):153-164 [Water environment health studies, not relevant to recreational water quality]

Maasz, Gabor; Mayer, Matyas; Zrinyi, Zita; Molnar, Eva; Kuzma, Monika; Fodor, Istvan; Pirger, Zsolt; Takacs, Peter (2019) Spatiotemporal variations of pharmacologically active compounds in surface waters of a summer holiday destination. *Science of the Total Environment* 677: 545-555 [Water environment health studies, not relevant to recreational water quality]

Magesh, N. S.; Chandrasekar, N.; Elango, L. (2017) Trace element concentrations in the groundwater of the Tamiraparani river basin, South India: Insights from human health risk and multivariate statistical techniques. *Chemosphere* 185: 468-479 [Water environment health studies, not relevant to recreational water quality]

Maloo, A.; Fulke, A. B.; Mulani, N.; Sukumaran, S.; Ram, A. (2017) Pathogenic multiple antimicrobial resistant *Escherichia coli* serotypes in recreational waters of Mumbai, India: a potential public

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health risk. *Environmental Science and Pollution Research* 24(12)11504-11517 [Water environment health studies, not relevant to recreational water quality]

Mark Ibekwe, A.; Murinda, S. E.; Graves, A. K. (2011) Microbiological evaluation of water quality from urban watersheds for domestic water supply improvement. *International Journal of Environmental Research and Public Health* 8(12)4460-4476 [Water environment health studies, not relevant to recreational water quality]

Marshall, A. C.; Paul, J. S.; Brooks, M. L.; Duram, L. A. (2017) Anglers' Perceptions and Fish Consumption Risks in the Lower Tisza River Basin. *Exposure and Health* 9(3)197-211 [Water environment health studies, not relevant to recreational water quality]

McGoran, A. R.; Clark, P. F.; Morritt, D. (2017) Presence of microplastic in the digestive tracts of European flounder, *Platichthys flesus*, and European smelt, *Osmerus eperlanus*, from the River Thames. *Environmental Pollution* 220: 744-751 [Water environment health studies, not relevant to recreational water quality]

McOliver, Cynthia C.; Graczyk, Thaddeus K.; Silbergeld, Ellen K. (2008) Assessing the Risks of Exposure to Cryptosporidium from Recreational Water Activities in Baltimore, Maryland. *Urban and Community Fisheries Programmes: Development, Management, and Evaluation* 67: 165-174 [Water environment health studies, not relevant to recreational water quality]

Mikolajczyk, Szczepan; Warenik-Bany, Malgorzata; Maszewski, Sebastian; Pajurek, Marek (2020) Dioxins and PCBs - Environment impact on freshwater fish contamination and risk to consumers. *Environmental Pollution* 263: 114611 [Water environment health studies, not relevant to recreational water quality]

Mirsadeghi, S. A.; Zakaria, M. P.; Yap, C. K.; Shahbazi, A. (2011) Risk assessment for the daily intake of polycyclic aromatic hydrocarbons from the ingestion of cockle (*Anadara granosa*) and exposure to contaminated water and sediments along the west coast of Peninsular Malaysia. *Journal of Environmental Sciences* 23(2)336-345 [Water environment health studies, not relevant to recreational water quality]

Mohanta, Vijay Laxmi; Naz, Aliya; Mishra, Brijesh Kumar (2020) Distribution of heavy metals in the water, sediments, and fishes from Damodar river basin at steel city, India: a probabilistic risk assessment. *Human and Ecological Risk Assessment* 26(2)406-429 [Water environment health studies, not relevant to recreational water quality]

Odey, Micheal O.; Ibor, Oju R.; Andem, Andem B.; Ettah, Ivon; Chukwuka, Azubuike V. (2018) Drinking water quality and risk implications for community health: A case study of shallow water wells and boreholes in three major communities in Northern Cross-River, Southern Nigeria. *Human and Ecological Risk Assessment* 24(2)427-444 [Water environment health studies, not relevant to recreational water quality]

Okoro, Hussein K.; Fatoki, Olalekan S.; Adekola, Folahan A.; Ximba, Bhekumusa J.; Snyman, Reinette G. (2011) Sources, Environmental Levels and Toxicity of Organotin in Marine Environment-A Review. *Asian Journal of Chemistry* 23(2)473-482 [Water environment health studies, not relevant to recreational water quality]

Overby, K. N.; Hatcher, S. M.; Stewart, J. R. (2015) Water quality and antibiotic resistance at beaches of the Galápagos Islands. *Frontiers in Environmental Science* 3(Oct)64 [Water environment health studies, not relevant to recreational water quality]

Oyo-Ita, Inyang O.; Oyo-Ita, Orok E.; Ikip, Ekpo O.; Sam, Edidiong S.; Ugim, Ugim S. (2017) Source Characterization and Historical Trend of Sedimentary PAHs from Reforme Lake, South-South Nigeria. *Aquatic Geochemistry* 23(5-6)377-398 [Water environment health studies, not relevant to recreational water quality]

Palash, Md Amin Ullah; Islam, Md Saiful; Bayero, Amina Salihu; Taqui, Syed Noeman; Koki, Isa Baba (2020) Evaluation of trace metals concentration and human health implication by indigenous edible fish species consumption from Meghna River in Bangladesh. *Environmental Toxicology and Pharmacology* 80: 103440 [Water environment health studies, not relevant to recreational water quality]

Peluso, F.; Grosman, F.; Castelain, J. G. (2009) Health risk by organochlorine pesticides in waters of an Argentine pampean shallow lake. *Acta Bioquímica Clínica Latinoamericana* 43(2)233-240 [Water environment health studies, not relevant to recreational water quality]

Pietroski, Jason P.; White, John R.; DeLaune, Ronald D. (2015) Effects of dispersant used for oil spill remediation on nitrogen cycling in Louisiana coastal salt marsh soil. *Chemosphere* 119: 562-567 [Water environment health studies, not relevant to recreational water quality]

Pinzón-Bedoya, C. H.; Pinzón-Bedoya, M. L.; Pinedo-Hernández, J.; Urango-Cardenas, I.; Marrugo-Negrete, J. (2020) Assessment of potential health risks associated with the intake of heavy metals in fish harvested from the largest estuary in Colombia. *International Journal of Environmental Research and Public Health* 17(8) [Water environment health studies, not relevant to recreational water quality]

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Pusceddu, F. H.; Choueri, R. B.; Pereira, C. D. S.; Cortez, F. S.; Santos, D. R. A.; Moreno, B. B.; Santos, A. R.; Rogero, J. R.; Cesar, A. (2018) Environmental risk assessment of triclosan and ibuprofen in marine sediments using individual and sub-individual endpoints. *Environmental Pollution* 232: 274-283 [Water environment health studies, not relevant to recreational water quality]

Ren, Yanjun; Lin, Meng; Liu, Qingming; Zhang, Zhonghao; Fei, Xufeng; Xiao, Rui; Lv, Xiaonan (2020) Contamination assessment, health risk evaluation, and source identification of heavy metals in the soil-rice system of typical agricultural regions on the southeast coast of China. *Environmental Science and Pollution Research International* [Water environment health studies, not relevant to recreational water quality]

Rocca, Lucia Mainero; Gentili, Alessandra; Caretti, Fulvia; Curini, Roberta; Perez-Fernandez, Virginia (2015) Occurrence of non-steroidal anti-inflammatory drugs in surface waters of Central Italy by liquid chromatography-tandem mass spectrometry. *International Journal of Environmental Analytical Chemistry* 95(8)685-697 [Water environment health studies, not relevant to recreational water quality]

Romao, Daniela; Sabino, Raquel; Verissimo, Cristina; Viegas, Carla; Barroso, Helena; Duarte, Aida; Solo-Gabriele, Helena; Gunde-Cimerman, Nina; Babic, Monika Novak; Marom, Tal; Brandao, Joao (2015) Children and Sand Play: Screening of Potential Harmful Microorganisms in Sandboxes, Parks, and Beaches. *Current Fungal Infection Reports* 9(3)155-163 [Water environment health studies, not relevant to recreational water quality]

Sabino, H.; Silva Júnior, G. C. D.; Cesar, R.; Menezes, J. (2020) Heavy metals and major anion content in groundwater of Tamoios coastal district (Rio de Janeiro/Brazil): assessment of suitability for drinking purposes and human health risk. *International Journal of Environmental Analytical Chemistry* [Water environment health studies, not relevant to recreational water quality]

Satapathy, S.; Panda, C. R.; Jena, B. S. (2019) Risk-based prediction of metal toxicity in sediment and impact on human health due to consumption of seafood (*Saccostrea cucullata*) found in two highly industrialised coastal estuarine regions of Eastern India: a food safety issue. *Environmental Geochemistry and Health* 41(5)1967-1985 [Water environment health studies, not relevant to recreational water quality]

Selvam, S.; Venkatraman, S.; Hossain, M. B.; Chung, S. Y.; Khatibi, R.; Nadiri, A. A. (2020) A study of health risk from accumulation of metals in commercial edible fish species at Tuticorin coasts of southern India. *Estuarine, Coastal and Shelf Science* 245 [Water environment health studies, not relevant to recreational water quality]

Sharifinia, M.; Bahmanbeigloo, Z. A.; Keshavarzifard, M.; Khanjani, M. H.; Lyons, B. P. (2020) Microplastic pollution as a grand challenge in marine research: A closer look at their adverse impacts on the immune and reproductive systems. *Ecotoxicology and Environmental Safety* 204 [Water environment health studies, not relevant to recreational water quality]

Shim, Y. K.; Miynarek, S. P.; van Wijngaarden, E. (2009) Parental exposure to pesticides and childhood Brain cancer: U.S. Atlantic Coast Childhood Brain Cancer Study. *Environmental Health Perspectives* 117(6)1002-1006 [Water environment health studies, not relevant to recreational water quality]

Shorna, Sabikunnahar; Shawkat, Saika; Hossain, Anwar; Quraishi, Shamshad B.; Ullah, A. K. M. Atique; Hosen, Mohammad Mozammal; Hossain, Md Kamal; Saha, Badhan; Paul, Bijoya; Habibullah-Al-Mamun, Md (2020) Accumulation of Trace Metals in Indigenous Fish Species from the Old Brahmaputra River in Bangladesh and Human Health Risk Implications. *Biological Trace Element Research* [Water environment health studies, not relevant to recreational water quality]

Siddiqui, E.; Verma, K.; Pandey, U.; Pandey, J. (2019) Metal Contamination in Seven Tributaries of the Ganga River and Assessment of Human Health Risk from Fish Consumption. *Archives of Environmental Contamination and Toxicology* 77(2)263-278 [Water environment health studies, not relevant to recreational water quality]

Singh, Simrat P.; Azua, Arlette; Chaudhary, Amit; Khan, Shabana; Willett, Kristine L.; Gardinali, Piero R. (2010) Occurrence and distribution of steroids, hormones and selected pharmaceuticals in South Florida coastal environments. *Ecotoxicology (London, England)* 19(2)338-350 [Water environment health studies, not relevant to recreational water quality]

Singh, U. K.; Kumar, B. (2017) Pathways of heavy metals contamination and associated human health risk in Ajay River basin, India. *Chemosphere* 174: 183-199 [Water environment health studies, not relevant to recreational water quality]

Trigo, C. E.; Patel, F. (2020) Febrile illness after a beach day: A case of *Salmonella* bacteraemia from oral exposure to a sand dollar. *Journal of Water and Health* 18(2)239-243 [Water environment health studies, not relevant to recreational water quality]

Vetrimurugan, E.; Shruti, V. C.; Jonathan, M. P.; Roy, P. D.; Kunene, N. W.; Villegas, L. E. C. (2017) Metal concentration in the tourist beaches of South Durban: An industrial hub of South Africa. *Marine*

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Pollution Bulletin 117(1-2)538-546 [Water environment health studies, not relevant to recreational water quality]

Wade, T. J.; Augustine, S. A. J.; Griffin, S. M.; Sams, E. A.; Oshima, K. H.; Egorov, A. I.; Simmons, K. J.; Eason, T. N.; Dufour, A. P. (2018) Asymptomatic norovirus infection associated with swimming at a tropical beach: A prospective cohort study. PLoS ONE 13(3) [Water environment health studies, not relevant to recreational water quality]

Wagh, V. M.; Panaskar, D. B.; Mukate, S. V.; Aamalawar, M. L.; Laxman Sahu, U. (2020) Nitrate associated health risks from groundwater of Kadava River Basin Nashik, Maharashtra, India. Human and Ecological Risk Assessment 26(3)654-672 [Water environment health studies, not relevant to recreational water quality]

Walsh, J. J.; Lenes, J. M.; Weisberg, R. H.; Zheng, L.; Hu, C.; Fanning, K. A.; Snyder, R.; Smith, J. (2017) More surprises in the global greenhouse: Human health impacts from recent toxic marine aerosol formations, due to centennial alterations of world-wide coastal food webs. Marine Pollution Bulletin 116(1-2)14855 [Water environment health studies, not relevant to recreational water quality]

Weisskopf, M. G.; Anderson, H. A.; Hanrahan, L. P. (2003) Decreased sex ratio following maternal exposure to polychlorinated biphenyls from contaminated Great Lakes sport-caught fish: A retrospective cohort study. Environmental Health: A Global Access Science Source 2: 41640 [Water environment health studies, not relevant to recreational water quality]

Wu, Ting; Li, Xiaoping; Yang, Tao; Sun, Xuemeng; Mielke, Howard W.; Cai, Yue; Ai, Yuwei; Zhao, Yanan; Liu, Dongying; Zhang, Xu; Li, Xiaoyun; Wang, Lijun; Yu, Hongtao (2017) Multi-Elements in Source Water (Drinking and Surface Water) within Five Cities from the Semi-Arid and Arid Region, NW China: Occurrence, Spatial Distribution and Risk Assessment. International Journal of Environmental Research and Public Health 14(10)1168 [Water environment health studies, not relevant to recreational water quality]

Yang, Yahong; Hu, Min; Lu, Wanmeng; Xue, Lixia; Lin, Xiufeng; Liu, Enlu (2020) Occurrence, distribution, and risk assessment of PPCPs in water and sediments of Longgang River in Shenzhen City, south China. Desalination and Water Treatment 189: 196-206 [Water environment health studies, not relevant to recreational water quality]

Zheng, Chaoya; Liu, Jianchao; Ren, Jinghua; Shen, Jie; Fan, Jian; Xi, Ruiyu; Chen, Wei; Chen, Qing (2019) Occurrence, Distribution and Ecological Risk of Bisphenol Analogues in the Surface Water from a Water Diversion Project in Nanjing, China. International Journal of Environmental Research and Public Health 16(18)3296 [Water environment health studies, not relevant to recreational water quality]

Abdel-Kader, Heba H.; Mourad, Mohamed H. (2020) Trace elements exposure influences proximate body composition and antioxidant enzyme activities of the species tilapia and catfish in Burullus Lake-Egypt: human risk assessment for the consumers. Environmental Science and Pollution Research 27(35)43682-43684. [Water environment health studies, not relevant to recreational water quality]

Buck, G. M.; Vena, J. E.; Schisterman, E. F.; Dmochowski, J.; Mendola, P.; Sever, L. E.; Fitzgerald, E.; Kostyniak, P.; Greizerstein, H.; Olson, J. (2000) Parental consumption of contaminated sport fish from Lake Ontario and predicted fecundability. Epidemiology 11(4)388-393 [Water environment health studies, not relevant to recreational water quality]

Zhao, B.; Xu, J.; Zhang, G.; Lu, S.; Liu, X.; Li, L.; Li, M. (2021) Occurrence of antibiotics and antibiotic resistance genes in the Fuxian Lake and antibiotic source analysis based on principal component analysis-multiple linear regression model. Chemosphere 262 [Water environment health studies, not relevant to recreational water quality]

8.2.1.2. Screened on abstract or full text, or excluded due to being out of review scope

Acosta-Coley, I.; Olivero-Verbel, J. (2015) Microplastic resin pellets on an urban tropical beach in Colombia. Environmental Monitoring and Assessment 187(7) [No link to human health outcome. Observational study only]

Alves, R. I. S.; Sampaio, C. F.; Nadal, M.; Schuhmacher, M.; Domingo, J. L.; Segura-Muñoz, S. I. (2014) Metal concentrations in surface water and sediments from Pardo River, Brazil: Human health risks. Environmental Research 133: 149-155 [Tap water study, does not deal with recreational water use exposures]

Barboza, L. G. A.; Frias, J. P. G. L.; Booth, A. M.; Vieira, L. R.; Masura, J.; Baker, J.; Foster, G.; Guilhermino, L. (2018) Microplastics pollution in the marine environment. World Seas: An Environmental Evaluation Volume III: Ecological Issues and Environmental Impacts 329-351 [No link to human health outcome. Review study of ecological impacts of microplastics]

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Benhaddya, Mohammed Lamine (2020) Human health risk assessment of heavy metals from surface water of Chott Merouane, Algeria. International Journal of Environmental Analytical Chemistry [Residential and industrial exposures only, does not deal with recreational water use exposures]

Botsou, Fotini; Hatzianestis, Ioannis (2012) Polycyclic aromatic hydrocarbons (PAHs) in marine sediments of the Hellenic coastal zone, eastern Mediterranean: levels, sources and toxicological significance. Journal of Soils and Sediments 12(2)265-277 [No link to recreational uses. Observational study of marine sediments in the western Aegean Sea. Assessment against ecological guidelines]

Chen, Chong; Zou, Wenbing; Cui, Guolu; Han, Changxu; Ma, Limin (2020) Current-Use Pesticides in the River Waters of Eastern China: Occurrence and Human Health Risk Assessment. Exposure and Health [No link to recreational uses. Observational Risk Assessment study of riverine drainages supplying Yangtse at Shanghai. Ambient Pesticide concentrations and dermal and oral pathways]

Custodio, M.; Cuadrado, W.; Peñaloza, R.; Montalvo, R.; Ochoa, S.; Quispe, J. (2020) Human risk from exposure to heavy metals and arsenic in water from rivers with mining influence in the Central Andes of Peru. Water (Switzerland) 12(7) [No link to recreational uses. Observational Risk Assessment study of riverine sites impacted by mine drainage]

Ferguson, Alesia; Del Donno, Courtney; Obeng-Gyasi, Emmanuel; Mena, Kristina; Altomare, Tanu Kaur; Guerrero, Rosalia; Gidley, Maribeth; Montas, Larissa; Solo-Gabriele, Helena M. (2019) Children Exposure-Related Behavior Patterns and Risk Perception Associated with Recreational Beach Use. International Journal of Environmental Research and Public Health 16(15)2783 [No link to human health outcome]

Ferguson, Alesia; Dwivedi, Ashok Kumar; Ehindero, Esther; Adelabu, Foluke; Rattler, Kyra; Perone, Hanna Rose; Montas, Larissa; Mena, Kristina; Solo-Gabriele, Helena (2020) Soil, Hand, and Body Adherence Measures across Four Beach Areas: Potential Influence on Exposure to Oil Spill Chemicals. International Journal of Environmental Research and Public Health 17(12)4196 [No link to human health outcome. Detailed assessment of skin adherence exposures to sandy beaches at two sites at Miami and two in Texas]

Keswani, Anisha; Oliver, David M.; Gutierrez, Tony; Quilliam, Richard S. (2016) Microbial hitchhikers on marine plastic debris: Human exposure risks at bathing waters and beach environments. Marine Environmental Research 118: 10-19 [Review of microplastics as source of pathogens in bathing waters and on bathing beaches. Study does not draw any conclusions about the health risks posed by this exposure pathway]

Kim, S. M.; Choi, Y. (2019) Mapping heavy metal concentrations in Beach Sands using GIS and Portable XRF data. Journal of Marine Science and Engineering 7(2) [No link to human health outcome. Observational study only]

Lozoya, J. P.; Teixeira de Mello, F.; Carrizo, D.; Weinstein, F.; Olivera, Y.; Cedrés, F.; Pereira, M.; Fossati, M. (2016) Plastics and microplastics on recreational beaches in Punta del Este (Uruguay): Unseen critical residents? Environmental Pollution 218: 931-941 [No link to human health outcome. Observational study only]

Ogbeide, O.; Tongo, I.; Ezemonye, L. (2016) Assessing the distribution and human health risk of organochlorine pesticide residues in sediments from selected rivers. Chemosphere 144: 1319-1326 [Does not deal with recreational water use exposures]

Proshad, R.; Islam, S.; Tusher, T. R.; Zhang, D.; Khadka, S.; Gao, J.; Kundu, S. (2020) Appraisal of heavy metal toxicity in surface water with human health risk by a novel approach: a study on an urban river in vicinity to industrial areas of Bangladesh. Toxin Reviews [Does not deal with recreational water use exposures]

Retama, I.; Jonathan, M. P.; Shruti, V. C.; Velumani, S.; Sarkar, S. K.; Roy, P. D.; Rodriguez-Espinosa, P. F. (2016) Microplastics in tourist beaches of Huatulco Bay, Pacific coast of southern Mexico. Marine Pollution Bulletin 113(1-2)530-535 [Does not deal with recreational water use exposures]

Rubio-Arias, Hector; Quintana, César; Jimenez-Castro, Jorge; Quintana, Ray; Gutierrez, Melida (2010) Contamination of the Conchos River in Mexico: does it pose a health risk to local residents? International Journal of Environmental Research and Public Health 7(5)2071-2084 [Does not deal with recreational water use exposures]

Russell, Shaina; Sullivan, Caroline A.; Reichelt-Brushett, Amanda J. (2015) Aboriginal Consumption of Estuarine Food Resources and Potential Implications for Health through Trace Metal Exposure; A Study in Gumbaynggirr Country, Australia. PloS One 10(6)e0130689 [Does not deal with recreational water use exposures]



8.2.2. Studies excluded after title and abstract review

8.2.2.1. Out of scope or not in English language, or incomplete

Ai, S.; Li, J.; Wang, X.; Gao, X.; Liu, Z.; Huang, Y. (2020) Water Quality Criteria and Risk Assessment of Bisphenol A in Taihu Lake. *Research of Environmental Sciences* 33(3):581-588 [Language = Chinese]

Alho, C. J. R.; Vieira, L. M. (1997) Fish and wildlife resources in the Pantanal wetlands of Brazil and potential disturbances from the release of environmental contaminants. *Environmental Toxicology and Chemistry* 16(1):71-74 [Out of scope date range]

Ambasht, R. S.; Srivastava, N. K. (1994) Restoration strategies for the degrading Rihand River and reservoir ecosystems in India. *Global wetlands* 483-492 [Out of scope date range]

Austin, A.; Munteanu, N. (1984) Evaluation of changes in a large oligotrophic wilderness park lake exposed to mine tailing effluent for 14 years: The phytoplankton. *Environmental Pollution. Series A, Ecological and Biological* 33(1):39-62 [Out of scope date range]

Baars, B. J. (2002) The wreckage of the oil tanker 'Erika' - Human health risk assessment of beach cleaning, sunbathing and swimming. *Toxicology Letters* 128(43891):55-68 [Out of scope date range]

Balsalobre, L. C., Dropa, M., Matté, G. R., and Matté, M. H. (2009) Molecular detection of enterotoxins in environmental strains of *Aeromonas hydrophila* and *Aeromonas jandaei*. *Journal of Water and Health* 74(4):685-691 [Endotoxins out of scope]

Berg, K. A., Lyra, C., Niemi, R. M., Heens, B., Hoppu, K., Erkoma, K., et al. (2011) Virulence genes of *Aeromonas* isolates, bacterial endotoxins and cyanobacterial toxins from recreational water samples associated with human health symptoms. *Journal of Water and Health* 9(4):670-679 [Endotoxins out of scope]

Birmingham, M. E.; Lee, L. A.; Ndayimirije, N.; Nkurikiye, S.; Hersh, B. S.; Wells, J. G.; Deming, M. S. (1997) Epidemic cholera in Burundi: Patterns of transmission in the Great Rift Valley Lake region. *Lancet* 349(9057):981-985 [Out of scope date range]

Bishop, C. A.; Mahony, N. A.; Struger, J.; Ng, P.; Pettit, K. E. (1999) Anuran development, density and diversity in relation to agricultural activity in the Holland River watershed, Ontario, Canada (1990-1992). *Environmental Monitoring and Assessment* 57(1):21-43 [Out of scope date range]

Boyett, T.; Davy, L.; Weathers, L.; Campbell, R.; Van Durme, D.; Roetzheim, R. G. (2002) Sun protection of children at the beach. *Journal of the American Board of Family Practice* 15(2):112-117 [Out of scope date range]

Brownell, M. J.; Harwood, V. J.; Kurz, R. C.; McQuaig, S. M.; Lukasik, J.; Scott, T. M. (2007) Confirmation of putative stormwater impact on water quality at a Florida beach by microbial source tracking methods and structure of indicator organism populations. *Water Research* 41(16):3747-3757 [Microbial risks out of scope]

Buatois, L. A.; Mángano, M. G.; Carr, T. R. (1999) Sedimentology and ichnology of paleozoic estuarine and shoreface reservoirs, morrow sandstone, lower Pennsylvanian of southwest Kansas, USA. *Current Research in Earth Sciences* 243(1):12785 [Out of scope date range]

de Man, H., Heederik, D. D. J., Leenen, E. J. T. M., de Roda Husman, A. M., Spithoven, J. J. G., and van Knapen, F. (2014) Human exposure to endotoxins and fecal indicators originating from water features. *Water Research* 51: 198-205 [Endotoxins out of scope]

Lévesque, B., Gervais, M. C., Chevalier, P., Gauvin, D., Anassour-Laouan-Sidi, E., Gingras, S., et al. (2016) Exposure to cyanobacteria: Acute health effects associated with endotoxins. *Public Health* 134: 98-101 [Endotoxins out of scope]

No author (2018) 42nd Annual Meeting of the Developmental Neurotoxicology Society: Held in conjunction with the 58th annual meeting of the Teratology Society, Hilton Clearwater Beach Resort Clearwater Beach, FL June 23-27, 2018. *Neurotoxicology and Teratology* 67: 76-93 [Incomplete reference]

No author (2005) Coast-to-coast polio drive to counter epidemic in Africa. *Indian Journal of Medical Sciences* 59(2):86-87 [Incomplete reference]

No author (2008) Marine Technology Society - Conference on Underwater Intervention 2008, UI 2008. [Incomplete reference]

Papadopoulos, Argyrios; Koroneos, Antonios; Christofides, Georgios; Stoulos, Stylianos (2015) Natural radioactivity distribution and gamma radiation exposure of beach sands close to Kavala pluton, Greece. *Open Geosciences* 7(1):407-422 [Radionuclides out of scope]



Zhang, C., Tian, F., Zhang, M., Zhang, Z., Bai, M., Guo, G., et al. (2019) Endotoxin contamination, a potentially important inflammation factor in water and wastewater: A review. *Science of The Total Environment* 681: 365–378 [Endotoxins out of scope]

Zwiener, Christian; Richardson, Susan D.; De Marini, David M.; Grummt, Tamara; Glauner, Thomas; Frimmel, Fritz H. (2007) Drowning in disinfection byproducts? Assessing swimming pool water. *Environmental Science & Technology* 41(2)363-372 [Swimming pools out of scope]

8.2.2.2. Screened on title or title/abstract: not relevant to primary or secondary research questions

Abd Rashid, Rasdi; Heidary, Fatemeh; Hussein, Adil; Hitam, Wan Hazabbah Wan; Abd Rashid, Rohana; Abd Ghani, Zulkifli; Omar, Nor Anita Che; Mustari, Zuraidah; Shatriah, Ismail (2011) Ocular burns and related injuries due to fireworks during the Aidil Fitri celebration on the East Coast of the Peninsular Malaysia. *Burns* 37(1)170-173 [Not relevant to primary or secondary research questions]

Abdelhafez, Ahmed A.; Li, Jianhua (2015) Environmental Monitoring of Heavy Metal Status and Human Health Risk Assessment in the Agricultural Soils of the Jinxi River Area, China. *Human and Ecological Risk Assessment* 21(4)952-971 [Not relevant to primary or secondary research questions]

Abed, R. M. M.; Al-Kharusi, S.; Prigent, S.; Headley, T. (2014) Diversity, distribution and hydrocarbon biodegradation capabilities of microbial communities in oil-contaminated cyanobacterial mats from a constructed wetland. *PLoS ONE* 9(12) [Not relevant to primary or secondary research questions]

Abella, J.; Fahy, A.; Duran, R.; Cagnon, C. (2015) Integron diversity in bacterial communities of freshwater sediments at different contamination levels. *FEMS Microbiology Ecology* 91(12) [Not relevant to primary or secondary research questions]

Acharya, S.; Pentapati, K. C.; Acharya, S. (2014) Socioeconomic mobility and tobacco consumption patterns in fish industry workers in Udupi District of coastal Karnataka. *Indian Journal of Dental Research* 25(5)653-656 [Not relevant to primary or secondary research questions]

Acosta-Coley, I.; Duran-Izquierdo, M.; Rodriguez-Cavallo, E.; Mercado-Camargo, J.; Mendez-Cuadro, D.; Olivero-Verbel, J. (2019) Quantification of microplastics along the Caribbean Coastline of Colombia: Pollution profile and biological effects on *Caenorhabditis elegans*. *Marine Pollution Bulletin* 146: 574-583 [Not relevant to primary or secondary research questions]

Acosta-González, A.; Marqués, S. (2016) Bacterial diversity in oil-polluted marine coastal sediments. *Current Opinion in Biotechnology* 38: 24-32 [Not relevant to primary or secondary research questions]

Acosta-González, A.; Martirani-von Abercron, S. M.; Rosselló-Móra, R.; Wittich, R. M.; Marqués, S. (2015) The effect of oil spills on the bacterial diversity and catabolic function in coastal sediments: a case study on the Prestige oil spill. *Environmental Science and Pollution Research* 22(20)15200-15214 [Not relevant to primary or secondary research questions]

Acosta-González, A.; Rosselló-Móra, R.; Marqués, S. (2013) Diversity of benzylsuccinate synthase-like (bssA) genes in hydrocarbon-polluted marine sediments suggests substrate-dependent clustering. *Applied and Environmental Microbiology* 79(12)3667-3676 [Not relevant to primary or secondary research questions]

Adali, Y.; Koca, Y. Basimoglu (2016) Effects of Pollution on Some Tissues of Fish Collected from Different Regions of Buyuk Menderes River: A Histopathological Study. *Journal of Environmental Protection and Ecology* 17(2)477-487 [Not relevant to primary or secondary research questions]

Adeleke, Babatunde; Robertson-Andersson, Deborah; Moodley, Gan (2020) Comparative analysis of trace metal levels in the crab Dotilla fenestrata, sediments and water in Durban Bay harbour, Richards Bay harbour and Mlalazi estuary, Kwazulu-Natal, South Africa. *Heliyon* 6(8)e04725 [Not relevant to primary or secondary research questions]

Adeniji, A. O.; Okoh, O. O.; Okoh, A. (2019) Levels of Polycyclic Aromatic Hydrocarbons in the Water and Sediment of Buffalo River Estuary, South Africa and Their Health Risk Assessment. *Archives of Environmental Contamination and Toxicology* 76(4)657-669 [Not relevant to primary or secondary research questions]

Adhikari, A. R.; Acharya, K.; Shanahan, S. A.; Zhou, X. (2011) Removal of nutrients and metals by constructed and naturally created wetlands in the Las Vegas Valley, Nevada. *Environmental Monitoring and Assessment* 180(43922)97-113 [Not relevant to primary or secondary research questions]



Adineh, Maede; Ghaderi, Mostafa; Mousavi-Nasab, Seyed Dawood (2019) Occurrence of Salivirus in Sewage and River Water Samples in Karaj, Iran. *Food and Environmental Virology* 11(2)193-197 [Not relevant to primary or secondary research questions]

Adriaenssens, Evelien M.; Farkas, Kata; Harrison, Christian; Jones, David L.; Allison, Heather E.; McCarthy, Alan J. (2018) Viromic Analysis of Wastewater Input to a River Catchment Reveals a Diverse Assemblage of RNA Viruses. *mSystems* 3(3) [Not relevant to primary or secondary research questions]

Aguilar, M.; Richardson, E.; Tan, B.; Walker, G.; Dunfield, P. F.; Bass, D.; Nesbø, C.; Foght, J.; Dacks, J. B. (2016) Next-Generation Sequencing Assessment of Eukaryotic Diversity in Oil Sands Tailings Ponds Sediments and Surface Water. *Journal of Eukaryotic Microbiology* 63(6)732-743 [Not relevant to primary or secondary research questions]

Ahmed, A. S. Shafiuuddin; Sultana, Sharmin; Habib, Ahsan; Ullah, Hadayet; Musa, Najiah; Hossain, M. Belal; Rahman, Md Mahfujur; Sarker, Md Shafiqul Islam (2019) Bioaccumulation of heavy metals in some commercially important fishes from a tropical river estuary suggests higher potential health risk in children than adults. *Plos One* 14(10)e0219336 [Not relevant to primary or secondary research questions]

Ahmed, W.; Hargreaves, M.; Goonetilleke, A.; Katouli, M. (2008) Population similarity analysis of indicator bacteria for source prediction of faecal pollution in a coastal lake. *Marine Pollution Bulletin* 56(8)1469-1475 [Not relevant to primary or secondary research questions]

Akhurst, D. J.; Clark, M. W.; Reichelt-Brushett, A. J.; Jones, G. B. (2012) Elemental speciation and distribution in sediments of a eutrophied subtropical freshwater reservoir using postextraction normalisation. *Water, Air, and Soil Pollution* 223(7)4589-4604 [Not relevant to primary or secondary research questions]

Alava, J. J.; Calle, P.; Tirapé, A.; Biedenbach, G.; Cadena, O. A.; Maruya, K.; Lao, W.; Aguirre, W.; Jiménez, P. J.; Domínguez, G. A.; Bossart, G. D.; Fair, P. A. (2020) Persistent Organic Pollutants and Mercury in Genetically Identified Inner Estuary Bottlenose Dolphin (*Tursiops truncatus*) Residents of the Guayaquil Gulf, Ecuador: Ecotoxicological Science in Support of Pollutant Management and Cetacean Conservation. *Frontiers in Marine Science* 7 [Not relevant to primary or secondary research questions]

Al-Awlaqi, N. A.; Shazili, N. A. M.; Nurulnadia, M. Y. (2019) Spatial and seasonal variation of metal accumulation in brown seaweed, *padina* spp. On the south China sea coast of Terengganu, Peninsular Malaysia. *AACL Bioflux* 12(5)1592-1605 [Not relevant to primary or secondary research questions]

Albert, James S.; Crampton, William G. R. (2009) A new species of electric knifefish, genus *Compsaraia* (Gymnotiformes: Apterodontidae) from the Amazon River, with extreme sexual dimorphism in snout and jaw length. *Systematics and Biodiversity* 7(1)81-92 [Not relevant to primary or secondary research questions]

Alberto Rojas-Fernandez, Jose; Rafael Benitez-Diaz, Pedro; Alejandro Rivas-Rojas, Edgard; Miranda-Contreras, Leticia (2019) Pesticide residues in agricultural soils of Los Zarzales micro-watershed, Rivas Davila municipality, Merida state, Venezuela. *Revista Internacional De Contaminacion Ambiental* 35(2)307-315 [Not relevant to primary or secondary research questions]

Alejandra Mondragon, Veronica; Llamas-Perez, Damaris F.; Gonzalez-Guzman, Gladis E.; Marquez-Gonzalez, Antonio R.; Padilla-Noriega, Roberto; de Jesus Duran-Avelar, Ma; Franco, Bernardo (2011) Identification of *Enterococcus faecalis* bacteria resistant to heavy metals and antibiotics in surface waters of the Mololoa River in Tepic, Nayarit, Mexico. *Environmental Monitoring and Assessment* 183(43922)329-340 [Not relevant to primary or secondary research questions]

Allouche, Mohamed; Nasri, Ahmed; Harrath, Abdel Halim; Mansour, Lamjed; Beyrem, Hamouda; Boufahja, Fehmi (2020) Migratory behavior of free-living marine nematodes surrounded by sediments experimentally contaminated by mixtures of polycyclic aromatic hydrocarbons. *Journal of King Saud University Science* 32(2)1339-1345 [Not relevant to primary or secondary research questions]

Alm, E. W.; Zimbler, D.; Callahan, E.; Plomaritis, E. (2014) Patterns and persistence of antibiotic resistance in faecal indicator bacteria from freshwater recreational beaches. *Journal of Applied Microbiology* 117(1)273-285 [Not relevant to primary or secondary research questions]

Al-Madbouh, S.; Al-Khatib, I. A.; Al-Sari, M. I.; Salahat, J. I.; Jararaa, B. Y. A.; Ribbe, L. (2019) Socioeconomic, agricultural, and individual factors influencing farmers' perceptions and willingness of compost production and use: an evidence from Wadi al-Far'a Watershed-Palestine. *Environmental Monitoring and Assessment* 191(4) [Not relevant to primary or secondary research questions]

Al-Mahruki, A.; Al-Mueini, R.; Al-Mahrooqi, Y.; Al-Sabahi, A.; Roos, G. H. P.; Patzelt, H. (2006) Significantly enhanced landfarm performance through the use of saline water and weekly tilling. 2: 561-565 [Not relevant to primary or secondary research questions]

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Alonso, D. L.; Pérez, R.; Okio, C. K. Y. A.; Castillo, E. (2020) Assessment of mining activity on arsenic contamination in surface water and sediments in southwestern area of Santurbán paramo, Colombia. *Journal of Environmental Management* 264 [Not relevant to primary or secondary research questions]

Aloulou, Fatma; EllEuch, Boubaker; Kallel, Monem (2012) Benthic foraminiferal assemblages as pollution proxies in the northern coast of Gabes Gulf, Tunisia. *Environmental Monitoring and Assessment* 184(2)777-795 [Not relevant to primary or secondary research questions]

Allsopp, N.; Gaika, L.; Knight, R.; Monakisi, C.; Hoffman, M. T. (2007) The impact of heavy grazing on an ephemeral river system in the succulent karo, South Africa. *Journal of Arid Environments* 71(1)82-96 [Not relevant to primary or secondary research questions]

Alvarez-Aguilar, A.; Rodríguez-Villanueva, V.; Macías-Zamora, J. V.; Ramírez-Álvarez, N.; Hernández-Guzmán, F. A. (2017) Spatio-temporal analysis of benthic polychaete community structure in the north-western coast of Baja California, Mexico. *Journal of the Marine Biological Association of the United Kingdom* 97(5)993-1005 [Not relevant to primary or secondary research questions]

Alvarez-Ortega, Neda; Caballero-Gallardo, Karina; Olivero-Verbel, Jesus (2019) Toxicological effects in children exposed to lead: A cross-sectional study at the Colombian Caribbean coast. *Environment International* 130: 104809 [Not relevant to primary or secondary research questions]

Al-Zamel, A. Z.; Al-Sarawi, M. A.; Khader, S. R.; Al-Rifaify, I. A. (2009) Benthic foraminifera from polluted marine environment of Sulaibikhat Bay (Kuwait). *Environmental Monitoring and Assessment* 149(43922)395-409 [Not relevant to primary or secondary research questions]

Amao, A. O.; Qurban, M. A.; Kaminski, M. A.; Joydas, T. V.; Manikandan, P. K.; Frontalini, F. (2020) Dataset showing the abundance and distribution of benthic foraminifera in relation to marine sediment parameters from western Arabian Gulf. *Data in Brief* 28 [Not relevant to primary or secondary research questions]

Ambrosone, A.; Roopin, M.; Pelaz, B.; Abdelmonem, A. M.; Ackermann, L. M.; Mattera, L.; Allocca, M.; Tino, A.; Klapper, M.; Parak, W. J.; Levy, O.; Tortiglione, C. (2017) Dissecting common and divergent molecular pathways elicited by CdSe/ZnS quantum dots in freshwater and marine sentinel invertebrates. *Nanotoxicology* 11(2)289-303 [Not relevant to primary or secondary research questions]

Amos, G. C. A.; Zhang, L.; Hawkey, P. M.; Gaze, W. H.; Wellington, E. M. (2014) Functional metagenomic analysis reveals rivers are a reservoir for diverse antibiotic resistance genes. *Veterinary Microbiology* 171(43924)441-447 [Not relevant to primary or secondary research questions]

Anbleyth-Evans, Jeremy; Araos Leiva, Francisco; Ther Rios, Francisco; Segovia Cortes, Ricardo; Haussermann, Vreni; Aguirre-Munoz, Carolina (2020) Toward marine democracy in Chile: Examining aquaculture ecological impacts through common property local ecological knowledge. *Marine Policy* 113: 103690 [Not relevant to primary or secondary research questions]

Anderson, P. D.; Johnson, A. C.; Pfeiffer, D.; Caldwell, D. J.; Hannah, R.; Mastrocco, F.; Sumpter, J. P.; Williams, R. J. (2012) Endocrine disruption due to estrogens derived from humans predicted to be low in the majority of U.S. surface waters. *Environmental Toxicology and Chemistry* 31(6)1407-1415 [Not relevant to primary or secondary research questions]

Andrade, F.; Aravinda, H. B.; Puttaiah, E. T. (2011) Study of Mangalore coastal water pollution by analysis of physico - Chemical parameters. *International Journal of Earth Sciences and Engineering* 4(1)57-64 [Not relevant to primary or secondary research questions]

Andrade, M. C.; Winemiller, K. O.; Barbosa, P. S.; Fortunati, A.; Chelazzi, D.; Cincinelli, A.; Giarrizzo, T. (2019) First account of plastic pollution impacting freshwater fishes in the Amazon: Ingestion of plastic debris by piranhas and other serrasalmids with diverse feeding habits. *Environmental Pollution* 244: 766-773 [Not relevant to primary or secondary research questions]

Antizar-Ladislao, B.; Bhattacharya, B. D.; Chaudhuri, S. Ray; Sarkar, S. K. (2015) Impact of silver nanoparticles on benthic prokaryotes in heavy metal-contaminated estuarine sediments in a tropical environment. *Marine Pollution Bulletin* 99(43862)104-111 [Not relevant to primary or secondary research questions]

Anyanwu, Emeka Donald; Nwachukwu, Emeka David (2020) Heavy metal content and health risk assessment of a South-eastern Nigeria River. *Applied Water Science* 10(9)210 [Not relevant to primary or secondary research questions]

Aquino, Monica; Luis Martinez-Guitarte, Jose; Garcia, Pilar; Maria Beltran, Eulalia; Fernandez, Carlos; Sanchez-Arguello, Paloma (2018) Combining the assessment of apical endpoints and gene expression in the freshwater snail *Physa acuta* after exposure to reclaimed water. *Science of the Total Environment* 642: 180-189 [Not relevant to primary or secondary research questions]

Araujo, Susana; Henriques, Isabel S.; Leandro, Sergio Miguel; Alves, Artur; Pereira, Anabela; Correia, Antonio (2014) Gulls identified as major source of fecal pollution in coastal waters: A microbial



source tracking study. *Science of the Total Environment* 470: 84-91 [Not relevant to primary or secondary research questions]

Aravantinou, A. F.; Tsarpali, V.; Dailianis, S.; Manariotis, I. D. (2015) Effect of cultivation media on the toxicity of ZnO nanoparticles to freshwater and marine microalgae. *Ecotoxicology and Environmental Safety* 114: 109-116 [Not relevant to primary or secondary research questions]

Archambault, J. M.; Bergeron, C. M.; Cope, W. G.; Lazaro, P. R.; Leonard, J. A.; Shea, D. (2017) Assessing toxicity of contaminants in riverine suspended sediments to freshwater mussels. *Environmental Toxicology and Chemistry* 36(2)395-407 [Not relevant to primary or secondary research questions]

Archundia, D.; Duwig, C.; Spadini, L.; Morel, M. C.; Prado, B.; Perez, M. P.; Orsag, V.; Martins, J. M. F. (2019) Assessment of the Sulfamethoxazole mobility in natural soils and of the risk of contamination of water resources at the catchment scale. *Environment International* 130 [Not relevant to primary or secondary research questions]

Arias, Andres H.; Spetter, Carla V.; Freije, Ruben H.; Marcovecchio, Jorge E. (2009) Polycyclic aromatic hydrocarbons in water, mussels (Brachidontes sp., Tagelus sp.) and fish (Odontesthes sp.) from Bahia Blanca Estuary, Argentina. *Estuarine Coastal and Shelf Science* 85(1)67-81 [Not relevant to primary or secondary research questions]

Arruti, A.; Fernández-Olmo, I.; Irabien, A. (2011) Regional evaluation of particulate matter composition in an Atlantic coastal area (Cantabria region, northern Spain): Spatial variations in different urban and rural environments. *Atmospheric Research* 101(43862)280-293 [Not relevant to primary or secondary research questions]

Artunduaga-López, J. P.; Jaramillo-Justinico, A.; Salazar-Uribe, J. C.; Mazo-Lopera, M. A.; Rodríguez-Cortés, F. J. (2020) A methodology for analysis of environmental impacts in offshore regions. Example for deep marine territories, in front of the coast of Córdoba department, Colombia. *DYNA (Colombia)* 87(213)222-231 [Not relevant to primary or secondary research questions]

Aryafar, A.; Gholami, R.; Rooki, R.; Ardejani, F. Doulati (2012) Heavy metal pollution assessment using support vector machine in the Shur River, Sarcheshmeh copper mine, Iran. *Environmental Earth Sciences* 67(4)1191-1199 [Not relevant to primary or secondary research questions]

Asare-Donkor, Noah Kyame; Boadu, Thomas Asare; Adimado, Anthony Apeke (2016) Evaluation of groundwater and surface water quality and human risk assessment for trace metals in human settlements around the Bosomtwe Crater Lake in Ghana. *SpringerPlus* 5(1)1812 [Not relevant to primary or secondary research questions]

Ashwini, S. K.; Varghese, George K. (2020) Environmental forensic analysis of the microplastic pollution at "Nattika" Beach, Kerala Coast, India. *Environmental Forensics* 21(1)21-36 [Not relevant to primary or secondary research questions]

Aubertheau, E.; Stalder, T.; Mondamert, L.; Ploy, M. C.; Dagot, C.; Labanowski, J. (2017) Impact of wastewater treatment plant discharge on the contamination of river biofilms by pharmaceuticals and antibiotic resistance. *Science of the Total Environment* 579: 1387-1398 [Not relevant to primary or secondary research questions]

Avigliano, Esteban; Schlotthauer, Jonatan; Maichak de Carvalho, Barbara; Sigrist, Mirna; Volpedo, Alejandra V. (2020) Inter-and intra-stock bioaccumulation of anionic arsenic species in an endangered catfish from South American estuaries: Risk assessment through consumption. *Journal of Food Composition and Analysis* 87: 103404 [Not relevant to primary or secondary research questions]

Axelstad, M.; Boberg, J.; Nellemann, C.; Kiersgaard, M.; Jacobsen, P. R.; Christiansen, S.; Hougaard, K. S.; Hass, U. (2011) Exposure to the widely used fungicide mancozeb causes thyroid hormone disruption in rat dams but no behavioral effects in the offspring. *Toxicological Sciences* 120(2)439-446 [Not relevant to primary or secondary research questions]

Ayadi, N.; Zghal, I.; Aloulou, F.; Bouzid, J. (2016) Impacts of several pollutants on the distribution of recent benthic foraminifera: the southern coast of Gulf of Gabes, Tunisia. *Environmental Science and Pollution Research* 23(7)6414-6429 [Not relevant to primary or secondary research questions]

Azad, S. a K.; Mallika, Naga E.; Reddy, Bhaskar G.; Kumar, Naveen G. (2016) Ethnic methodology of preparation of low fat meat products in North Coastal Andhra Pradesh. *Indian Journal of Traditional Knowledge* 15(2)285-291 [Not relevant to primary or secondary research questions]

Azevedo, F. C. R.; Vaz, I. C. D.; Barbosa, F. A. R.; Magalhães, S. M. S. (2019) Toxicological effects of ciprofloxacin and chlorhexidine on growth and chlorophyll a synthesis of freshwater cyanobacteria. *Brazilian Journal of Pharmaceutical Sciences* 55 [Not relevant to primary or secondary research questions]

Azhdar, Zakieh; Ghaderi, Mostafa; Mousavi-Nasab, Seyed Dawood (2019) Optimization of RT-qPCR for Detection of Aichi Virus in Sewage and River Water Samples in Karaj, Iran. *Archives of Iranian Medicine* 22(5)242-246 [Not relevant to primary or secondary research questions]

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Baas, J.; Kooijman, B. (2010) Chemical contamination and the ecological quality of surface water. *Environmental Pollution* 158(5)1603-1607 [Not relevant to primary or secondary research questions]

Bábek, O.; Kielar, O.; Lendáková, Z.; Mandlíková, K.; Sedláček, J.; Tolaszová, J. (2020) Reservoir deltas and their role in pollutant distribution in valley-type dam reservoirs: Les Království Dam, Elbe River, Czech Republic. *Catena* 184 [Not relevant to primary or secondary research questions]

Bachanek, Teresa; Ogonovsky, Roman; Hendzel, Barbara; Pitura, Karolina; Jarosz, Zbigniew; Wolanska, Ewa; Samborski, Dariusz; Hrynovets, Volodymir; Szybinski, Volodymir; Hrynioh, Volodymir (2018) Condition of mineralized tooth tissues of inhabitants of Szackie Lake District (Ukraine regarding silver content and selected macro-elements in drinking water and soil. *Annals of Agricultural and Environmental Medicine* 25(4)581-586 [Not relevant to primary or secondary research questions]

Bachanek, Teresa; Ogonovsky, Roman; Hendzel, Barbara; Pitura, Karolina; Jarosz, Zbigniew; Wolańska, Ewa; Samborski, Dariusz; Hrynovets, Volodymir; Szybiński, Volodymir; Hrynioh, Volodymir (2018) The condition of mineralized tooth tissue of the inhabitants of Szackie Lake District (Ukraine) with regard to the content of silver and chosen microelements in drinking water and the soil. *Annals of agricultural and environmental medicine: AAEM* 25(4)581-586 [Not relevant to primary or secondary research questions]

Bahnmüller, S.; von Gunten, U.; Canonica, S. (2014) Sunlight-induced transformation of sulfadiazine and sulfamethoxazole in surface waters and wastewater effluents. *Water Research* 57: 183-192 [Not relevant to primary or secondary research questions]

Baikie, I. D.; Dennis, F.; Crawford, R.; Scirea, M. (2004) Material analysis and radioisotope studies of spent nuclear fuel found in the marine environment. *Scientific Basis for Nuclear Waste Management* Xxviii 824: 577-582 [Not relevant to primary or secondary research questions]

Baki, Mohammad Abdul; Shojib, Md Fajul Haque; Sehrin, Subrina; Chakraborty, Sanjay; Choudhury, Tasrina Rabia; Bristy, Moumita Saha; Ahmed, Md Kawser; Yusoff, Sumiani Binti; Khan, Md Firoz (2020) Health risk assessment of heavy metal accumulation in the Buriganga and Turag River systems for *Puntius ticto*, *Heteropneustes fossilis*, and *Channa punctatus*. *Environmental Geochemistry and Health* 42(2)531-543 [Not relevant to primary or secondary research questions]

Baktybaeva, Z. B.; Suleymanov, R. A.; Yamalov, S. M.; Kulagin, A. A.; Valeev, T. K.; Rakhmatullin, N. R. (2016) Evaluation of the content and migration of heavy metals in components of river ecosystems' of mining territories of the republic of bashkortostan. *Gigiena i Sanitariya* 95(9)822-827 [Not relevant to primary or secondary research questions]

Baktybaeva, Z. B.; Yamalov, S. M.; Suyundukov, Ya T. (2011) Effect of Heavy Metal Pollution on Plant Communities of the Tanalyk River, the Bashkir Transural Region. *Russian Journal of Ecology* 42(5)378-381 [Not relevant to primary or secondary research questions]

Balcom, P. H.; Fitzgerald, W. F.; Vandal, G. M.; Lamborg, C. H.; Rolflus, K. R.; Langer, C. S.; Hammerschmidt, C. R. (2004) *Mercury sources and cycling in the Connecticut River and Long Island Sound*. *Marine Chemistry* 90(43922)53-74 [Not relevant to primary or secondary research questions]

Balderrama-Carmona, A. P.; Bisher-Alvarez, Y.; Silva-Beltran, N. P.; Ayala-Parra, P. A.; Felipe-Ortega-Fonseca, X. (2019) Estimating the health risk assessment of the consumption of *Oreochromis niloticus*, tap water, surface water and prey sediments, contaminated with heavy metals in communities close to a copper mine and to Adolfo Ruiz Cortines dam, in Sonora, Mexico. *Revista Bio Ciencias* 6: UNSP-e522 [Not relevant to primary or secondary research questions]

Baldwin, A. K.; Corsi, S. R.; Oliver, S. K.; Lenaker, P. L.; Nott, M. A.; Mills, M. A.; Norris, G. A.; Paatero, P. (2020) Primary Sources of Polycyclic Aromatic Hydrocarbons to Streambed Sediment in Great Lakes Tributaries Using Multiple Lines of Evidence. *Environmental Toxicology and Chemistry* 39(7)1392-1408 [Not relevant to primary or secondary research questions]

Balthis, W. L.; Hyland, J. L.; Fulton, M. H.; Pennington, P. L.; Cooksey, C.; Key, P. B.; Delorenzo, M. E.; Wirth, E. F. (2010) Effects of chemically spiked sediments on estuarine benthic communities: A controlled mesocosm study. *Environmental Monitoring and Assessment* 161(43922)191-203 [Not relevant to primary or secondary research questions]

Bao, Yanping; Jin, Xiaohu; Guo, Chuling; Lu, Guining; Dang, Zhi (2020) Sulfate-reducing bacterial community shifts in response to acid mine drainage in the sediment of the Hengshi watershed, South China. *Environmental Science and Pollution Research* 28(2021)2822-2834 [Not relevant to primary or secondary research questions]

Barchanska, Hanna; Sajdak, Marcin; Szczypta, Kornelia; Swientek, Angelika; Tworek, Martyna; Kurek, Magdalena (2017) Atrazine, triketone herbicides, and their degradation products in sediment, soil and surface water samples in Poland. *Environmental Science and Pollution Research* 24(1)644-658 [Not relevant to primary or secondary research questions]

Bargiela, R.; Mapelli, F.; Rojo, D.; Chouaia, B.; Tornés, J.; Borin, S.; Richter, M.; Del Pozo, M. V.; Cappello, S.; Gertler, C.; Genovese, M.; Denaro, R.; Martínez-Martínez, M.; Fodelianakis, S.; Amer, R. A.;

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Bigazzi, D.; Han, X.; Chen, J.; Chernikova, T. N.; Golyshina, O. V.; Mahjoubi, M.; Jaouani, A.; Benzha, F.; Magagnini, M.; Hussein, E.; Al-Horani, F.; Cherif, A.; Blaghen, M.; Abdel-Fattah, Y. R.; Kalogerakis, N.; Barbas, C.; Malkawi, H. I.; Golyshin, P. N.; Yakimov, M. M.; Daffonchio, D.; Ferrer, M. (2015) Bacterial population and biodegradation potential in chronically crude oil-contaminated marine sediments are strongly linked to temperature. *Scientific Reports* 5 [Not relevant to primary or secondary research questions]

Barkia, I.; Al-Haj, L.; Abdul Hamid, A.; Zakaria, M.; Saari, N.; Zadjali, F. (2019) Indigenous marine diatoms as novel sources of bioactive peptides with antihypertensive and antioxidant properties. *International Journal of Food Science and Technology* 54(5)1514-1522 [Not relevant to primary or secondary research questions]

Barkovskii, A. L.; Babb, C. M.; Hurley, D.; Shin, E. (2015) Origins and environmental mobility of antibiotic resistance genes, virulence factors and bacteria in a tidal creek's watershed. *Journal of Applied Microbiology* 118(3)764-776 [Not relevant to primary or secondary research questions]

Barmo, C.; Ciacci, C.; Canonico, B.; Fabbri, R.; Cortese, K.; Balbi, T.; Marcomini, A.; Pojana, G.; Gallo, G.; Canesi, L. (2013) In vivo effects of n-TiO₂ on digestive gland and immune function of the marine bivalve *Mytilus galloprovincialis*. *Aquatic Toxicology* 132-133: 43344 [Not relevant to primary or secondary research questions]

Barnes, Robert J.; van der Gast, Christopher J.; Riba, Olga; Lehtovirta, Laura E.; Prosser, James I.; Dobson, Peter J.; Thompson, Ian P. (2010) The impact of zero-valent iron nanoparticles on a river water bacterial community. *Journal of Hazardous Materials* 184(43891)73-80 [Not relevant to primary or secondary research questions]

Barrows, Abigail P. W.; Christiansen, Katie S.; Bode, Emma T.; Hoellein, Timothy J. (2018) A watershed-scale, citizen science approach to quantifying microplastic concentration in a mixed land-use river. *Water Research* 147: 382-392 [Not relevant to primary or secondary research questions]

Bartlett, A. J.; Hedges, A. M.; Intini, K. D.; Brown, L. R.; Maisonneuve, F. J.; Robinson, S. A.; Gillis, P. L.; de Solla, S. R. (2019) Acute and chronic toxicity of neonicotinoid and butenolide insecticides to the freshwater amphipod, *Hyalella azteca*. *Ecotoxicology and Environmental Safety* 175: 215-223 [Not relevant to primary or secondary research questions]

Bartolomé, L.; Etxebarria, N.; Alonso, M.; Navarro, P.; Ortiz-Zarragoitia, M. (2012) A chemical and biological approach to phthalates contamination in two estuaries from the basque coast (Bay of Biscay): Levels, distribution and biomarker responses. *Phthalates: Chemical Properties, Impacts on Health and the Environment* 61-86 [Not relevant to primary or secondary research questions]

Basso, Lorena; Rizzo, Lucia; Marzano, Marinella; Intranuovo, Marianna; Fosso, Bruno; Pesole, Graziano; Piraino, Stefano; Stabili, Loredana (2019) Jellyfish summer outbreaks as bacterial vectors and potential hazards for marine animals and humans health? The case of *Rhizostoma pulmo* (Scyphozoa, Cnidaria). *The Science of the Total Environment* 692: 305-318 [Not relevant to primary or secondary research questions]

Basturk, Emine (2019) Assessing Water Quality of Mamasin Dam, Turkey: Using Water Quality Index Method, Ecological and Health Risk Assessments. *Clean-Soil Air Water* 47(12)1900251 [Not relevant to primary or secondary research questions]

Batbayar, G.; Pfeiffer, M.; von Tümpeling, W.; Kappas, M.; Karthe, D. (2017) Chemical water quality gradients in the Mongolian sub-catchments of the Selenga River basin. *Environmental Monitoring and Assessment* 189(8) [Not relevant to primary or secondary research questions]

Batty, L. C.; Atkin, L.; Manning, D. A. C. (2005) Assessment of the ecological potential of mine-water treatment wetlands using a baseline survey of macroinvertebrate communities. *Environmental Pollution* 138(3)412-419 [Not relevant to primary or secondary research questions]

Bayo, J.; Rojo, D.; Olmos, S. (2019) Abundance, morphology and chemical composition of microplastics in sand and sediments from a protected coastal area: The Mar Menor lagoon (SE Spain). *Environmental Pollution* 252: 1357-1366 [Not relevant to primary or secondary research questions]

Bayona, Y.; Roucaute, M.; Cailleaud, K.; Lagadic, L.; Bassères, A.; Caquet, T. (2015) Effect of thiram and of a hydrocarbon mixture on freshwater macroinvertebrate communities in outdoor stream and pond mesocosms: I. Study design, chemicals fate and structural responses. *Ecotoxicology* 24(9)1976-1995 [Not relevant to primary or secondary research questions]

Bayona, Y.; Roucaute, M.; Cailleaud, K.; Lagadic, L.; Bassères, A.; Caquet, T. (2014) Isotopic niche metrics as indicators of toxic stress in two freshwater snails. *Science of the Total Environment* 484(1)102-113 [Not relevant to primary or secondary research questions]

Bayoumi, R. A.; El-Nagar, A. Y. (2009) Safe control methods of petroleum crude oil pollution in the mangrove forests of the Egyptian Red sea coast. *Journal of Applied Sciences Research* 5(12)2435-2447 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

122



Becker, Jeremias Martin; Russo, Renato; Shahid, Naeem; Liess, Matthias (2020) Drivers of pesticide resistance in freshwater amphipods. *The Science of the Total Environment* 735: 139264 [Not relevant to primary or secondary research questions]

Beddow, J.; Stölpe, B.; Cole, P. A.; Lead, J. R.; Sapp, M.; Lyons, B. P.; McKew, B.; Steinke, M.; Benyahia, F.; Colbeck, I.; Whitby, C. (2014) Estuarine sediment hydrocarbon-degrading microbial communities demonstrate resilience to nanosilver. *International Biodegradation and Biodegradation* 96: 206-215 [Not relevant to primary or secondary research questions]

Behbahaninia, A. (2007) Physico-chemical characteristics and pollution levels of heavy metals in Jajrood River, East of Tehran, Iran. 142-145 [Not relevant to primary or secondary research questions]

Behrooz, R. Dahmardeh; Sari, A. Esmaili; Bahramifar, N.; Ghasempouri, S. M. (2009) Organochlorine pesticide and polychlorinated biphenyl residues in human milk from the Southern Coast of Caspian Sea, Iran. *Chemosphere* 74(7)931-937 [Not relevant to primary or secondary research questions]

Beketov, M. A.; Liess, M. (2008) Acute and delayed effects of the neonicotinoid insecticide thiacloprid on seven freshwater arthropods. *Environmental Toxicology and Chemistry* 27(2)461-470 [Not relevant to primary or secondary research questions]

Belan, T. A. (2004) Marine environmental quality assessment using polychaete taxocene characteristics in Vancouver Harbour. *Marine Environmental Research* 57(43862)89-101 [Not relevant to primary or secondary research questions]

Belardinelli, M.; Cocchi, M.; Raffaelli, I.; Guerra, L.; Tamburro, A.; Fausto, A. M. (2010) Results of preliminary attempts to control the larvae of Leptoconops (Holoconops) kerteszi Kieffer, 1908 (Diptera, Ceratopogonidae) in the coastal wetlands of Tuscany, Italy. *Annals of Tropical Medicine and Parasitology* 104(3)237-246 [Not relevant to primary or secondary research questions]

Belles, Angel; Alary, Claire; Laguerre, Nellaïdeve; Franke, Christine (2018) Analyzing the uncertainty of diffusive gel-based passive samplers as tools for evaluating the averaged contamination of surface water by organic pollutants. *Environmental Science and Pollution Research International* 25(20)20231-20240 [Not relevant to primary or secondary research questions]

Bencs, L.; Horemans, B.; Buczyńska, A. J.; Van Grieken, R. (2017) Uneven distribution of inorganic pollutants in marine air originating from ocean-going ships. *Environmental Pollution* 222: 226-233 [Not relevant to primary or secondary research questions]

Benito, M.; Mosteo, R.; Rubio, E.; LaPlante, D.; Ormad, M. P.; Goni, P. (2017) Bioaccumulation of Inorganic Elements in Dreissena Polymorpha from the Ebro River, Spain: Could Zebra Mussels Be Used as a Bioindicator of the Impact of Human Activities? *River Research and Applications* 33(5)718-728 [Not relevant to primary or secondary research questions]

Benkaddour, Batoul; Abdelmalek, Fatiha; Addou, Ahmed; Noguer, Thierry; Aubert, Dominique; Vouve, Florence (2019) Assessment of Anthropogenic and Natural Factors on Cheliff River Waters (North-West of Algeria) at Two Contrasted Climatic Seasons. *International Journal of Environmental Research* 13(6)925-941 [Not relevant to primary or secondary research questions]

Benoit, Kouame Kouakou; Seraphin, Konan Kouakou; Felix, Konan Koffi; Charles, Boussou Koffi; Lazare, Kouassi Kouakou (2019) Heavy Metals Contamination of an Aquatic Environment and Health Risks Assessment in Two Fish Species: Case of the Guessabo Lake, Western Côte d'Ivoire. *Oriental Journal of Chemistry* 35(6)1742-1755 [Not relevant to primary or secondary research questions]

Bentley, S. J.; Blum, M. D.; Maloney, J.; Pond, L.; Paulsell, R. (2016) The Mississippi River source-to-sink system: Perspectives on tectonic, climatic, and anthropogenic influences, Miocene to Anthropocene. *Earth-Science Reviews* 153: 139-174 [Not relevant to primary or secondary research questions]

Bercu, Joel P.; Parke, Neil J.; Fiori, Janice M.; Meyerhoff, Roger D. (2008) Human health risk assessments for three neuropharmaceutical compounds in surface waters. *Regulatory toxicology and pharmacology*: RTP 50(3)420-427 [Not relevant to primary or secondary research questions]

Bergami, E.; Pugnalini, S.; Vannuccini, M. L.; Manfra, L.; Falieri, C.; Savorelli, F.; Dawson, K. A.; Corsi, I. (2017) Long-term toxicity of surface-charged polystyrene nanoplastics to marine planktonic species *Dunaliella tertiolecta* and *Artemia franciscana*. *Aquatic Toxicology* (Amsterdam, Netherlands) 189: 159-169 [Not relevant to primary or secondary research questions]

Bernard, A.; Carbonnelle, S.; Michel, O.; Higuet, S.; De Burbure, C.; Buchet, J. P.; Hermans, C.; Dumont, X.; Doyle, I. (2003) Lung hyperpermeability and asthma prevalence in schoolchildren: Unexpected associations with the attendance at indoor chlorinated swimming pools. *Occupational and Environmental Medicine* 60(6)385-394 [Not relevant to primary or secondary research questions]

Bernard, Alfred; Nickmilder, Marc; Dumont, Xavier (2015) Chlorinated pool attendance, airway epithelium defects and the risks of allergic diseases in adolescents: Interrelationships revealed by circulating

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

123



biomarkers. *Environmental Research* 140: 119-126 [Not relevant to primary or secondary research questions]

Berry, Oliver; England, Phillip; Fairclough, David; Jackson, Gary; Greenwood, Jim (2012) Microsatellite DNA analysis and hydrodynamic modelling reveal the extent of larval transport and gene flow between management zones in an exploited marine fish (*Glaucosoma hebraicum*). *Fisheries Oceanography* 21(4)243-254 [Not relevant to primary or secondary research questions]

Bertelkamp, C.; van der Hoek, J. P.; Schouteten, K.; Hulpiau, L.; Vanhaecke, L.; Vanden Bussche, J.; Cabo, A. J.; Callewaert, C.; Boon, N.; Löwenberg, J.; Singhal, N.; Verliefde, A. R. D. (2016) The effect of feed water dissolved organic carbon concentration and composition on organic micropollutant removal and microbial diversity in soil columns simulating river bank filtration. *Chemosphere* 144: 932-939 [Not relevant to primary or secondary research questions]

Berthet, B.; Mouneyrac, C.; Amiard, J. C.; Amiard-Triquet, C.; Berthelot, Y.; Le Hen, A.; Mastain, O.; Rainbow, P. S.; Smith, B. D. (2003) Accumulation and soluble binding of cadmium, copper, and zinc in the polychaete *Hediste diversicolor* from coastal sites with different trace metal bioavailabilities. *Archives of Environmental Contamination and Toxicology* 45(4)468-478 [Not relevant to primary or secondary research questions]

Besaury, Ludovic; Ouddane, Baghdad; Pavissich, Juan Pablo; Dubrulle-Brunaud, Carole; Gonzalez, Bernardo; Quillet, Laurent (2012) Impact of copper on the abundance and diversity of sulfate-reducing prokaryotes in two chilean marine sediments. *Marine Pollution Bulletin* 64(10)2135-2145 [Not relevant to primary or secondary research questions]

Bessa, L. J.; Barbosa-Vasconcelos, A.; Mendes, Â; Vaz-Pires, P.; Da Costa, P. M. (2014) High prevalence of multidrug-resistant *Escherichia coli* and *Enterococcus* spp. in river water, upstream and downstream of a wastewater treatment plant. *Journal of Water and Health* 12(3)426-435 [Not relevant to primary or secondary research questions]

Bhadra, Bhaskar; Nanda, Ashis Kumar; Chakraborty, Ranadhir (2007) Fluctuation in recoverable nickel and zinc resistant copiotrophic bacteria explained by the varying zinc ion content of Torsa River in different months. *Archives of Microbiology* 188(3)215-224 [Not relevant to primary or secondary research questions]

Biales, A. D.; Denton, D. L.; Riordan, D.; Breuer, R.; Batt, A. L.; Crane, D. B.; Schoenfuss, H. L. (2015) Complex watersheds, collaborative teams: Assessing pollutant presence and effects in the San Francisco Delta. *Integrated Environmental Assessment and Management* 11(4)674-688 [Not relevant to primary or secondary research questions]

Biarnès, A.; Baily, J. S.; Boissieux, Y. (2009) Identifying indicators of the spatial variation of agricultural practices by a tree partitioning method: The case of weed control practices in a vine growing catchment. *Agricultural Systems* 99(43892)105-116 [Not relevant to primary or secondary research questions]

Bilirha, H.; Roy, R.; Moreau, B.; Belles-Isles, M.; Dewailly, É; Ayotte, P. (2003) In vitro activation of cord blood mononuclear cells and cytokine production in a remote coastal population exposed to organochlorines and methyl mercury. *Environmental Health Perspectives* 111(16)1952-1957 [Not relevant to primary or secondary research questions]

Blando, J. D.; Cohn, P. (2004) Exposure and health risk from swimming in outdoor pools contaminated by trichloroethylene. *Human and Ecological Risk Assessment* 10(4)717-731 [Not relevant to primary or secondary research questions]

Bloomquist, R. F.; Fowler, T. E.; Sylvester, J. B.; Miro, R. J.; Streelman, J. T. (2017) A compendium of developmental gene expression in Lake Malawi cichlid fishes. *BMC developmental biology* 17(1)3 [Not relevant to primary or secondary research questions]

Blunt, Susanna M.; Sackett, Joshua D.; Rosen, Michael R.; Benotti, Mark J.; Trenholm, Rebecca A.; Vanderford, Brett J.; Hedlund, Brian P.; Moser, Duane P. (2018) Association between degradation of pharmaceuticals and endocrine-disrupting compounds and microbial communities along a treated wastewater effluent gradient in Lake Mead. *The Science of the Total Environment* 622-623: 1640-1648 [Not relevant to primary or secondary research questions]

Bogomolni, A. L.; Gast, R. J.; Ellis, J. C.; Dennett, M.; Pugliares, K. R.; Lentell, B. J.; Moore, M. J. (2008) Victims or vectors: A survey of marine vertebrate zoonoses from coastal waters of the Northwest Atlantic. *Diseases of Aquatic Organisms* 81(1)13-38 [Not relevant to primary or secondary research questions]

Bollmohr, S.; van den Brink, P. J.; Wade, P. W.; Day, J. A.; Schulz, R. (2011) Environmental variables, pesticide pollution and meiofaunal community structure in two contrasting temporarily open/closed False Bay estuaries. *Water Sa* 37(3)391-400 [Not relevant to primary or secondary research questions]

Bondarczuk, K.; Piotrowska-Seget, Z. (2019) Microbial diversity and antibiotic resistance in a final effluent-receiving lake. *Science of the Total Environment* 650: 2951-2961 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Booth, S. R.; Patten, K.; New, L. (2019) Response of estuarine benthic invertebrates to field applications of insecticide. *Estuarine, Coastal and Shelf Science* 218: 86-94 [Not relevant to primary or secondary research questions]

Borja, A.; Muxika, I.; Franco, J. (2003) The application of a Marine Biotic Index to different impact sources affecting soft-bottom benthic communities along European coasts. *Marine Pollution Bulletin* 46(7)835-845 [Not relevant to primary or secondary research questions]

Bosch, A.; Abad, F. X.; Pintó, R. M. (2005) Human pathogenic viruses in the marine environment. *Oceans and Health: Pathogens in the Marine Environment* 109-131 [Not relevant to primary or secondary research questions]

Botle, A.; Singhal, R. K.; Basu, H.; V, M.; Masih, J. (2020) Health risk assessment of heavy metals associated with Coarse and Quasi-accumulative airborne particulate matter in Mumbai City situated on the Western Coast of India. *Environmental Technology and Innovation* 19 [Not relevant to primary or secondary research questions]

Bouétard, A.; Côte, J.; Besnard, A. L.; Collinet, M.; Coutellec, M. A. (2014) Environmental versus anthropogenic effects on population adaptive divergence in the freshwater snail *Lymnaea stagnalis*. *PLoS ONE* 9(9) [Not relevant to primary or secondary research questions]

Bovio, E.; Gnavi, G.; Prigione, V.; Spina, F.; Denaro, R.; Yakimov, M.; Calogero, R.; Crisafi, F.; Varese, G. C. (2017) The culturable mycobacteria of a Mediterranean marine site after an oil spill: Isolation, identification and potential application in bioremediation. *Science of the Total Environment* 576: 310-318 [Not relevant to primary or secondary research questions]

Bowen, A. B.; Kile, J. C.; Otto, C.; Kazerouni, N.; Austin, C.; Blount, B. C.; Wong, H. N.; Beach, M. J.; Fry, A. M. (2007) Outbreaks of short-incubation ocular and respiratory illness following exposure to indoor swimming pools. *Environmental Health Perspectives* 115(2)267-271 [Not relevant to primary or secondary research questions]

Bhattacharyay, G.; Sadhu, A. K.; Mazumdar, A.; Chaudhuri, P. K. (2005) Antennal deformities of chironomid larvae and their use in biomonitoring of heavy metal pollutants in the river Damodar of West Bengal, India. *Environmental Monitoring and Assessment* 108(43891)67-84 [Not relevant to primary or secondary research questions]

Bowyer, R. T.; Blundell, G. M.; Ben-David, M.; Jewett, S. C.; Dean, T. A.; Duffy, L. K. (2003) Effects of the Exxon Valdez oil spill on river otters: Injury and recovery of a sentinel species. *Wildlife Monographs* (153)19360 [Not relevant to primary or secondary research questions]

Boyd, C. E. (2009) Aquaculture, Freshwater. *Encyclopedia of Inland Waters* 234-241 [Not relevant to primary or secondary research questions]

Bradford, A.; Handy, R. D.; Readman, J. W.; Atfield, A.; Mühling, M. (2009) Impact of silver nanoparticle contamination on the genetic diversity of natural bacterial assemblages in estuarine sediments. *Environmental Science and Technology* 43(12)4530-4536 [Not relevant to primary or secondary research questions]

Brakstad, O. G.; Lofthus, S.; Ribicic, D.; Netzer, R. (2017) Biodegradation of petroleum oil in cold marine environments. *Psychrophiles: From Biodiversity to Biotechnology: Second Edition* 613-644 [Not relevant to primary or secondary research questions]

Brand, Anne-Fleur; Hynes, Juliet; Walker, Lee A.; Pereira, M. Gloria; Lawlor, Alan J.; Williams, Richard J.; Shore, Richard F.; Chadwick, Elizabeth A. (2020) Biological and anthropogenic predictors of metal concentration in the Eurasian otter, a sentinel of freshwater ecosystems. *Environmental Pollution* 266: 115280 [Not relevant to primary or secondary research questions]

Brander, Susanne M.; Jeffries, Ken M.; Cole, Bryan J.; DeCourten, Bethany M.; White, J. Wilson; Hasenbein, Simone; Fangue, Nann A.; Connon, Richard E. (2016) Transcriptomic changes underlie altered egg protein production and reduced fecundity in an estuarine model fish exposed to bifenthrin. *Aquatic Toxicology (Amsterdam, Netherlands)* 174: 247-260 [Not relevant to primary or secondary research questions]

Brattland, C.; Eythórrsson, E.; Weines, J.; Sunnanå, K. (2019) Social-ecological timelines to explore human adaptation to coastal change. *Ambio* 48(12)1516-1529 [Not relevant to primary or secondary research questions]

Bray, Jon P.; Nichols, Sue J.; Keely-Smith, Alexandra; Thompson, Ross; Bhattacharyya, Saurav; Gupta, Susmita; Gupta, Abhik; Gao, Jianfa; Wang, Xianyu; Kaserzon, Sarit; Mueller, Jochen F.; Chou, Audrey; Kefford, Ben J. (2019) Stressor dominance and sensitivity-dependent antagonism: Disentangling the freshwater effects of an insecticide among co-occurring agricultural stressors. *Journal of Applied Ecology* 56(8)2020-2033 [Not relevant to primary or secondary research questions]

Breitwieser, M.; Vigneau, E.; Viricel, A.; Becquet, V.; Lacroix, C.; Erb, M.; Huet, V.; Churlaud, C.; Le Floch, S.; Guillot, B.; Gruber, M.; Thomas, H. (2018) What is the relationship between the bioaccumulation of chemical contaminants in the variegated scallop *Mimachlamys varia* and its health status? A study carried out on the French Atlantic coast using the Path ComDim model.

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Science of the Total Environment 640-641: 662-670 [Not relevant to primary or secondary research questions]

Brittle, S. W.; Paluri, S. L. A.; Foose, D. P.; Ruis, M. T.; Amato, M. T.; Lam, N. H.; Buttigieg, B.; Gagnon, Z. E.; Sizemore, I. E. (2016) Freshwater Crayfish: A Potential Benthic-Zone Indicator of Nanosilver and Ionic Silver Pollution. *Environmental Science and Technology* 50(13)7056-7065 [Not relevant to primary or secondary research questions]

Brix, Hans; Koottatep, Thammarat; Fryd, Ole; Laugesen, Carsten H. (2011) The flower and the butterfly constructed wetland system at Koh Phi Phi-System design and lessons learned during implementation and operation. *Ecological Engineering* 37(5)729-735 [Not relevant to primary or secondary research questions]

Brown, B. L.; LePrell, R. V.; Franklin, R. B.; Rivera, M. C.; Cabral, F. M.; Eaves, H. L.; Gardiakos, V.; Keegan, K. P.; King, T. L. (2015) Metagenomic analysis of planktonic microbial consortia from a non-tidal urban-impacted segment of James River. *Standards in Genomic Sciences* 10(1) [Not relevant to primary or secondary research questions]

Brown, C. J.; Sen, D.; Yano, H.; Bauer, M. L.; Rogers, L. M.; Van der Auwera, G. A.; Top, E. M. (2013) Diverse broad-host-range plasmids from freshwater carry few accessory genes. *Applied and Environmental Microbiology* 79(24)7684-7695 [Not relevant to primary or secondary research questions]

Brown, J. S.; Sutula, M.; Stransky, C.; Rudolph, J.; Byron, E. (2010) Sediment contaminant chemistry and toxicity of freshwater urban wetlands in southern California. *Journal of the American Water Resources Association* 46(2)367-385 [Not relevant to primary or secondary research questions]

Brown, J.; Bernot, M. J.; Bernot, R. J. (2012) The influence of TCS on the growth and behavior of the freshwater snail, *Physa acuta*. *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering* 47(11)1626-1630 [Not relevant to primary or secondary research questions]

Brown, Jeffrey S.; Sutula, Martha; Stransky, Chris; Rudolph, John; Byron, Earl (2010) Sediment Contaminant Chemistry and Toxicity of Freshwater Urban Wetlands in Southern California1. *Journal of the American Water Resources Association* 46(2)367-384 [Not relevant to primary or secondary research questions]

Bruelheide, H.; Jandt, U.; Gries, D.; Thomas, F. M.; Foetzki, A.; Buerkert, A.; Wang, G.; Zhang, X.; Runge, M. (2003) Vegetation changes in a river oasis on the southern rim of the Taklamakan Desert in China between 1956 and 2000. *Phytocoenologia* 33(4)801-818 [Not relevant to primary or secondary research questions]

Brulliard, C.; Traversier, N.; Allyn, J.; Schaeffer, C.; Bouchet, B.; Allou, N. (2017) Case report: Disseminated shewanella algae infection with meningoencephalitis in a traveler secondary to marine injury in Madagascar. *American Journal of Tropical Medicine and Hygiene* 97(4)1043-1044 [Not relevant to primary or secondary research questions]

Bu, Hongmei; Tan, Xiang; Li, Siyue; Zhang, Quanfa (2010) Temporal and spatial variations of water quality in the Jinsui River of the South Qinling Mts., China. *Ecotoxicology and Environmental Safety* 73(5)907-913 [Not relevant to primary or secondary research questions]

Bu, Qingwei; Luo, Qian; Wang, Donghong; Rao, Kaifeng; Wang, Zijian; Yu, Gang (2015) Screening for over 1000 organic micropollutants in surface water and sediments in the Liaohe River watershed. *Chemosphere* 138: 519-525 [Not relevant to primary or secondary research questions]

Bueche, M.; Sauvain, L.; Wunderlin, T.; Junier, T.; Tercier, M.; Loizeau, J. L.; Masson, M.; Gascon, E.; Junier, P. (2013) Endospore-forming bacteria as an indicator of pollution in sediments of Lake Geneva. *Proceedings of the 16th International Conference on Heavy Metals in the Environment* 1: 33011 [Not relevant to primary or secondary research questions]

Buffet, P. E.; Poirier, L.; Zalouk-Vergnoux, A.; Lopes, C.; Amiard, J. C.; Gaudin, P.; Risso-de Faverney, C.; Guibbolini, M.; Gilliland, D.; Perrein-Ettajani, H.; Valsami-Jones, E.; Mouneyrac, C. (2014) Biochemical and behavioural responses of the marine polychaete *hediste diversicolor* to cadmium sulfide quantum dots (CdS QDs): Waterborne and dietary exposure. *Chemosphere* 100: 63-70 [Not relevant to primary or secondary research questions]

Bugel, Sean M.; White, Lori A.; Cooper, Keith R. (2010) Impaired reproductive health of killifish (*Fundulus heteroclitus*) inhabiting Newark Bay, NJ, a chronically contaminated estuary. *Aquatic Toxicology* (Amsterdam, Netherlands) 96(3)182-193 [Not relevant to primary or secondary research questions]

Bu-Olayan, A. H.; Thomas, B. (2012) Surveillance of point source wastewater discharges to trace metals pollution in the marine environment. *Research Journal of Chemistry and Environment* 16(4)54-58 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Burone, L.; Venturini, N.; Sprechmann, P.; Valente, P.; Muniz, P. (2006) Foraminiferal responses to polluted sediments in the Montevideo coastal zone, Uruguay. *Marine Pollution Bulletin* 52(1):61-73 [Not relevant to primary or secondary research questions]

Buynevich, Ilya V. (2015) Recent vertebrate tracks in sandy substrates and their paleoenvironmental implications: examples from coastal Lithuania. *Baltica* 28(1):29-40 [Not relevant to primary or secondary research questions]

Bytyqi, Pajtim; Czikkely, Marton; Shala-Abazi, Albona; Fetoshi, Osman; Ismaili, Murtezan; Hyseni-Spahi, Mimoza; Ymeri, Prespa; Kabashi-Kastrati, Edona; Millaku, Fadil (2020) Macrophytes as biological indicators of organic pollution in the Lepenci River Basin in Kosovo. *Journal of Freshwater Ecology* 35(1):105-121 [Not relevant to primary or secondary research questions]

Monterroso, S. C.; Carapuça, H. M.; Duarte, A. C. (2005) Ion-exchange and permselectivity properties of poly(sodium 4-styrenesulfonate) coatings on glassy carbon: Application in the modification of mercury film electrodes for the direct voltammetric analysis of trace metals in estuarine waters. *Talanta* 65(3):644-653 [Not relevant to primary or secondary research questions]

Cabral, Henrique; Fonseca, Vanessa; Sousa, Tania; Leal, Miguel Costa (2019) Synergistic Effects of Climate Change and Marine Pollution: An Overlooked Interaction in Coastal and Estuarine Areas. *International Journal of Environmental Research and Public Health* 16(15):2737 [Not relevant to primary or secondary research questions]

Cabrini, Tatiana M. B.; Barboza, Carlos A. M.; Skinner, Viviane B.; Hauser-Davis, Rachel A.; Rocha, Rafael C.; SaintPierre, Tatiana D.; Valentim, Jean L.; Cardoso, Ricardo S. (2017) Heavy metal contamination in sandy beach macrofauna communities from the Rio de Janeiro coast, Southeastern Brazil. *Environmental Pollution* (Barking, Essex: 1987) 221: 116-129 [Not relevant to primary or secondary research questions]

Cai, ChuanYang; Li, JingYa; Wu, Di; Wang, XiLong; Tsang, Daniel C. W.; Li, XiangDong; Sun, JianTeng; Zhu, LiZhong; Shen, HuiZhong; Tao, Shu; Liu, WenXin (2017) Spatial distribution, emission source and health risk of parent PAHs and derivatives in surface soils from the Yangtze River Delta, eastern China. *Chemosphere* 178: 301-308 [Not relevant to primary or secondary research questions]

Callicott, K.; Hooper-Bùi, L. (2019) An investigation of environmental concentrations of atrazine, chlorothalonil, and fipronil in a Mississippi River-influenced marsh in southern Louisiana. *Microchemical Journal* 146: 1241-1248 [Not relevant to primary or secondary research questions]

Camargo, M. Z.; Sandrini-Neto, L.; Carreira, R. S.; Camargo, M. G. (2017) Effects of hydrocarbon pollution in the structure of macrobenthic assemblages from two large estuaries in Brazil. *Marine Pollution Bulletin* 125(43862):66-76 [Not relevant to primary or secondary research questions]

Campa, M. F.; Techtmann, S. M.; Ladd, M. P.; Yan, J.; Patterson, M.; Amaral, A. G. M.; Carter, K. E.; Ulrich, N.; Grant, C. J.; Hettich, R. L.; Lamendella, R.; Hazen, T. C. (2019) Surface water microbial community response to the biocide 2,2-dibromo-3-nitrilopropionamide, used in unconventional oil and gas extraction. *Applied and Environmental Microbiology* 85(21) [Not relevant to primary or secondary research questions]

Canli, E. G.; Dogan, A.; Canli, M. (2018) Serum biomarker levels alter following nanoparticle (Al2O3, CuO, TiO2) exposures in freshwater fish (*Oreochromis niloticus*). *Environmental Toxicology and Pharmacology* 62: 181-187 [Not relevant to primary or secondary research questions]

Cao, Xianghui; Lu, Yonglong; Wang, Chenchen; Zhang, Meng; Yuan, Jingjing; Zhang, Anqi; Song, Shuai; Baninla, Yvette; Khan, Kifayatullah; Wang, Yichao (2019) Hydrogeochemistry and quality of surface water and groundwater in the drinking water source area of an urbanizing region. *Ecotoxicology and Environmental Safety* 186: 109628 [Not relevant to primary or secondary research questions]

Cao, Zhengnan; Liu, Xiaoyan; Zhang, Xinying; Chen, Lisha; Liu, Shanshan; Hu, Yan (2012) Short-term effects of diesel fuel on rhizosphere microbial community structure of native plants in Yangtze estuarine wetland. *Environmental Science and Pollution Research International* 19(6):2179-2185 [Not relevant to primary or secondary research questions]

Caplin, J. L.; Hanlon, G. W.; Taylor, H. D. (2008) Presence of vancomycin and ampicillin-resistant *Enterococcus faecium* of epidemic clonal complex-17 in wastewaters from the south coast of England. *Environmental Microbiology* 10(4):885-892 [Not relevant to primary or secondary research questions]

Cappello, S.; Crisari, A.; Hassanshahian, M.; Genovese, M.; Santisi, S.; Yakimov, M. M. (2012) Effect of a bioemulsificant exopolysaccharide (EPS 2003) on abundance and vitality of marine bacteria. *Water, Air, and Soil Pollution* 223(7):3903-3909 [Not relevant to primary or secondary research questions]

Caputo, Domenico R.; Robson, Samuel C.; Werner, Inge; Ford, Alex T. (2020) Complete transcriptome assembly and annotation of a critically important amphipod species in freshwater ecotoxicological

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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risk assessment: *Gammarus fossarum*. *Environment International* 137: 105319 [Not relevant to primary or secondary research questions]

Carmen Pineda, M.; McQuaid, Christopher D.; Turon, Xavier; Lopez-Legentil, Susanna; Ordonez, Victor; Rius, Marc (2012) Tough Adults, Frail Babies: An Analysis of Stress Sensitivity across Early Life-History Stages of Widely Introduced Marine Invertebrates. *Plos One* 7(10)e46672 [Not relevant to primary or secondary research questions]

Carreira, S.; Costa, P. M.; Martins, M.; Lobo, J.; Costa, M. H.; Caeiro, S. (2013) Ecotoxicological Heterogeneity in Transitional Coastal Habitats Assessed Through the Integration of Biomarkers and Sediment-Contamination Profiles: A Case Study Using a Commercial Clam. *Archives of Environmental Contamination and Toxicology* 64(1)97-109 [Not relevant to primary or secondary research questions]

Carriger, J. F.; Hoang, T. C.; Rand, G. M.; Gardinali, P. R.; Castro, J. (2011) Acute toxicity and effects analysis of endosulfan sulfate to freshwater fish species. *Archives of Environmental Contamination and Toxicology* 60(2)281-289 [Not relevant to primary or secondary research questions]

Carvalho, M. R. D.; Lovejoy, N. R. (2011) Morphology and phylogenetic relationships of a remarkable new genus and two new species of neotropical freshwater stingrays from the amazon basin (Chondrichthyes: Potamotrygonidae). *Zootaxa* 13-48 [Not relevant to primary or secondary research questions]

Castresana, G. P.; Roldán, E. C.; Suastegui, W. A. G.; Perales, J. L. M.; Montalvo, A. C.; Silva, A. H. (2019) Evaluation of health risks due to heavy metals in a rural population exposed to Atoyac River pollution in Puebla, Mexico. *Water (Switzerland)* 11(2) [Not relevant to primary or secondary research questions]

Catania, V.; Cappello, S.; Di Giorgi, V.; Santisi, S.; Di Maria, R.; Mazzola, A.; Vizzini, S.; Quatrini, P. (2018) Microbial communities of polluted sub-surface marine sediments. *Marine Pollution Bulletin* 131: 396-406 [Not relevant to primary or secondary research questions]

Celebi, Ahmet; Sengorur, Bulent; Klove, Bjorn (2014) Human health risk assessment of dissolved metals in groundwater and surface waters in the Melen watershed, Turkey. *Journal of Environmental Science and Health Part a-Toxic/Hazardous Substances & Environmental Engineering* 49(2)153-161 [Not relevant to primary or secondary research questions]

Cercato, M. C.; Ramazzotti, V.; Sperduti, I.; Asensio-Pascual, A.; Ribes, I.; Guillen, C.; Nagore, E. (2015) Sun Protection Among Spanish Beachgoers: Knowledge, Attitude and Behaviour. *Journal of Cancer Education* 30(1)44139 [Not relevant to primary or secondary research questions]

Chai, Liyuan; Wang, Zhenxing; Wang, Yunyan; Yang, Zhihui; Wang, Haiying; Wu, Xie (2010) Ingestion risks of metals in groundwater based on TIN model and dose-response assessment - A case study in the Xiangjiang watershed, central-south China. *Science of the Total Environment* 408(16)3118-3124 [Not relevant to primary or secondary research questions]

Chakraborty, Jaya; Sapkale, Vibhavari; Shah, Manan; Rajput, Vinay; Mehrete, Gajanan; Agawane, Sachin; Kamble, Sanjay; Dharne, Mahesh (2020) Metagenome sequencing to unveil microbial community composition and prevalence of antibiotic and metal resistance genes in hypersaline and hyperalkaline Lonar Lake, India. *Ecological Indicators* 110: 105827 [Not relevant to primary or secondary research questions]

Chakraborty, P. (2017) Oyster reef restoration in controlling coastal pollution around India: A viewpoint. *Marine Pollution Bulletin* 115(43862)190-193 [Not relevant to primary or secondary research questions]

Chakraborty, S.; Bhattacharya, T.; Singh, G.; Maity, J. P. (2014) Benthic macroalgae as biological indicators of heavy metal pollution in the marine environments: A biomonitoring approach for pollution assessment. *Ecotoxicology and Environmental Safety* 100(1)61-68 [Not relevant to primary or secondary research questions]

Chalkley, R.; Child, F.; Al-Thaqafi, K.; Dean, A. P.; White, K. N.; Pittman, J. K. (2019) Macroalgae as spatial and temporal bioindicators of coastal metal pollution following remediation and diversion of acid mine drainage. *Ecotoxicology and Environmental Safety* 182: [Not relevant to primary or secondary research questions]

Chang, C. Y.; Yu, H. Y.; Chen, J. J.; Li, F. B.; Zhang, H. H.; Liu, C. P. (2014) Accumulation of heavy metals in leaf vegetables from agricultural soils and associated potential health risks in the Pearl River Delta, South China. *Environmental Monitoring and Assessment* 186(3)1547-1560 [Not relevant to primary or secondary research questions]

Channa, K.; Röllin, H. B.; Nøst, T. H.; Odland, J. Ø; Sandanger, T. M. (2012) Prenatal exposure to DDT in malaria endemic region following indoor residual spraying and in non-malaria coastal regions of South Africa. *Science of the Total Environment* 429: 183-190 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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1344-2022

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Channa, Kalavati R.; Roellin, Halina B.; Wilson, Kerry S.; Nost, Therese H.; Odland, Jon O.; Naik, Inakshi; Sandanger, Torkjel M. (2012) Regional variation in pesticide concentrations in plasma of delivering women residing in rural Indian Ocean coastal regions of South Africa. *Journal of Environmental Monitoring* 14(11)2952-2960 [Not relevant to primary or secondary research questions]

Charrière, S.; Aumont, C. (2016) Managing the drinking water catchment areas: the French agricultural cooperatives feed back. *Environmental Science and Pollution Research* 23(11)11379-11385 [Not relevant to primary or secondary research questions]

Chatterjee, S.; Chattopadhyay, B.; Mukhopadhyay, S. K. (2010) Monitoring waste metal pollution at Ganga Estuary via the East Calcutta Wetland areas. *Environmental Monitoring and Assessment* 170(43922)23-31 [Not relevant to primary or secondary research questions]

Chatterjee, S.; Chetia, M.; Singh, L.; Chattopadhyay, B.; Datta, S.; Mukhopadhyay, S. K. (2011) A study on the phytoaccumulation of waste elements in wetland plants of a Ramsar site in India. *Environmental Monitoring and Assessment* 178(43922)361-371 [Not relevant to primary or secondary research questions]

Chaturvedi, P.; Chaurasia, D.; Pandey, A.; Gupta, P. (2020) Co-occurrence of multidrug resistance, β -lactamase and plasmid mediated AmpC genes in bacteria isolated from river Ganga, northern India. *Environmental Pollution* 267 [Not relevant to primary or secondary research questions]

Chaumet, B.; Morin, S.; Bouthy, S.; Mazzella, N. (2019) Diuron sorption isotherms in freshwater biofilms. *Science of the Total Environment* 651: 1219-1225 [Not relevant to primary or secondary research questions]

Chen, Chong; Zou, Wenbing; Chen, Songsong; Zhang, Kai; Ma, Limin (2020) Ecological and health risk assessment of organochlorine pesticides in an urbanized river network of Shanghai, China. *Environmental Sciences Europe* 32(1)42 [Not relevant to primary or secondary research questions]

Chen, H.; Bai, X.; Li, Y.; Jing, L.; Chen, R.; Teng, Y. (2019) Source identification of antibiotic resistance genes in a peri-urban river using novel crAssphage marker genes and metagenomic signatures. *Water Research* 167 [Not relevant to primary or secondary research questions]

Chen, H.; Liu, S.; Xu, X. R.; Liu, S. S.; Zhou, G. J.; Sun, K. F.; Zhao, J. L.; Ying, G. G. (2015) Antibiotics in typical marine aquaculture farms surrounding Hailing Island, South China: Occurrence, bioaccumulation and human dietary exposure. *Marine Pollution Bulletin* 90(43862)181-187 [Not relevant to primary or secondary research questions]

Chen, H.; Teng, Y.; Li, J.; Wu, J.; Wang, J. (2016) Source apportionment of trace metals in river sediments: A comparison of three methods. *Environmental Pollution* 211: 28-37 [Not relevant to primary or secondary research questions]

Chen, H.; Wang, G.; Lu, X.; Jiang, M.; Mendelsohn, I. A. (2015) Balancing the needs of China's wetland conservation and rice production. *Environmental Science and Technology* 49(11)6385-6393 [Not relevant to primary or secondary research questions]

Chen, J.; Li, N.; Han, S.; Sun, Y.; Wang, L.; Qu, Z.; Dai, M.; Zhao, G. (2020) Characterization and bioremediation potential of nickel-resistant endophytic bacteria isolated from the wetland plant *Tamarix chinensis*. *FEMS Microbiology Letters* 367(12) [Not relevant to primary or secondary research questions]

Chen, J.; Tong, T.; Jiang, X.; Xie, S. (2020) Biodegradation of sulfonamides in both oxic and anoxic zones of vertical flow constructed wetland and the potential degraders. *Environmental Pollution* 265 [Not relevant to primary or secondary research questions]

Chen, J.; Wang, Z.; Li, G.; Guo, R. (2014) The swimming speed alteration of two freshwater rotifers *Brachionus calyciflorus* and *Asplanchna brightwelli* under dimethoate stress. *Chemosphere* 95: 256-260 [Not relevant to primary or secondary research questions]

Chen, Jiarui; McIlroy, Shelby E.; Archana, Anand; Baker, David M.; Panagiotou, Gianni (2019) A pollution gradient contributes to the taxonomic, functional, and resistome diversity of microbial communities in marine sediments. *Microbiome* 7: 104 [Not relevant to primary or secondary research questions]

Chen, K.; Xiao, N.; Wang, B.; Li, J. (2012) The effects of petroleum exploitation on water quality bio-assessment and benthic macro-invertebrate communities in the Yellow River Delta wetland, Dongying. *Shengtai Xuebao/ Acta Ecologica Sinica* 32(6)1970-1978 [Not relevant to primary or secondary research questions]

Chen, L.; Au, D. W. T.; Hu, C.; Zhang, W.; Zhou, B.; Cai, L.; Giesy, J. P.; Qian, P. Y. (2017) Linking genomic responses of gonads with reproductive impairment in marine medaka (*Oryzias melastigma*) exposed chronically to the chemopreventive and antifouling agent, 3,3'-diindolylmethane (DIM). *Aquatic Toxicology* 183: 135-143 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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Chen, Lian; Zhou, Shenglu; Shi, Yaxing; Wang, Chunhui; Li, Baojie; Li, Yan; Wu, Shaohua (2018) Heavy metals in food crops, soil, and water in the Lihe River Watershed of the Taihu Region and their potential health risks when ingested. *Science of the Total Environment* 615: 141-149 [Not relevant to primary or secondary research questions]

Chen, M. C.; Chen, T. H. (2020) Spatial and seasonal distribution of microplastics on sandy beaches along the coast of the Hengchun Peninsula, Taiwan. *Marine Pollution Bulletin* 151 [Not relevant to primary or secondary research questions]

Chen, M.; Chen, M.; Lu, Y.; Wang, L.; Huang, Y. (2016) The farmers' perceptions of ANPS pollution and its influencing factors in Poyang Lake Region, China. *Water Science and Technology* 73(7)1591-1598 [Not relevant to primary or secondary research questions]

Chen, Ruihui; Chen, Haiyang; Song, Liuting; Yao, Zhipeng; Meng, Fansheng; Teng, Yanguo (2019) Characterization and source apportionment of heavy metals in the sediments of Lake Tai (China) and its surrounding soils. *The Science of the Total Environment* 694: 133819 [Not relevant to primary or secondary research questions]

Chen, Te-Hao; Chen, Yi-Ling; Chen, Chia-Yang; Liu, Pi-Jen; Cheng, Jing- O.; Ko, Fung-Chi (2015) Assessment of ichthyotoxicity and anthropogenic contamination in the surface waters of Kenting National Park, Taiwan. *Environmental Monitoring and Assessment* 187(5)265 [Not relevant to primary or secondary research questions]

Chen, X.; Chen, M.; Xu, B.; Tang, R.; Han, X.; Qin, Y.; Xu, B.; Hang, B.; Mao, Z.; Huo, W.; Xia, Y.; Xu, Z.; Wang, X. (2013) Parental phenols exposure and spontaneous abortion in Chinese population residing in the middle and lower reaches of the Yangtze River. *Chemosphere* 93(2)217-222 [Not relevant to primary or secondary research questions]

Chen, Yanan; Zhang, Jiquan; Zhang, Feng; Liu, Xingpeng; Zhou, Mo (2018) Contamination and health risk assessment of PAHs in farmland soils of the Yinma River Basin, China. *Ecotoxicology and Environmental Safety* 156: 383-390 [Not relevant to primary or secondary research questions]

Chen, Z.; Kuschk, P.; Paschke, H.; Kästner, M.; Müller, J. A.; Köser, H. (2014) Treatment of a sulfate-rich groundwater contaminated with perchloroethene in a hydroponic plant root mat filter and a horizontal subsurface flow constructed wetland at pilot-scale. *Chemosphere* 117(1)178-184 [Not relevant to primary or secondary research questions]

Cheng, Zhang; Man, Yu Bon; Nie, Xiang Ping; Wong, Ming Hung (2013) Trophic relationships and health risk assessments of trace metals in the aquaculture pond ecosystem of Pearl River Delta, China. *Chemosphere* 90(7)2142-2148 [Not relevant to primary or secondary research questions]

Cheung, K. C.; Leung, H. M.; Wong, M. H. (2008) Metal concentrations of common freshwater and marine fish from the Pearl River Delta, South China. *Archives of Environmental Contamination and Toxicology* 54(4)705-715 [Not relevant to primary or secondary research questions]

Chi, Shiyun; Li, Ming; Zheng, Jinxiu; Chen, Sheng; Chen, Mingxiu; Hu, Juxiang; Tang, Jianfeng; Hu, Sheng; Dong, Fangyong; Zhao, Xianfu (2017) Macroinvertebrate communities in the Big East Lake water network in relation to environmental factors. *Knowledge and Management of Aquatic Ecosystems* (418)22 [Not relevant to primary or secondary research questions]

Chiang, Y. C.; Yang, H. J.; Chen, S. C.; Hu, C. W.; Tsai, C. T.; Lai, D. J.; Kuo, C. Y. (2017) Inhalation exposure of children to indoor PM10 and associated metals during river-dust episodes. *Air Quality, Atmosphere and Health* 10(3)381-388 [Not relevant to primary or secondary research questions]

Chidya, Russel C. G.; Abdel-Dayem, Sherif M.; Takeda, Kazuhiko; Sakugawa, Hiroshi (2018) Spatio-temporal variations of selected pesticide residues in the Kurose River in Higashi-Hiroshima city, Japan. *Journal of Environmental Science and Health. Part. B, Pesticides, Food Contaminants, and Agricultural Wastes* 53(9)602-614 [Not relevant to primary or secondary research questions]

Chihara, E.; Hayashi, K. (2016) Effect of a fenestration between an intrascleral lake and supraciliary space on deep sclerectomy. *Journal of Glaucoma* 25(4)e299-e307 [Not relevant to primary or secondary research questions]

Chimeddulam, Dalaijamts; Wu, Kuen-Yuh (2013) River water contaminated with perfluorinated compounds potentially posing the greatest risk to young children. *Chemosphere* 90(5)1617-1624 [Not relevant to primary or secondary research questions]

Chin, Yin-Yien; Chu, Wan-Loy; Kok, Yih-Yih; Phang, Siew-Moi; Wong, Chiew-Yen; Tan, Boon-Keat; Mustafa, Emienour Muzalina (2019) Sensitivity of selected tropical microalgae isolated from a farmland and a eutrophic lake to atrazine and endosulfan. *Journal of Applied Phycology* 31(5)2981-2998 [Not relevant to primary or secondary research questions]

Chitmanat, C.; Prakobsin, N.; Chaibu, P.; Traichaiyaporn, S. (2008) The use of acetylcholinesterase inhibition in river snails (*Sinotaia ingallsiana*) to determine the pesticide contamination in the upper Ping River. *International Journal of Agriculture and Biology* 10(6)658-660 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

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Cho, J.; Jung, B. K.; Chang, T.; Sohn, W. M.; Sinuon, M.; Chai, J. Y. (2020) *Echinostoma mekongi* n. Sp. (digenea: Echinostomatidae) from riparian people along the mekong river in cambodia. *Korean Journal of Parasitology* 58(4)431-443 [Not relevant to primary or secondary research questions]

Cho, Jae Heon; Lee, Jong Ho (2015) Watershed model calibration framework developed using an influence coefficient algorithm and a genetic algorithm and analysis of pollutant discharge characteristics and load reduction in a TMDL planning area. *Journal of Environmental Management* 163: 44106 [Not relevant to primary or secondary research questions]

Cho, S.; Hiott, L. M.; McDonald, J. M.; Barrett, J. B.; McMillan, E. A.; House, S. L.; Adams, E. S.; Frye, J. G.; Jackson, C. R. (2020) Diversity and antimicrobial resistance of *Enterococcus* from the Upper Oconee Watershed, Georgia. *Journal of Applied Microbiology* 128(4)1221-1233 [Not relevant to primary or secondary research questions]

Cho, Yeo-Myoung; Ghosh, Upal; Kennedy, Alan J.; Grossman, Adam; Ray, Gary; Tomaszewski, Jeanne E.; Smithery, Dennis W.; Bridges, Todd S.; Luthy, Richard G. (2009) Field Application of Activated Carbon Amendment for In-Situ Stabilization of Polychlorinated Biphenyls in Marine Sediment. *Environmental Science & Technology* 43(10)3815-3823 [Not relevant to primary or secondary research questions]

Chonova, T.; Kurmayer, R.; Rimet, F.; Labanowski, J.; Vasselon, V.; Keck, F.; Illmer, P.; Bouchez, A. (2019) Benthic diatom communities in an alpine river impacted by waste water treatment effluents as revealed using DNA metabarcoding. *Frontiers in Microbiology* 10(APR) [Not relevant to primary or secondary research questions]

Choudhury, D.; Gupta, S. (2017) Impact of waste dump on surface water quality and aquatic insect diversity of Deepor Beel (Ramsar site), Assam, North-east India. *Environmental Monitoring and Assessment* 189(11) [Not relevant to primary or secondary research questions]

Christoffersen, K.; Hansen, B. W.; Johansson, L. S.; Krog, E. (2003) Influence of LAS on marine calanoid copepod population dynamics and potential reproduction. *Aquatic Toxicology* 63(4)405-416 [Not relevant to primary or secondary research questions]

Chukwuka, A.; Ogbeye, O.; Uhunamure, G. (2019) Gonad pathology and intersex severity in pelagic (*Tilapia zilli*) and benthic (*Neochanna diversus* and *Clarias gariepinus*) species from a pesticide-impacted agrarian catchment, south-south Nigeria. *Chemosphere* 225: 535-547 [Not relevant to primary or secondary research questions]

Chung, H. S.; Choi, J. H.; Abd El-Aty, A. M.; Lee, Y. J.; Lee, H. S.; Kim, S.; Jung, H. J.; Kang, T. W.; Shin, H. C.; Shim, J. H. (2016) Simultaneous determination of seven multiclass veterinary antibiotics in surface water samples in the Republic of Korea using liquid chromatography with tandem mass spectrometry. *Journal of Separation Science* 39(24)4688-4699 [Not relevant to primary or secondary research questions]

Ciesielski, T.; Szefer, P.; Bertenyi, Zs.; Kuklik, I.; Skóra, K.; Namieśnik, J.; Fodor, P. (2006) Interspecific distribution and co-associations of chemical elements in the liver tissue of marine mammals from the Polish Economical Exclusive Zone, Baltic Sea. *Environment International* 32(4)524-532 [Not relevant to primary or secondary research questions]

Çiftçi Türetken, P. S.; Altuğ, G.; Çardak, M.; Güneş, K. (2019) Bacteriological quality, heavy metal and antibiotic resistance in Sapanca Lake, Turkey. *Environmental Monitoring and Assessment* 191(7) [Not relevant to primary or secondary research questions]

Clarke, R.; Peyton, D.; Healy, M. G.; Fenton, O.; Cummins, E. (2016) A quantitative risk assessment for metals in surface water following the application of biosolids to grassland. *Science of the Total Environment* 566-567: 102-112 [Not relevant to primary or secondary research questions]

Clayton, Janet L.; Miller, Shelly A.; Menendez, Raymond (2015) In-Situ Bioassay Response of Freshwater Mussels to Acid Mine Drainage Pollution and its Mitigation. *Southeastern Naturalist* 14: 261-275 [Not relevant to primary or secondary research questions]

Coclet, Clement; Garnier, Cedric; Durrieu, Gael; D'Onofrio, Sebastien; Layglon, Nicolas; Briand, Jean-Francois; Misson, Benjamin (2020) Impacts of copper and lead exposure on prokaryotic communities from contaminated contrasted coastal seawaters: the influence of previous metal exposure. *Fems Microbiology Ecology* 96(6)fiaa048 [Not relevant to primary or secondary research questions]

Corbella, C.; Guivernau, M.; Viñas, M.; Puigagut, J. (2015) Operational, design and microbial aspects related to power production with microbial fuel cells implemented in constructed wetlands. *Water Research* 84: 232-242 [Not relevant to primary or secondary research questions]

Corcoll, Natalia; Yang, Jianghua; Backhaus, Thomas; Zhang, Xiaowei; Eriksson, Karl Martin (2019) Copper Affects Composition and Functioning of Microbial Communities in Marine Biofilms at Environmentally Relevant Concentrations. *Frontiers in Microbiology* 9: 3248 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Cordeiro, Lucas Freitas; Marques, Bianca Fell; Kist, Luiza Wilges; Bogo, Mauricio Reis; Lopez, Gerardo; Pagano, Gisela; Kuelkamp-Guerreiro, Irene Clernes; Monserrat, Jose Maria (2014) Toxicity of fullerene and nanosilver nanomaterials against bacteria associated to the body surface of the estuarine worm *Laeonereis acuta* (Polychaeta, Nereididae). *Marine Environmental Research* 99: 52-59 [Not relevant to primary or secondary research questions]

Corno, Gianluca; Yang, Ying; Eckert, Ester M.; Fontaneto, Diego; Fiorentino, Antonino; Galafassi, Silvia; Zhang, Tong; Di Cesare, Andrea (2019) Effluents of wastewater treatment plants promote the rapid stabilization of the antibiotic resistome in receiving freshwater bodies. *Water Research* 158: 72-81 [Not relevant to primary or secondary research questions]

Crenn, V.; Chakraborty, A.; Fronval, I.; Petitprez, D.; Riffault, V. (2018) Fine particles sampled at an urban background site and an industrialized coastal site in Northern France-Part 2: Comparison of offline and online analyses for carbonaceous aerosols. *Aerosol Science and Technology* 52(3)287-299 [Not relevant to primary or secondary research questions]

Creusot, N.; Ait-Aïssa, S.; Tapie, N.; Pardon, P.; Brion, F.; Sanchez, W.; Thybaud, E.; Porcher, J. M.; Budzinski, H. (2014) Identification of synthetic steroids in river water downstream from pharmaceutical manufacture discharges based on a bioanalytical approach and passive sampling. *Environmental Science and Technology* 48(7)3649-3657 [Not relevant to primary or secondary research questions]

Cristale, J.; Katsoyannis, A.; Sweetman, A. J.; Jones, K. C.; Lacorte, S. (2013) Occurrence and risk assessment of organophosphorus and brominated flame retardants in the River Aire (UK). *Environmental Pollution* 179: 194-200 [Not relevant to primary or secondary research questions]

Croisant, S. A.; Lin, Y. L.; Shearer, J. J.; Prochaska, J.; Phillips-Savoy, A.; Gee, J.; Jackson, D.; Panettieri, R. A.; Howarth, M.; Sullivan, J.; Black, B. J.; Tate, J.; Nguyen, D.; Anthony, A.; Khan, A.; Fernando, H.; Shakeel Ansari, G. A.; Rowe, G.; Howrey, B.; Singleton, C.; Elferink, C. (2017) The gulf coast health Alliance: health risks related to the macondo spill (GC-HARMS) study: Self-reported health effects. *International Journal of Environmental Research and Public Health* 14(11) [Not relevant to primary or secondary research questions]

Cross, A. T.; Turner, S. R.; Renton, M.; Baskin, J. M.; Dixon, K. W.; Merritt, D. J. (2015) Seed dormancy and persistent sediment seed banks of ephemeral freshwater rock pools in the Australian monsoon tropics. *Annals of Botany* 115(5)847-859 [Not relevant to primary or secondary research questions]

Cudera, R. B.; Razon, B. C.; Millondaga, K. J. I. (2020) Cultural and ecological significance of odonata (Insecta) to the t'boli of lake sebu, mindanao, Philippines. *Biodiversitas* 21(6)2536-2554 [Not relevant to primary or secondary research questions]

Cui, Lili; Wang, Jun (2019) Persistent Halogenated Organic Pollutants in Surface Water in a Megacity: Distribution Characteristics and Ecological Risks in Wuhan, China. *Archives of Environmental Contamination and Toxicology* 77(1)98-114 [Not relevant to primary or secondary research questions]

Cui, Zhihong; Liu, Jinyi; Li, Peng; Cao, Jia (2010) Male Reproductive and Behavior Toxicity in Rats After Subchronic Exposure to Organic Extracts from Jialing River of Chongqing, China. *Birth Defects Research Part B-Developmental and Reproductive Toxicology* 89(1)34-42 [Not relevant to primary or secondary research questions]

Curren, E.; Leong, S. C. Y. (2019) Profiles of bacterial assemblages from microplastics of tropical coastal environments. *Science of the Total Environment* 655: 313-320 [Not relevant to primary or secondary research questions]

Curtis, D.; Elango, V.; Collins, A. W.; Rodrigue, M.; Pardue, J. H. (2018) Transport of crude oil and associated microbial populations by washover events on coastal headland beaches. *Marine Pollution Bulletin* 130: 229-239 [Not relevant to primary or secondary research questions]

Custódio, M.; Villasante, S.; Cremades, J.; Calado, R.; Lillebø, A. I. (2017) Unravelling the potential of halophytes for marine integrated multi-trophic aquaculture (IMTA)- A perspective on performance, opportunities and challenges. *Aquaculture Environment Interactions* 9: 445-460 [Not relevant to primary or secondary research questions]

Da Silva Coelho, K.; Rocha, O. (2010) Assessment of the potential toxicity of a linear alkylbenzene sulfonate (LAS) to freshwater animal life by means of cladoceran bioassays. *Ecotoxicology* 19(4)812-818 [Not relevant to primary or secondary research questions]

da Silva, J. P. C. B.; de Carvalho, M. R. (2011) A new species of neotropical freshwater stingray of the genus *Potamotrygon* garman, 1877 from the río madre de Dios, perú (chondrichthyes: Potamotrygonidae). *Papeis Avulsos de Zoologia* 51(8)139-154 [Not relevant to primary or secondary research questions]

Dafforn, Katherine A.; Glasby, Tim M.; Johnston, Emma L. (2009) Links between estuarine condition and spatial distributions of marine invaders. *Diversity and Distributions* 15(5)807-821 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Dahm, Clifford N. (2010) Consequences of Climate Variability and Human Water Demand on Freshwater Ecosystems: A Mediterranean Perspective from the United States. *Water Scarcity in the Mediterranean: Perspectives Under Global Change* 8: 55-71 [Not relevant to primary or secondary research questions]

Dahshan, Hesham; Megahed, Ayman Mohamed; Abd-Elall, Amr Mohamed Mohamed; Abd-El-Kader, Mahdy Abdel-Goad; Nabawy, Ehab; Elbana, Mariam Hassan (2016) Monitoring of pesticides water pollution-The Egyptian River Nile. *Journal of Environmental Health Science & Engineering* 14: 15 [Not relevant to primary or secondary research questions]

Damak, M.; Frontalini, F.; Elleuch, B.; Kallel, M. (2019) Benthic foraminiferal assemblages as pollution proxies along the coastal fringe of the Monastir Bay (Tunisia). *Journal of African Earth Sciences* 150: 379-388 [Not relevant to primary or secondary research questions]

Dang, Hongyue; Ren, Jing; Song, Linsheng; Sun, Song; An, Liguo (2008) Dominant chloramphenicol-resistant bacteria and resistance genes in coastal marine waters of Jiaozhou Bay, China. *World Journal of Microbiology & Biotechnology* 24(2)209-217 [Not relevant to primary or secondary research questions]

Das, Dulal; Misra, Jibon; Mitra, Malay; Bhattacharya, Bhashwar; Bagchi, Anandamoy (2013) Prevalence of dental caries and treatment needs in children in coastal areas of West Bengal. *Contemporary Clinical Dentistry* 4(4)482-487 [Not relevant to primary or secondary research questions]

Holbrook, R.D.; Motabar, Donna; Quiñones, Oscar; Stanford, Benjamin; Vanderford, Brett; Moss, Donna (2013) Titanium distribution in swimming pool water is dominated by dissolved species. *Environmental Pollution* (Barking, Essex: 1987) 181: 68-74 [Not relevant to primary or secondary research questions]

Davis, A. M.; Lewis, S. E.; Brodie, J. E.; Benson, A. (2014) The potential benefits of herbicide regulation: A cautionary note for the Great Barrier Reef catchment area. *Science of the Total Environment* 490: 81-92 [Not relevant to primary or secondary research questions]

De Carvalho, M. R.; Maisey, J. G.; Grande, L. (2004) Freshwater stingrays of the Green River Formation of Wyoming (early Eocene), with the description of a new genus and species and an analysis of its phylogenetic relationships (Chondrichthyes : Myliobatiformes). *Bulletin of the American Museum of Natural History* (284)1-136 [Not relevant to primary or secondary research questions]

De Castro-Català, N.; Muñoz, I.; Armendáriz, L.; Campos, B.; Barceló, D.; López-Doval, J.; Pérez, S.; Petrovic, M.; Picó, Y.; Riera, J. L. (2015) Invertebrate community responses to emerging water pollutants in Iberian river basins. *Science of the Total Environment* 503-504: 142-150 [Not relevant to primary or secondary research questions]

De Jong, S. V. Z. (2016) Let's talk oil spill risk: Lessons learned from coastal communities in British Columbia, Canada. *Responses to Disasters and Climate Change: Understanding Vulnerability and Fostering Resilience* 83-92 [Not relevant to primary or secondary research questions]

de la Torre, F. R.; Ferrari, L.; Salibian, A. (2005) Biomarkers of a native fish species (*Cnesterodon decemmaculatus*) application to the water toxicity assessment of a peri-urban polluted river of Argentina. *Chemosphere* 59(4)577-583 [Not relevant to primary or secondary research questions]

De Paula, E. L.; Da Silva Rodrigues, E. H.; Moratti, M.; Scherrer, E. P. (2017) Development of risk-based inspection methodology in river crossings. [Not relevant to primary or secondary research questions]

De Rooij, C.; Thompson, R. S.; Garny, V.; Lecloux, A.; Van Wijk, D. (2004) Dichloromethane marine risk assessment with special reference to the osparcom region: North Sea. *Environmental Monitoring and Assessment* 97(43891)44621 [Not relevant to primary or secondary research questions]

de Troya-Martin, Magdalena; Delgado-Sánchez, Nuria; Blazquez-Sánchez, Nuria; Ortega-Tudela, Gregorio; Carlos Toribio-Montero, Juan; Lourdes Jabalera-Mesa, María; Ríos-Almellones, Inmaculada; Rivas-Ruiz, Francisco (2014) Skin cancer prevention campaign aimed at beachgoers on the Costa del Sol (southern Spain). *International Journal of Dermatology* 53(11)E526-E530 [Not relevant to primary or secondary research questions]

Deben, S.; Aboal, J. R.; Carballera, A.; Cesa, M.; Fernandez, J. A. (2017) Monitoring river water quality with transplanted bryophytes: A methodological review. *Ecological Indicators* 81: 461-470 [Not relevant to primary or secondary research questions]

Dedeh, Amina; Ciutat, Aurelie; Tran, Damien; Bourdineaud, Jean-Paul (2014) DNA Alterations Triggered by Environmentally Relevant Polymetallic Concentrations in Marine Clams *Ruditapes philippinarum* and Polychaete Worms *Hediste diversicolor*. *Archives of Environmental Contamination and Toxicology* 67(4)651-658 [Not relevant to primary or secondary research questions]

DeFlorio-Barker, S.; Holman, D.; Landolfi, R.; Arnold, B. F.; Colford, J. M.; Weisberg, S. B.; Schiff, K. C.; Sams, E. A.; Wade, T. J. (2020) Incidence and public health burden of sunburn among beachgoers in the United States. *Preventive Medicine* 134 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Degger, N.; Wepener, V.; Richardson, B. J.; Wu, R. S. S. (2011) Application of artificial mussels (AMs) under South African marine conditions: A validation study. *Marine Pollution Bulletin* 63(44170)108-118 [Not relevant to primary or secondary research questions]

del Moral, Anna; del Carmen Llasat, Maria; Rigo, Tomeu (2020) Connecting flash flood events with radar-derived convective storm characteristics on the northwestern Mediterranean coast: knowing the present for better future scenarios adaptation. *Atmospheric Research* 238: UNSP-104863 [Not relevant to primary or secondary research questions]

Della Rossa, Pauline; Jannoyer, Magalie; Mottes, Charles; Plet, Joanne; Bazizi, Abderazak; Arnaud, Luc; Jestin, Alexandra; Woignier, Thierry; Gaude, Jean-Marie; Cattan, Philippe (2017) Linking current river pollution to historical pesticide use: Insights for territorial management? *The Science of the Total Environment* 574: 1232-1242 [Not relevant to primary or secondary research questions]

Demenchuk, E.; Chasovskiy, V.; Krylova, O. (2019) Impact of the industrial growth in Kaliningrad region on urban river water quality. *International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM* 19(5.1)365-371 [Not relevant to primary or secondary research questions]

Demirel, Zeynel; Ozer, Zafer; Ozer, Olcay (2011) Investigation and modeling of water quality of Goksu River (Cleadnos) in an international protected area by using GIS. *Journal of Geographical Sciences* 21(3)429-440 [Not relevant to primary or secondary research questions]

Devarajan, Naresh; Laffite, Amandine; Graham, Neil D.; Meijer, Maria; Prabakar, Kandasamy; Mubedi, Josue I.; Elongo, Vicky; Mpiana, Pius T.; Ibelings, Bastiaan Willem; Wildi, Walter; Pote, John (2015) Accumulation of Clinically Relevant Antibiotic-Resistance Genes, Bacterial Load, and Metals in Freshwater Lake Sediments in Central Europe. *Environmental Science & Technology* 49(11)6528-6537 [Not relevant to primary or secondary research questions]

Devlin, Michelle J.; Lyons, Brett P.; Bacon, John; Edmonds, Nathan; Tracey, Dieter; Al Zaidan, Abdullah S.; Al Ajmi, Fahad; Al-Wazzan, Zainab A.; Al-Hussain, Mona M.; Al Khaled, Hessa; Le Quesne, Will J. F. (2019) Principles to enable comprehensive national marine ecosystem status assessments from disparate data: The state of the marine environment in Kuwait. *Estuarine Coastal and Shelf Science* 230: 106407 [Not relevant to primary or secondary research questions]

Devos, S. A.; Baeyens, K.; Van Hecke, L. (2003) Sunscreen use and skin protection behavior on the Belgian beach. *International Journal of Dermatology* 42(5)352-356 [Not relevant to primary or secondary research questions]

Devos, S. A.; Van Der Endt, J. D.; Broeckx, W.; Vandaele, M.; Del Marmol, V.; Roseeuw, D.; Maselis, T. (2012) Sunscreen use and skin protection behaviour on the Belgian beach: A comparison 9 years later. *European Journal of Cancer Prevention* 21(5)474-477 [Not relevant to primary or secondary research questions]

Díaz-Jaramillo, M.; Ferreira, J. L.; Amado, L. L.; Ventura-Lima, J.; Martins, A.; Retamal, M. R.; Urrutia, R.; Bertran, C.; Barra, R.; Monserrat, J. M. (2010) Biomonitoring of antioxidant and oxidative stress responses in *Perinereis gualpensis* (Polychaeta: Nereididae) in Chilean estuarine regions under different anthropogenic pressure. *Ecotoxicology and Environmental Safety* 73(4)515-523 [Not relevant to primary or secondary research questions]

Díaz-Jaramillo, M.; Miglioranza, K. S. B.; Carriquiriborde, P.; Marino, D.; Pegoraro, C. N.; Valenzuela, G.; Barra, R. (2017) Sublethal effects in *Perinereis gualpensis* (Polychaeta: Nereididae) exposed to mercury-pyrene sediment mixture observed in a multipolluted estuary. *Ecotoxicology (London, England)* 26(6)792-801 [Not relevant to primary or secondary research questions]

Díaz-Jaramillo, Mauricio; da Rocha, Alessandra Martins; Chiang, Gustavo; Buchwalter, David; Monserrat, Jose M.; Barra, Ricardo (2013) Biochemical and behavioral responses in the estuarine polychaete *Perinereis gualpensis* (Nereididae) after in situ exposure to polluted sediments. *Ecotoxicology and Environmental Safety* 89: 182-188 [Not relevant to primary or secondary research questions]

Díez, I.; Secilla, A.; Santolaria, A.; Gorostiaga, J. M. (2009) Ecological monitoring of intertidal phytobenthic communities of the Basque Coast (N. Spain) following the Prestige oil spill. *Environmental Monitoring and Assessment* 159(43922)555-575 [Not relevant to primary or secondary research questions]

Ding, Lei; Chen, Kun-lun; Cheng, Sheng-gao; Wang, Xu (2015) Water ecological carrying capacity of urban lakes in the context of rapid urbanization: A case study of East Lake in Wuhan. *Physics and Chemistry of the Earth* 89-90: 104-113 [Not relevant to primary or secondary research questions]

Divya, Sukumaran P.; Hatha, A. A. Mohamed (2019) Screening of tropical estuarine water in south-west coast of India reveals emergence of ARGs-harboring hypervirulent *Escherichia coli* of global significance. *International Journal of Hygiene and Environmental Health* 222(2)235-248 [Not relevant to primary or secondary research questions]

Djahnit, N.; Chernai, S.; Catania, V.; Hamdi, B.; China, B.; Cappello, S.; Quatrini, P. (2019) Isolation, characterization and determination of biotechnological potential of oil-degrading bacteria from

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Algerian centre coast. *Journal of Applied Microbiology* 126(3)780-795 [Not relevant to primary or secondary research questions]

do Nascimento, N. R.; Nicola, S. M. C.; Rezende, M. O. O.; Oliveira, T. A.; Oberg, G. (2004) Pollution by hexachlorobenzene and pentachlorophenol in the coastal plain of Sao Paulo state, Brazil. *Geoderma* 121(43924)221-232 [Not relevant to primary or secondary research questions]

Doering, J. A.; Farmahin, R.; Wiseman, S.; Beitel, S. C.; Kennedy, S. W.; Giesy, J. P.; Hecker, M. (2015) Differences in activation of aryl hydrocarbon receptors of white sturgeon relative to lake sturgeon are predicted by identities of key amino acids in the ligand binding domain. *Environmental Science and Technology* 49(7)4681-4689 [Not relevant to primary or secondary research questions]

Doğan-Sağlamtimur, N.; Kumbur, H. (2010) Metals (Hg, Pb, Cu, and Zn) bioaccumulation in sediment, fish, and human scalp hair: A case study from the city of mersin along the southern coast of turkey. *Biological Trace Element Research* 136(1)55-70 [Not relevant to primary or secondary research questions]

Dokmeci, A. H.; Yıldız, T.; Ongen, A.; Sıvıri, N. (2014) Heavy metal concentration in deepwater rose shrimp species (*Parapenaeus longirostris*, Lucas, 1846) collected from the Marmara Sea Coast in Tekirdağ. *Environmental Monitoring and Assessment* 186(4)2449-2454 [Not relevant to primary or secondary research questions]

Dong, Bo; Zhu, Yongxiang; Xu, Zouying; Zhang, Rui; Yi, Ge (2019) Pollution Characteristics and Risk Levels of the Chemical Toxin Microcystin on Coastal Areas. *Journal of Coastal Research* 87-90 [Not relevant to primary or secondary research questions]

Dong, Linlin; Zhang, Haidong; Wang, Lingqiang; Yu, Dongsheng; Yang, Feixia; Shi, Xuezheng; Saleem, Hafsa; Akhtar, M. Saleem (2018) Irrigation with sediment-laden river water affects the soil texture and composition of organic matter fractions in arid and semi-arid areas of Northwest China. *Geoderma* 328: 43739 [Not relevant to primary or secondary research questions]

Dong-yi, Jiang; Jin-qin, Yang; Yun-yan, Wang; Qi, Liao; Zhe, Long; San-yang, Zhou (2019) Surface water quality and potential health risk assessments in Changsha-Zhuzhou-Xiangtan section of Xiangjiang River, China. *Journal of Central South University* 26(12)3252-3260 [Not relevant to primary or secondary research questions]

Dorigo, U.; Lefranc, M.; Leboulanger, C.; Montuelle, B.; Humbert, J. F. (2009) Spatial heterogeneity of periphytic microbial communities in a small pesticide-polluted river. *FEMS Microbiology Ecology* 67(3)491-501 [Not relevant to primary or secondary research questions]

Doroski, April A.; Helton, Ashley M.; Vadas, Timothy M. (2019) Denitrification Potential and Carbon Mineralization in Restored and Unrestored Coastal Wetland Soils Across an Urban Landscape. *Wetlands* 39(4)895-906 [Not relevant to primary or secondary research questions]

Dos Santos, Dayana M.; Buruaem, Lucas; Gonçalves, Renato M.; Williams, Mike; Abessa, Denis M. S.; Kookana, Rai; de Marchi, Mary Rosa R. (2018) Multiresidue determination and predicted risk assessment of contaminants of emerging concern in marine sediments from the vicinities of submarine sewage outfalls. *Marine Pollution Bulletin* 129(1)299-307 [Not relevant to primary or secondary research questions]

Downing, Amy L.; DeVanna, Kristen M.; Rubeck-Schurtz, C. Nichole; Tuhela, Laura; Grunkemeyer, Heather (2008) Community and ecosystem responses to a pulsed pesticide disturbance in freshwater ecosystems. *Ecotoxicology* 17(6)539-548 [Not relevant to primary or secondary research questions]

Doyle, Shawn M.; Whitaker, Emily A.; De Pascuale, Veronica; Wade, Terry L.; Knap, Anthony H.; Santschi, Peter H.; Quigg, Antonietta; Sylvan, Jason B. (2018) Rapid Formation of Microbe-Oil Aggregates and Changes in Community Composition in Coastal Surface Water Following Exposure to Oil and the Dispersant Corexit. *Frontiers in Microbiology* 9: 689 [Not relevant to primary or secondary research questions]

Dragun, Zrinka; Marijic, Vlatka Filipovic; Krasnici, Nesrete; Ivankovic, Dusica; Valic, Damir; Zunic, Jakov; Kapetanovic, Damir; Smrzlic, Irena Vardic; Redzovic, Zuzana; Grgic, Ivana; Erk, Marijana (2018) Total and cytosolic concentrations of twenty metals/metalloids in the liver of brown trout *Salmo trutta* (Linnaeus, 1758) from the karstic Croatian river Krka. *Ecotoxicology and Environmental Safety* 147: 537-549 [Not relevant to primary or secondary research questions]

Dragun, Zrinka; Kapetanović, Damir; Raspot, Biserka; Teskeredžić, Emin (2011) Water quality of medium size watercourse under baseflow conditions: the case study of river Sutla in Croatia. *Ambio* 40(4)391-407 [Not relevant to primary or secondary research questions]

Dsikowitzky, L.; Nordhaus, I.; Sujatha, C. H.; Akhil, P. S.; Soman, K.; Schwarzbauer, J. (2014) A combined chemical and biological assessment of industrial contamination in an estuarine system in Kerala, India. *Science of the Total Environment* 485-486(1)348-362 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Du, J.; Zhang, Y.; Guo, R.; Meng, F.; Gao, Y.; Ma, C.; Zhang, H. (2019) Harmful effect of nanoparticles on the functions of freshwater ecosystems: Insight into nanoZnO-polluted stream. *Chemosphere* 214: 830-838 [Not relevant to primary or secondary research questions]

Duan, B.; Li, B. F.; Liu, R. S.; Tong, X. L. (2008) Diel rhythm of benthic macroinvertebrate's drift in streams in Hengshihui River watershed of Guangdong, China. *Chinese Journal of Applied Ecology* 19(5)1084-1090 [Not relevant to primary or secondary research questions]

Duan, Bo; Li, Bin-Feng; Liu, Ruo-Si; Tong, Xiao-Li (2008) [Diel rhythm of benthic macroinvertebrate's drift in streams in Hengshihui River watershed of Guangdong, China]. *Ying Yong Sheng Tai Xue Bao = The Journal of Applied Ecology* 19(5)1084-1090 [Not relevant to primary or secondary research questions]

Duan, Weili; He, Bin; Chen, Yaning; Zou, Shan; Wang, Yi; Nover, Daniel; Chen, Wen; Yang, Guishan (2018) Identification of long-term trends and seasonality in high-frequency water quality data from the Yangtze River basin, China. *Plos One* 13(2)e0188889 [Not relevant to primary or secondary research questions]

Duan, Weili; He, Bin; Nover, Daniel; Yang, Guishan; Chen, Wen; Meng, Huifang; Zou, Shan; Liu, Chuanming (2016) Water Quality Assessment and Pollution Source Identification of the Eastern Poyang Lake Basin Using Multivariate Statistical Methods. *Sustainability* 8(2)133 [Not relevant to primary or secondary research questions]

Dudarev, A. A.; Chupachin, V. S.; Ivanova, Z. S.; Lebedev, G. B. (2012) Specificity of exposure of the indigenous dwellers of coastal and inland Chukotka to dichlorodiphenyltrichloroethane. *Gigiena i sanitaria* (2)15-20 [Not relevant to primary or secondary research questions]

Dudek, Natasha K.; Sun, Christine L.; Burstein, David; Kantor, Rose S.; Aliaga Goltzman, Daniela S.; Bik, Elisabeth M.; Thomas, Brian C.; Banfield, Jillian F.; Relman, David A. (2017) Novel Microbial Diversity and Functional Potential in the Marine Mammal Oral Microbiome. *Current biology: CB* 27(24)3752-3762.e6 [Not relevant to primary or secondary research questions]

Dumas, Thibaut; Bonnefille, Benilde; Gomez, Elena; Boccard, Julien; Castro, Nancy Ariza; Fenet, Helene; Courant, Frederique (2020) Metabolomics approach reveals disruption of metabolic pathways in the marine bivalve *Mytilus galloprovincialis* exposed to a WWTP effluent extract. *Science of the Total Environment* 712: 136551 [Not relevant to primary or secondary research questions]

Dumolland, Remi; Gazo, Ievgeniia; Gomes, Isa D. L.; Besnardreau, Lydia; McDougall, Alex (2017) Ascidians: An Emerging Marine Model for Drug Discovery and Screening. *Current Topics in Medicinal Chemistry* 17(18)2056-2066 [Not relevant to primary or secondary research questions]

Dungan, R. S.; Snow, D. D.; Bjorneberg, D. L. (2017) Occurrence of antibiotics in an agricultural watershed in south-central Idaho. *Journal of Environmental Quality* 46(6)1455-1461 [Not relevant to primary or secondary research questions]

Duodu, Godfred Odame; Ogogo, Kenneth Nduka; Mummullage, Sandya; Harden, Fiona; Goonetilleke, Ashantha; Ayoko, Godwin A. (2017) Source apportionment and risk assessment of PAHs in Brisbane River sediment, Australia. *Ecological Indicators* 73: 784-799 [Not relevant to primary or secondary research questions]

Dutta, Smita; Dwivedi, Ajay; Kumar, M. Suresh (2018) Use of water quality index and multivariate statistical techniques for the assessment of spatial variations in water quality of a small river. *Environmental Monitoring and Assessment* 190(12)718 [Not relevant to primary or secondary research questions]

Ebadi, Abdol Ghaffar; Hisoriev, Hikmat (2018) Physicochemical characterization of sediments from Tajan river basin in the northern Iran. *Toxicological and Environmental Chemistry* 100(44017)540-549 [Not relevant to primary or secondary research questions]

Echarri-Bravo, V.; Paterson, L.; Aspray, T. J.; Porter, J. S.; Winson, M. K.; Thornton, B.; Hartl, M. G. J. (2015) Shifts in the metabolic function of a benthic estuarine microbial community following a single pulse exposure to silver nanoparticles. *Environmental Pollution* 201: 91-99 [Not relevant to primary or secondary research questions]

Edge, T. A.; Hill, S.; Seto, P.; Marsalek, J. (2010) Library-dependent and library-independent microbial source tracking to identify spatial variation in faecal contamination sources along a Lake Ontario beach (Ontario, Canada). *Water Science and Technology* 62(3)719-727 [Not relevant to primary or secondary research questions]

Effler, Steven W.; O'Donnell, Susan M.; Prestigiacomo, Anthony R.; Matthews, David A.; Auer, Martin T. (2013) Retrospective analyses of inputs of municipal wastewater effluent and coupled impacts on an urban lake. *Water Environment Research: A Research Publication of the Water Environment Federation* 85(1)13-26 [Not relevant to primary or secondary research questions]

Ekklesia, E.; Shanahan, P.; Chua, L. H. C.; Eikaas, H. S. (2015) Associations of chemical tracers and faecal indicator bacteria in a tropical urban catchment. *Water Research* 75: 270-281 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Ekmekyapar, Fsun; Cebi, Ulviye Kanburoglu (2017) An investigation of inorganic chemicals and heavy metals in Kirkclareli Dam water, Thrace region. *Desalination and Water Treatment* 87: 306-313 [Not relevant to primary or secondary research questions]

Ekpo, O. (2016) Cares-seeking for childhood diarrhoea at the primary level of care in communities in Cross River State, Nigeria. *Journal of Epidemiology and Global Health* 6(4)303-313 [Not relevant to primary or secondary research questions]

El Kashouty, Mohamed (2012) The hydrogeochemical evolution and modeling of the Quaternary aquifer west of the River Nile, El Minia district. *Arabian Journal of Geosciences* 5(4)617-635 [Not relevant to primary or secondary research questions]

El Kashouty, Mohamed; El Sayed, Esam; Kamel, Aly Aly (2012) The hydrochemical characteristics and evolution of groundwater and surface water in the western part of the River Nile, El Minia district, Upper Egypt. *Arabian Journal of Geosciences* 5(4)637-652 [Not relevant to primary or secondary research questions]

El Wahab, M. A.; Hamoda, A. Z. (2012) Effect of desalination plants on the marine environment along the Red sea, Egypt. (case study). *Thalassas* 28(2)27-36 [Not relevant to primary or secondary research questions]

El-Din, Soad M. Mohy; Noaman, Nadia H.; Zaky, Seham H. (2016) Effects of Chloramphenicol, Clofibric Acid, Acetyl Salicylic Acid, Nonylphenol and Bisphenol on the Protein Profile and Ultrastructure of Marine Macroalgae *Pterocladia capillacea* and *Ulva lactuca*. *Egyptian Journal of Botany* 56(1)335-351 [Not relevant to primary or secondary research questions]

Elias, Daniel; Bernot, Melody J. (2017) Effects of Individual and Combined Pesticide Commercial Formulations Exposure to Egestion and Movement of Common Freshwater Snails, *Physa acuta* and *Helisoma anceps*. *American Midland Naturalist* 178(1)97-111 [Not relevant to primary or secondary research questions]

Elliott, S. M.; Brigham, M. E.; Kiesling, R. L.; Schoenfuss, H. L.; Jorgenson, Z. G. (2018) Environmentally relevant chemical mixtures of concern in waters of United States tributaries to the Great Lakes. *Integrated Environmental Assessment and Management* 14(4)509-518 [Not relevant to primary or secondary research questions]

Elliott, S.; Maltrud, M.; Reagan, M.; Moridis, G.; Cameron-Smith, P. (2011) Marine methane cycle simulations for the period of early global warming. *Journal of Geophysical Research: Biogeosciences* 116(1) [Not relevant to primary or secondary research questions]

Ellis, J. I.; Hewitt, J. E.; Clark, D.; Taiapa, C.; Patterson, M.; Sinner, J.; Hardy, D.; Thrush, S. F. (2015) Assessing ecological community health in coastal estuarine systems impacted by multiple stressors. *Journal of Experimental Marine Biology and Ecology* 473: 176-187 [Not relevant to primary or secondary research questions]

El-Makawy, A. I.; Grgis, S. M.; Khalil, W. K. B. (2008) Developmental and genetic toxicity of stannous chloride in mouse dams and fetuses. *Mutation Research - Genetic Toxicology and Environmental Mutagenesis* 657(2)105-110 [Not relevant to primary or secondary research questions]

Elmorsi, R. R.; Hamed, M. A.; Abou-El-Sherbini, K. S. (2017) Physicochemical properties of manzala lake, Egypt. *Egyptian Journal of Chemistry* 60(4)519-535 [Not relevant to primary or secondary research questions]

Elsayed, O. F.; Maillard, E.; Vuilleumier, S.; Millet, M.; Imfeld, G. (2015) Degradation of chloroacetanilide herbicides and bacterial community composition in lab-scale wetlands. *Science of the Total Environment* 520: 222-231 [Not relevant to primary or secondary research questions]

Elshanawany, R.; Ibrahim, M. I.; Frihy, O.; Abodia, M. (2018) Foraminiferal evidence of anthropogenic pollution along the Nile Delta coast. *Environmental Earth Sciences* 77(12) [Not relevant to primary or secondary research questions]

El-Sheekh, M.; Ali, E.; El-Kassas, H. (2019) Phytoplankton ecology along the Egyptian northern lakes: Status, pressures and impacts. 71 [Not relevant to primary or secondary research questions]

El-Sheekh, Mostafa (2009) River Nile Pollutants and Their Effect on Life Forms and Water Quality. *Nile: Origin, Environments, Limnology and Human Use* 89: 395-405 [Not relevant to primary or secondary research questions]

El-Sorogy, A.; Abdel-Wahab, M.; Ziko, A.; Shehata, W. (2016) Impact of some trace metals on bryozoan occurrences, Red Sea coast, Egypt. *Indian Journal of Geo-Marine Sciences* 45(1)86-99 [Not relevant to primary or secondary research questions]

Emelougu, E. S.; Seiler, T. B.; Pollard, P.; Robinson, C. D.; Webster, L.; McKenzie, C.; Heger, S.; Hollert, H.; Bresnan, E.; Best, J.; Moffat, C. F. (2014) Evaluations of combined zebrafish (*Danio rerio*) embryo and marine phytoplankton (*Diacronema lutheri*) toxicity of dissolved organic contaminants in the Ythan catchment, Scotland, UK. *Environmental Science and Pollution Research* 21(8)5537-5546 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Emelogu, Emmanuel S.; Pollard, Pat; Dymond, Peter; Robinson, Craig D.; Webster, Lynda; McKenzie, Craig; Dobson, Judy; Bresnan, Eileen; Moffat, Colin F. (2013) Occurrence and potential combined toxicity of dissolved organic contaminants in the Forth estuary and Firth of Forth, Scotland assessed using passive samplers and an algal toxicity test. *The Science of the Total Environment* 461-462: 230-239 [Not relevant to primary or secondary research questions]

Emenike, PraiseGod Chidozie; Neris, Jordan Brizi; Tenebe, Imokhai Theophilus; Nnaji, Chidozie Charles; Jarvis, Peter (2020) Estimation of some trace metal pollutants in River Atuara southwestern Nigeria and spatio-temporal human health risks assessment. *Chemosphere* 239: 124770 [Not relevant to primary or secondary research questions]

Emenike, PraiseGod Chidozie; Tenebe, Imokhai Theophilus; Neris, Jordan Brizi; Omole, David Olugbenga; Afolayan, Olaniyi; Okeke, Chukwueloka Udechukwu; Emenike, Ikechukwu Kingsley (2020) An integrated assessment of land-use change impact, seasonal variation of pollution indices and human health risk of selected toxic elements in sediments of River Atuara, Nigeria. *Environmental Pollution* 265: 114795 [Not relevant to primary or secondary research questions]

Emmett, A.; Uchida, T.; Wagner Jr, R. F. (2008) Sunburn risk factors for beachgoing children. *Dermatology Online Journal* 14(1) [Not relevant to primary or secondary research questions]

Engler, R. E. (2012) The complex interaction between marine debris and toxic chemicals in the ocean. *Environmental Science and Technology* 46(22)12302-12315 [Not relevant to primary or secondary research questions]

Enitan, Ibitonke Titilayo; Enitan, Abimbola Motunrayo; Odiyo, John Ogony; Alhassan, Muhammad Mamman (2018) Human Health Risk Assessment of Trace Metals in Surface Water Due to Leachate from the Municipal Dumpsite by Pollution Index: A Case Study from Ndawuse River, Abuja, Nigeria. *Open Chemistry* 16(1)214-227 [Not relevant to primary or secondary research questions]

Escobar, Maria Doris; Andrade-Lopez, Juana; Farias, Izeni P.; Hrbek, Tomas (2015) Delimiting Evolutionarily Significant Units of the Fish, *Piaractus brachypomus* (Characiformes: Serrasalmidae), from the Orinoco and Amazon River Basins with Insight on Routes of Historical Connectivity. *Journal of Heredity* 106: 428-438 [Not relevant to primary or secondary research questions]

Eskenazi, B.; Chevrier, J.; Rosas, L. G.; Anderson, H. A.; Bomman, M. S.; Bouwman, H.; Chen, A.; Cohn, B. A.; de Jager, C.; Henshel, D. S.; Leipzig, F.; Leipzig, J. S.; Lorenz, E. C.; Snedeker, S. M.; Stapleton, D. (2009) The pine river statement: Human health consequences of DDT use. *Environmental Health Perspectives* 117(9)1359-1367 [Not relevant to primary or secondary research questions]

Espinosa-Reyes, Guillermo; Costilla-Salazar, Rogelio; Perez-Vazquez, Francisco J.; Gonzalez-Mille, Donaji J.; Flores-Ramirez, Rogelio; del Carmen Cuevas-Diaz, Maria; Medellin-Garibay, Susana E.; Ilizaliturri-Hernandez, Cesar A. (2019) DNA damage in earthworms by exposure of Persistent Organic Pollutants in low basin of Coatzacoalcos River, Mexico. *Science of the Total Environment* 651: 1236-1242 [Not relevant to primary or secondary research questions]

Esposito, Giuseppe; Meloni, Domenico; Abete, Maria Cesarina; Colombero, Giorgio; Mantia, Martino; Pastorino, Paolo; Prearo, Marino; Pais, Antonio; Antuofermo, Elisabetta; Squadrone, Stefania (2018) The bivalve *Ruditapes decussatus*: A biomonitor of trace elements pollution in Sardinian coastal lagoons (Italy). *Environmental Pollution* (Barking, Essex: 1987) 242(Pt B)1720-1728 [Not relevant to primary or secondary research questions]

Essumang, D. K. (2009) Analysis and Human Health Risk Assessment of Arsenic, Cadmium, and Mercury in Manta Birostris (Manta Ray) Caught Along the Ghanaian Coastline. *Human and Ecological Risk Assessment* 15(5)985-998 [Not relevant to primary or secondary research questions]

Essumang, D. K.; Dodo, D. K.; Hadzi, G. (2010) Distribution, levels, and risk assessment of polycyclic aromatic hydrocarbons in the soot of some kitchens in the Cape Coast Metropolis of Ghana. *Toxicological and Environmental Chemistry* 92(9)1633-1647 [Not relevant to primary or secondary research questions]

Carvalho, M. E. de, da Silva, R. A., Barata, J. M. S., Domingos, M. de F., Ciaravolo, R. M. de C., and Zacharias, F. (2003) Chagas' disease in the southern coastal region of Brazil. *Revista de Saude Publica* 37(1)49-58 [Not relevant to primary or secondary research questions]

Etokidem, Aniekan Jumbo; Johnson, Ofonime (2016) Child Survival Strategies: Assessment of Knowledge and Practice of Rural Women of Reproductive Age in Cross River State, Nigeria. *Journal of Tropical Medicine* 2016: 5098463 [Not relevant to primary or secondary research questions]

Evrenoglou, Lefkothea; Partsinevelou, Sofia Aikaterini; Stamatis, Panagiotis; Lazaris, Andreas; Patsouris, Eustratios; Kotampasi, Chrysanthi; Nicolopoulou-Stamati, Polyxeni (2013) Children exposure to trace levels of heavy metals at the north zone of Kifissos River. *The Science of the Total Environment* 443: 650-661 [Not relevant to primary or secondary research questions]

Ezenwaka, C. O.; Nzeako, S. O. (2019) Efficacy of artesunate and praziquantel combination on the prevalence of urinary schistosomiasis among children in Abua/Odual Local Government Area,

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Rivers State, Nigeria. Nigerian Journal of Parasitology 40(1)66-75 [Not relevant to primary or secondary research questions]

Fabrega, Julia; Zhang, Rui; Renshaw, Joanna C.; Liu, Wen-Tso; Lead, Jamie R. (2011) Impact of silver nanoparticles on natural marine biofilm bacteria. Chemosphere 85(6)961-966 [Not relevant to primary or secondary research questions]

Fabrik, I.; Ruferova, Z.; Hilscherova, K.; Adam, V.; Trnkova, L.; Kizek, R. (2008) A determination of metallothionein in larvae of freshwater midges (*Chironomus riparius*) using Brdicka reaction. Sensors 8(7)4081-4094 [Not relevant to primary or secondary research questions]

Falfushynska, H. I.; Gnatyshyna, L. L.; Osadchuk, O. Y.; Farkas, A.; Vehovszky, A.; Carpenter, D. O.; Gyori, J.; Stolar, O. B. (2014) Diversity of the molecular responses to separate wastewater effluents in freshwater mussels. Comparative Biochemistry and Physiology Part - C: Toxicology and Pharmacology 164: 51-58 [Not relevant to primary or secondary research questions]

Fang, Tingting; Wang, Hui; Cui, Qijia; Rogers, Matt; Dong, Peiyan (2018) Diversity of potential antibiotic-resistant bacterial pathogens and the effect of suspended particles on the spread of antibiotic resistance in urban recreational water. Water Research 145: 541-551 [Not relevant to primary or secondary research questions]

Fangxiu, Zhang; Yanping, Wang; Longxi, Han; Xiaoli, Zhang (2010) Research on Application of Water-quality Model for Urgent Eco-friendly Water-transfer Project from Yellow River to Baiyangdian. [Not relevant to primary or secondary research questions]

Fantuzzi, G.; Aggazzotti, G.; Righi, E.; Predieri, G.; Castiglioni, S.; Riva, F.; Zuccato, E. (2018) Illicit drugs and pharmaceuticals in swimming pool waters. The Science of the Total Environment 635: 956-963 [Not relevant to primary or secondary research questions]

Fasca, H.; de Castilho, L. V. A.; de Castilho, J. F. M.; Pasqualino, I. P.; Alvarez, V. M.; de Azevedo Jurelevicius, D.; Seldin, L. (2018) Response of marine bacteria to oil contamination and to high pressure and low temperature deep sea conditions. MicrobiologyOpen 7(2) [Not relevant to primary or secondary research questions]

Faure, F.; Demars, C.; Wieser, O.; Kunz, M.; De Alencastro, L. F. (2015) Plastic pollution in Swiss surface waters: Nature and concentrations, interaction with pollutants. Environmental Chemistry 12(5)582-591 [Not relevant to primary or secondary research questions]

Fauvette, V.; Montero, N.; Mueller, J. F.; Banks, A.; Mazzella, N.; Kaserzon, S. L. (2017) Glyphosate and AMPA passive sampling in freshwater using a microporous polyethylene diffusion sampler. Chemosphere 188: 241-248 [Not relevant to primary or secondary research questions]

Feng, L.; Cheng, Y.; Zhang, Y.; Li, Z.; Yu, Y.; Feng, L.; Zhang, S.; Xu, L. (2020) Distribution and human health risk assessment of antibiotic residues in large-scale drinking water sources in Chongqing area of the Yangtze River. Environmental Research 185 [Not relevant to primary or secondary research questions]

Fernandes, C.; Khandeparker, R. D. S.; Shenoy, B. D. (2020) High abundance of *Vibrio* in tarball-contaminated seawater from Vagator beach, Goa, India. Marine Pollution Bulletin 150 [Not relevant to primary or secondary research questions]

Fernandes, G. W.; Goulart, F. F.; Ranieri, B. D.; Coelho, M. S.; Dales, K.; Boesche, N.; Bustamante, M.; Carvalho, F. A.; Carvalho, D. C.; Dirzo, R.; Fernandes, S.; Galetti, P. M.; Millan, V. E. G.; Mielke, C.; Ramirez, J. L.; Neves, A.; Rogass, C.; Ribeiro, S. P.; Scariot, A.; Soares-Filho, B. (2016) Deep into the mud: ecological and socio-economic impacts of the dam breach in Mariana, Brazil. Natureza e Conservacao 14(2)35-45 [Not relevant to primary or secondary research questions]

Fernández, N.; Fernández-Boán, M.; Verísmo, P.; Freire, J. (2013) Assessing the spatial variability, level and source of organic chemical contaminants in bivalve fishing grounds on the Galician coast (NW Spain). Marine Pollution Bulletin 74(1)291-301 [Not relevant to primary or secondary research questions]

Fernandez-Cassi, X.; Timoneda, N.; Gonzales-Gustavson, E.; Abril, J. F.; Bofill-Mas, S.; Girones, R. (2017) A metagenomic assessment of viral contamination on fresh parsley plants irrigated with fecally tainted river water. International Journal of Food Microbiology 257: 80-90 [Not relevant to primary or secondary research questions]

Ferrante, A.; Trivellini, A.; Malorgio, F.; Carmassi, G.; Vernieri, P.; Serra, G. (2011) Effect of seawater aerosol on leaves of six plant species potentially useful for ornamental purposes in coastal areas. Scientia Horticulturae 128(3)332-341 [Not relevant to primary or secondary research questions]

Ferrante, Margherita; Napoli, Salvatore; Grasso, Alfina; Zuccarello, Pietro; Cristaldi, Antonio; Copat, Chiara (2019) Systematic review of arsenic in fresh seafood from the Mediterranean Sea and European Atlantic coasts: A health risk assessment. Food and Chemical Toxicology 126: 322-331 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Ferre-Huguet, Nuria; Nadal, Marti; Schuhmacher, Marta; Domingo, Jose L. (2009) Human Health Risk Assessment for Environmental Exposure to Metals in the Catalan Stretch of the Ebro River, Spain. *Human and Ecological Risk Assessment* 15(3)604-623 [Not relevant to primary or secondary research questions]

Ferreira de Oliveira, Vera Lucia; Gerlach, Raquel Fernanda; Martins, Lourdes Conceicao; Guerra, Carolina de Souza; Frazao, Paulo; Ferreira Braga, Alvesio Luis; Amador Pereira, Luiz Alberto (2017) Dental enamel as biomarker for environmental contaminants in relevant industrialized estuary areas in Sao Paulo, Brazil. *Environmental Science and Pollution Research* 24(16)14080-14090 [Not relevant to primary or secondary research questions]

Ferreira, M. D. S.; Fontes, M. P. F.; Pacheco, A. A.; Lima, H. N.; Santos, J. Z. L. (2020) Risk assessment of trace elements pollution of Manaus urban rivers. *Science of the Total Environment* 709 [Not relevant to primary or secondary research questions]

Fleddum, A.; Atkinson, L. J.; Field, J. G.; Shin, P. (2013) Changes in biological traits of macro-benthic communities subjected to different intensities of demersal trawling along the west coast of southern Africa. *Journal of the Marine Biological Association of the United Kingdom* 93(8)2027-2038 [Not relevant to primary or secondary research questions]

Flocks, James; Kindinger, Jack; Marot, Marci; Holmes, Charles (2009) Sediment Characterization and Dynamics in Lake Pontchartrain, Louisiana. *Journal of Coastal Research* 113-126 [Not relevant to primary or secondary research questions]

Folkerts, Erik J.; Goss, Greg G.; Blewett, Tamzin A. (2020) Investigating the Potential Toxicity of Hydraulic Fracturing Flowback and Produced Water Spills to Aquatic Animals in Freshwater Environments: A North American Perspective. *Reviews of Environmental Contamination and Toxicology* [Not relevant to primary or secondary research questions]

Fonseca, V. F.; Franca, S.; Serafim, A.; Company, R.; Lopes, B.; Bebianno, M. J.; Cabral, H. N. (2011) Multi-biomarker responses to estuarine habitat contamination in three fish species: *Dicentrarchus labrax*, *Solea senegalensis* and *Pomatoschistus microps*. *Aquatic Toxicology* 102(43924)216-227 [Not relevant to primary or secondary research questions]

Font-Ribera, Laia; Villanueva, Cristina M.; Gracia-Lavedan, Esther; Borras-Santos, Alicia; Kogevinas, Manolis; Zock, Jan-Paul (2014) Indoor swimming pool attendance and respiratory and dermal health in schoolchildren - HITEA Catalonia. *Respiratory Medicine* 108(7)1056-1059 [Not relevant to primary or secondary research questions]

Foomani, A.; Gholizadeh, M.; Harsij, M.; Salavatian, S. M. (2020) River health assessment using macroinvertebrates and water quality parameters: A case of the Shanbeh-Bazar River, Anzali Wetland, Iran. *Iranian Journal of Fisheries Sciences* 19(5)2274-2292 [Not relevant to primary or secondary research questions]

Fournier, Maria-Luisa; Echeverria-Saenz, Silvia; Mena, Freylan; Arias-Andres, Maria; de la Cruz, Elba; Ruepert, Clemens (2018) Risk assessment of agriculture impact on the Frio River watershed and Cano Negro Ramsar wetland, Costa Rica. *Environmental Science and Pollution Research* 25(14)13347-13359 [Not relevant to primary or secondary research questions]

Freixa, Anna; Perijo, Nuria; Langenheder, Silke; Romani, Anna M. (2020) River biofilms adapted to anthropogenic disturbances are more resistant to WWTP inputs. *Fems Microbiology Ecology* 96(9)fiaa152 [Not relevant to primary or secondary research questions]

Fremling, C. R. (2005) Impacts of a spill of no. 6 fuel oil on Lake Winona. 3698 [Not relevant to primary or secondary research questions]

French, Susannah S.; DeNardo, Dale F.; Greives, Timothy J.; Strand, Christine R.; Demas, Gregory E. (2010) Human disturbance alters endocrine and immune responses in the Galapagos marine iguana (*Amblyrhynchus cristatus*). *Hormones and Behavior* 58(5)792-799 [Not relevant to primary or secondary research questions]

Frenkel, Michael; Yunik, Yaron; Fleker, Marcelo; Blum, Shlomo E.; Sionov, Edward; Elad, Daniel; Serhan, Hanan; Segal, Esther (2020) Fungi in sands of Mediterranean Sea beaches of Israel-Potential relevance to human health and well-being. *Mycoses* [Not relevant to primary or secondary research questions]

Fresia, P.; Antelo, V.; Salazar, C.; Giménez, M.; D'Alessandro, B.; Afshinnekoo, E.; Mason, C.; Gonnet, G. H.; Iraola, G. (2019) Urban metagenomics uncover antibiotic resistance reservoirs in coastal beach and sewage waters. *Microbiome* 7(1) [Not relevant to primary or secondary research questions]

Fritts, Mark W.; Deboer, Jason A.; Fritts, Andrea K.; Kellock, Kristen A.; Bringolf, Robert B.; Casper, Andrew F. (2016) Survey of Intersex Occurrence in Largemouth Bass (*Micropterus salmoides*) from the Upper Illinois River Waterway. *American Midland Naturalist* 176(1)158-165 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Fu, Jie; Luo, Yin; Liu, Chunsheng; Zhu, Hailiang (2013) Studies on the Environmental Pollution of the Huaihe River, China. *Journal of Environmental Protection and Ecology* 14(4)1498-1505 [Not relevant to primary or secondary research questions]

Fu, S.; Liu, Z.; Li, Y. Z.; Guo, Y. R.; Xu, X. M.; Liu, J. J.; Hu, X. D. (2018) Sequence subdivision and development characteristics of low-accommodation non-marine basins: a case study of the Yanchang Formation in the Ordos Basin. *Australian Journal of Earth Sciences* 65(6)823-850 [Not relevant to primary or secondary research questions]

Fuentes, S.; Ding, G. C.; Cárdenas, F.; Smalla, K.; Seeger, M. (2015) Assessing environmental drivers of microbial communities in estuarine soils of the Aconcagua River in Central Chile. *FEMS Microbiology Ecology* 91(10) [Not relevant to primary or secondary research questions]

Galla, S.; Chakraborty, S.; Cheng, X.; Yeo, J. Y.; Mell, B.; Chiu, N.; Wenceslau, C. F.; Vijay-Kumar, M.; Joe, B. (2020) Exposure to Amoxicillin in Early Life Is Associated With Changes in Gut Microbiota and Reduction in Blood Pressure: Findings From a Study on Rat Dams and Offspring. *Journal of the American Heart Association* 9(2) [Not relevant to primary or secondary research questions]

Gallego, J. R.; González-Rojas, E.; Peláez, A. I.; Sánchez, J.; García-Martínez, M. J.; Ortiz, J. E.; Torres, T.; Llamas, J. F. (2006) Natural attenuation and bioremediation of Prestige fuel oil along the Atlantic coast of Galicia (Spain). *Organic Geochemistry* 37(12)1869-1884 [Not relevant to primary or secondary research questions]

Gallen, C.; Heffernan, A. L.; Kaserzon, S.; Dogruer, G.; Samanipour, S.; Gomez-Ramos, M. J.; Mueller, J. F. (2019) Integrated chemical exposure assessment of coastal green turtle foraging grounds on the Great Barrier Reef. *The Science of the Total Environment* 657: 401-409 [Not relevant to primary or secondary research questions]

Gammons, Christopher H.; Slotton, Darell G.; Gerbrandt, Butch; Weight, Willis; Young, Courtney A.; McNearney, Richard L.; Camac, Eugenio; Calderon, Ruben; Tapia, Henri (2006) Mercury concentrations of fish, river water, and sediment in the Rio Ramis-Lake Titicaca watershed, Peru. *Science of the Total Environment* 368(43892)637-648 [Not relevant to primary or secondary research questions]

Gao, Bo; Gao, Li; Gao, Jijun; Xu, Dongyu; Wang, Qiwen; Sun, Ke (2019) Simultaneous evaluations of occurrence and probabilistic human health risk associated with trace elements in typical drinking water sources from major river basins in China. *The Science of the Total Environment* 666: 139-146 [Not relevant to primary or secondary research questions]

Gao, F.; Luo, X. J.; Yang, Z. F.; Wang, X. M.; Mai, B. X. (2009) Brominated flame retardants, polychlorinated biphenyls, and organochlorine pesticides in bird eggs from the Yellow River Delta, North China. *Environmental Science and Technology* 43(18)6956-6962 [Not relevant to primary or secondary research questions]

Gao, Han; LaVergne, JeanneM; Carpenter, Corey M. G.; Desai, Raj; Zhang, Xu; Gray, Kimberly; Helbling, Damian E.; Wells, George F. (2019) Exploring co-occurrence patterns between organic micropollutants and bacterial community structure in a mixed-use watershed. *Environmental Science-Processes & Impacts* 21(5)867-880 [Not relevant to primary or secondary research questions]

Gao, L.; Han, L.; Peng, W.; Gao, B.; Xu, D.; Wan, X. (2018) Identification of anthropogenic inputs of trace metals in lake sediments using geochemical baseline and Pb isotopic composition. *Ecotoxicology and Environmental Safety* 164: 226-233 [Not relevant to primary or secondary research questions]

Gao, Quanxin; Li, Yunli; Qi, Zhanhui; Yue, Yanfeng; Min, Minghua; Peng, Shiming; Shi, Zhaohong; Gao, Yang (2018) Diverse and abundant antibiotic resistance genes from mariculture sites of China's coastline. *Science of the Total Environment* 630: 117-125 [Not relevant to primary or secondary research questions]

Garcés-Ordóñez, O.; Castillo-Olaya, V. A.; Granados-Briceño, A. F.; Blandón García, L. M.; Espinosa Díaz, L. F. (2019) Marine litter and microplastic pollution on mangrove soils of the Ciénaga Grande de Santa Marta, Colombian Caribbean. *Marine Pollution Bulletin* 145: 455-462 [Not relevant to primary or secondary research questions]

García-Alonso, J.; Khan, F. R.; Misra, S. K.; Turmaine, M.; Smith, B. D.; Rainbow, P. S.; Luoma, S. N.; Valsami-Jones, E. (2011) Cellular internalization of silver nanoparticles in gut epithelia of the estuarine polychaete *nereis diversicolor*. *Environmental Science and Technology* 45(10)4630-4636 [Not relevant to primary or secondary research questions]

García-Regueira, X.; Tato, R.; Moreira, J.; Urgorri, V. (2010) Temporal evolution of polychaete assemblages on intertidal hard substrata at two localities of the galician coast after the 'Prestige' oil spill. *Thalassas* 26(2)33-45 [Not relevant to primary or secondary research questions]

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Garnier, Josette; Anglade, Juliette; Benoit, Marie; Billen, Gilles; Puech, Thomas; Ramarson, Antsiva; Passy, Paul; Silvestre, Marie; Lassaletta, Luis; Trommenschlager, Jean-Marie; Schott, Celine; Tallec, Gaelle (2016) Reconnecting crop and cattle farming to reduce nitrogen losses to river water of an intensive agricultural catchment (Seine basin, France): past, present and future. *Environmental Science & Policy* 63: 76-90 [Not relevant to primary or secondary research questions]

Garry, Vincent F.; Holland, Seth E.; Erickson, Leanna L.; Burroughs, Barbara L. (2003) Male reproductive hormones and thyroid function in pesticide applicators in the Red River Valley of Minnesota. *Journal of Toxicology and Environmental Health. Part A* 66(11)965-986 [Not relevant to primary or secondary research questions]

Garzanti, Eduardo; Vermeesch, Pieter; Vezzoli, Giovanni; Ando, Sergio; Botti, Eleonora; Limonta, Mara; Dinis, Pedro; Hahn, Annette; Baudet, Daniel; De Grave, Johan; Yaya, Nicole Kitambala (2019) Congo River sand and the equatorial quartz factory. *Earth-Science Reviews* 197: 102918 [Not relevant to primary or secondary research questions]

Garzon-Vidueira, Raul; Rial-Otero, Raquel; Luz Garcia-Nocelo, Ma; Rivas-Gonzalez, Erica; Moure-Gonzalez, Debora; Fompedrina-Roca, Diego; Vadillo-Santos, Itziar; Simal-Gandara, Jesus (2020) Identification of nitrates origin in Limia river basin and pollution-determinant factors. *Agriculture Ecosystems & Environment* 290: 106775 [Not relevant to primary or secondary research questions]

Gashi, Fatbardh; Franciskovic-Bilinski, Stanislav; Bilinski, Halka; Rexhepi, Ardian; Robaj, Ajnishahe (2017) Assessing the distribution of trace elements in water from Batllava Lake (Kosovo). *Sustainable Water Resources Management* 3(1)44166 [Not relevant to primary or secondary research questions]

Gauquie, J.; Devriese, L.; Robbins, J.; De Witte, B. (2015) A qualitative screening and quantitative measurement of organic contaminants on different types of marine plastic debris. *Chemosphere* 138: 348-356 [Not relevant to primary or secondary research questions]

Gaydos, Joseph K.; Thixton, Sofie; Donatuto, Jamie (2015) Evaluating Threats in Multinational Marine Ecosystems: A Coast Salish First Nations and Tribal Perspective. *Plos One* 10(12)e0144861 [Not relevant to primary or secondary research questions]

Gedik, Kenan; Boran, Muhammet; Alkan, Nigar (2014) Determination of oil and domestic pollution indicators on the southeastern Black Sea coastal water. *Indian Journal of Geo-Marine Sciences* 43(5)799-804 [Not relevant to primary or secondary research questions]

Gessner, Mark O.; Tlili, Ahmed (2016) Fostering integration of freshwater ecology with ecotoxicology. *Freshwater Biology* 61(12)1991-2001 [Not relevant to primary or secondary research questions]

Ghaderpour, A.; Ho, W. S.; Chew, L. L.; Bong, C. W.; Chong, V. C.; Thong, K. L.; Chai, L. C. (2015) Diverse and abundant multi-drug resistant *E. coli* in Matang mangrove estuaries, Malaysia. *Frontiers in Microbiology* 6(SEP) [Not relevant to primary or secondary research questions]

Ghanem, N.; Kiesel, B.; Kallies, R.; Harms, H.; Chatzinotas, A.; Wick, L. Y. (2016) Marine phages as tracers: Effects of size, morphology, and physico- chemical surface properties on transport in a porous medium. *Environmental Science and Technology* 50(23)12816-12824 [Not relevant to primary or secondary research questions]

Ghanem, Nawras; Kiesel, Bärbel; Kallies, René; Harms, Hauke; Chatzinotas, Antonis; Wick, Lukas Y. (2016) Marine Phages As Tracers: Effects of Size, Morphology, and Physico-Chemical Surface Properties on Transport in a Porous Medium. *Environmental Science & Technology* 50(23)12816-12824 [Not relevant to primary or secondary research questions]

Ghayebzadeh, M.; Aslani, H.; Taghipour, H.; Mousavi, S. (2020) Contamination of the Caspian Sea Southern coast sediments with microplastics: A marine environmental problem. *Marine Pollution Bulletin* 160 [Not relevant to primary or secondary research questions]

Ghosh, S.; Ram, S. S.; Bakshi, M.; Chakraborty, A.; Sudarshan, M.; Chaudhuri, P. (2016) Vertical and horizontal variation of elemental contamination in sediments of Hooghly Estuary, India. *Marine Pollution Bulletin* 109(1)539-549 [Not relevant to primary or secondary research questions]

Ghosh, Somdeep; Bakshi, Madhurima; Kumar, Alok; Ramanathan, A. L.; Biswas, Jayanta Kumar; Bhattacharyya, Subarna; Chaudhuri, Punarbasu; Shaheen, Sabry M.; Rinklebe, Joerg (2019) Assessing the potential ecological risk of Co, Cr, Cu, Fe and Zn in the sediments of Hooghly-Matla estuarine system, India. *Environmental Geochemistry and Health* 41(1)53-70 [Not relevant to primary or secondary research questions]

Ghribi, Rayda; Correia, Alberto Teodorico; Elleuch, Boubaker; Nunes, Bruno (2019) Toxicity Assessment of Impacted Sediments from Southeast Coast of Tunisia Using a Biomarker Approach with the Polychaete *Hediste diversicolor*. *Archives of Environmental Contamination and Toxicology* 76(4)678-691 [Not relevant to primary or secondary research questions]

Giebel, H. A.; Klotz, F.; Voget, S.; Poehlein, A.; Grosser, K.; Teske, A.; Brinkhoff, T. (2016) Draft genome sequence of the marine Rhodobacteraceae strain O3.65, cultivated from oil-polluted seawater of

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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the Deepwater Horizon oil spill. *Standards in Genomic Sciences* 11(1) [Not relevant to primary or secondary research questions]

Giessing, Anders M. B.; Mayer, Lawrence M.; Forbes, Thomas L. (2003) Synchronous fluorescence spectrometry of 1-hydroxypyrene: a rapid screening method for identification of PAH exposure in tissue from marine polychaetes. *Marine Environmental Research* 56(5):599-615 [Not relevant to primary or secondary research questions]

Giguère, A.; Campbell, P. G. C.; Hare, L.; McDonald, D. G.; Rasmussen, J. B. (2004) Influence of lake chemistry and fish age on cadmium, copper, and zinc concentrations in various organs of indigenous yellow perch (*Perca flavescens*). *Canadian Journal of Fisheries and Aquatic Sciences* 61(9):1702-1716 [Not relevant to primary or secondary research questions]

Gil, A.; Sarmento, G.; Minhalma, M.; Duarte, E.; De Pinho, M. N. (2011) Ultrafiltration/nanofiltration based technique for the removal of endocrine disruptors from surface water. 1: 156-160 [Not relevant to primary or secondary research questions]

Gilby, B. L.; Olds, A. D.; Hardcastle, F. E.; Henderson, C. J.; Connolly, R. M.; Martin, T. S. H.; Maxwell, P. S.; Goodridge Gaines, L. A.; Jones, T. R.; Underwood, A.; Schlacher, T. A. (2020) Diverse land uses and high coastal urbanisation do not always result in harmful environmental pollutants in fisheries species. *Marine Pollution Bulletin* 159: 111487 [Not relevant to primary or secondary research questions]

Gimeno, P.; Severyns, J.; Acuña, V.; Comas, J.; Corominas, L. (2018) Balancing environmental quality standards and infrastructure upgrade costs for the reduction of microcontaminant loads in rivers. *Water Research* 143: 632-641 [Not relevant to primary or secondary research questions]

Ginebreda, A.; Pérez, S.; Rivas, D.; Kuzmanovic, M.; Barceló, D. (2016) Pollutants of Emerging Concern in Rivers of Catalonia: Occurrence, Fate, and Risk. 42 [Not relevant to primary or secondary research questions]

Ginebreda, Antoni; Munoz, Isabel; Lopez de Alda, Miren; Brix, Rikke; Lopez-Doval, Julio; Barcelo, Damia (2010) Environmental risk assessment of pharmaceuticals in rivers: Relationships between hazard indexes and aquatic macroinvertebrate diversity indexes in the Llobregat River (NE Spain). *Environment International* 36(2):153-162 [Not relevant to primary or secondary research questions]

Giri, S.; Singh, A. K. (2014) Risk assessment, statistical source identification and seasonal fluctuation of dissolved metals in the subarnarekha river, india. *Journal of Hazardous Materials* 265: 305-314 [Not relevant to primary or secondary research questions]

Goel, S.; Viteri, S.; Morán, T.; Coronado, C.; Dios, J. L. I.; Miguel-Lillo, B.; Fernández-García, E. M.; Rosell, R. (2016) Phase I, dose-escalating study of elisidepsin (Irvalec®), a plasma membrane-disrupting marine antitumor agent, in combination with erlotinib in patients with advanced malignant solid tumors. *Investigational New Drugs* 34(1):75-83 [Not relevant to primary or secondary research questions]

Gogia, S.; Rao, C. (2017) Prevalence and risk factors for peripheral neuropathy among type 2 diabetes mellitus patients at a tertiary care hospital in coastal Karnataka. *Indian Journal of Endocrinology and Metabolism* 21(5):665-669 [Not relevant to primary or secondary research questions]

Gomez Otero, Julieta; Schuster, Veronica; Svoboda, Ariadna (2015) Fish and plants: The "hidden" resources in the archaeological record of the North-central Patagonian coast (Argentina). *Quaternary International* 373: 72-81 [Not relevant to primary or secondary research questions]

Gonzalez, Mariana; Miglioranza, Karina S. B.; Grondona, Sebastián I.; Silva Barni, María Florencia; Martínez, Daniel E.; Peña, Aránzazu (2013) Organic pollutant levels in an agricultural watershed: the importance of analyzing multiple matrices for assessing stream water pollution. *Environmental Science: Processes & Impacts* 15(4):739-750 [Not relevant to primary or secondary research questions]

Gonzalez-Plaza, Juan J.; Simatovic, Ana; Milakovic, Milena; Bielen, Ana; Wichmann, Fabienne; Udikovic-Kolic, Nikolina (2018) Functional Repertoire of Antibiotic Resistance Genes in Antibiotic Manufacturing Effluents and Receiving Freshwater Sediments. *Frontiers in Microbiology* 8: 2678 [Not relevant to primary or secondary research questions]

Gonzalez-Wanguemert, Mercedes; Dominguez-Godino, Jorge A.; Canovas, Fernando (2018) The fast development of sea cucumber fisheries in the Mediterranean and NE Atlantic waters: From a new marine resource to its over-exploitation. *Ocean & Coastal Management* 151: 165-177 [Not relevant to primary or secondary research questions]

Goodwin, K. D.; McNay, M.; Cao, Y.; Ebentier, D.; Madison, M.; Griffith, J. F. (2012) A multi-beach study of *Staphylococcus aureus*, MRSA, and enterococci in seawater and beach sand. *Water Research* 46(13):4195-4207 [Not relevant to primary or secondary research questions]



Goswami, R.; Kumar, M.; Biyani, N.; Shea, P. J. (2020) Arsenic exposure and perception of health risk due to groundwater contamination in Majuli (river island), Assam, India. *Environmental Geochemistry and Health* 42(2)443-460 [Not relevant to primary or secondary research questions]

Götz, T.; Hillenbrand, T.; Marscheider-Weidemann, F.; Fuchs, S.; Scherer, U. (2009) Deposition of polycyclic aromatic hydrocarbons in surface waters - State of knowledge. *Umweltwissenschaften und Schadstoff-Forschung* 21(5)433-442 [Not relevant to primary or secondary research questions]

Gouin, N.; Bertin, A.; Espinosa, M. I.; Snow, D. D.; Ali, J. M.; Kolok, A. S. (2019) Pesticide contamination drives adaptive genetic variation in the endemic mayfly *Andesiops torrens* within a semi-arid agricultural watershed of Chile. *Environmental Pollution* 255 [Not relevant to primary or secondary research questions]

Gouveia, P.; Felgueiras, F.; Mourão, Z.; Fernandes, E. D. O.; Moreira, A.; Gabriel, M. F. (2019) Predicting health risk from exposure to trihalomethanes in an Olympic-size indoor swimming pool among elite swimmers and coaches. *Journal of Toxicology and Environmental Health - Part A: Current Issues* 82(9)577-590 [Not relevant to primary or secondary research questions]

Govender, J.; Naidoo, T.; Rajkaran, A.; Cebekhulu, S.; Bhugeloo, A.; Naidoo, S. (2020) Towards characterising microplastic abundance, typology and retention in mangrove-dominated estuaries. *Water (Switzerland)* 12(10) [Not relevant to primary or secondary research questions]

Grande, Emilio; Visser, Ate; Beitz, Pamela; Moran, Jean (2019) Examination of Nutrient Sources and Transport in a Catchment with an Audubon Certified Golf Course. *Water* 11(9)1923 [Not relevant to primary or secondary research questions]

Grandesso, F.; Rafael, F.; Chipeta, S.; Alley, I.; Saussier, C.; Nogareda, F.; Burns, M.; Lechevalier, P.; Page, A. L.; Salumu, L.; Pezzoli, L.; Mwesawina, M.; Cavailler, P.; Mengel, M.; Luquero, F. J.; Cohuet, S. (2018) Oral cholera vaccination in hard-to-reach communities, Lake Chilwa, Malawi. *Bulletin of the World Health Organization* 96(12)817-825 [Not relevant to primary or secondary research questions]

Grandjean, Philippe; Poulsen, Lars K.; Heilmann, Carsten; Steuerwald, Ulrike; Weihe, Pal (2010) Allergy and Sensitization during Childhood Associated with Prenatal and Lactational Exposure to Marine Pollutants. *Environmental Health Perspectives* 118(10)1429-1433 [Not relevant to primary or secondary research questions]

Granek, E. F.; Conn, K. E.; Nilsen, E. B.; Pillsbury, L.; Strecker, A. L.; Rumrill, S. S.; Fish, W. (2016) Spatial and temporal variability of contaminants within estuarine sediments and native Olympia oysters: A contrast between a developed and an undeveloped estuary. *Science of the Total Environment* 557-558: 869-879 [Not relevant to primary or secondary research questions]

Gray, N. F.; Delaney, E. (2008) Comparison of benthic macroinvertebrate indices for the assessment of the impact of acid mine drainage on an Irish river below an abandoned Cu-S mine. *Environmental Pollution* 155(1)31-40 [Not relevant to primary or secondary research questions]

Gray, N. F.; Delaney, E. (2010) Measuring community response of benthic macroinvertebrates in an erosional river impacted by acid mine drainage by use of a simple model. *Ecological Indicators* 10(3)668-675 [Not relevant to primary or secondary research questions]

Grayson, Richard; Kay, Paul; Foulger, Miles (2008) The use of GIS and multi-criteria evaluation (MCE) to identify agricultural land management practices which cause surface water pollution in drinking water supply catchments. *Water Science and Technology* 58(9)1797-1802 [Not relevant to primary or secondary research questions]

Green, Timothy J.; Barnes, Andrew C. (2010) Reduced salinity, but not estuarine acidification, is a cause of immune-suppression in the Sydney rock oyster *Saccostrea glomerata*. *Marine Ecology Progress Series* 402: 161-170 [Not relevant to primary or secondary research questions]

Greer, C. W.; Fortin, N.; Roy, R.; Whyte, L. G.; Lee, K. (2003) Indigenous sediment microbial activity in response to nutrient enrichment and plant growth following a controlled oil spill on a freshwater wetland. *Bioremediation Journal* 7(1)69-80 [Not relevant to primary or secondary research questions]

Greer, C. W.; Wyglinski, J.; Michel, C.; Fortin, N.; Sanschagrin, S.; Niemi, A.; Wliyte, L. G.; King, T. L.; Lee, K.; Yergeau, E. (2014) Natural attenuation potential for oil in ice in the Canadian Arctic marine environment. 666-681 [Not relevant to primary or secondary research questions]

Greig, Hamish S.; Niyogi, Dev K.; Hogsden, Kristy L.; Jellyman, Phillip G.; Harding, Jon S. (2010) Heavy metals: confounding factors in the response of New Zealand freshwater fish assemblages to natural and anthropogenic acidity. *The Science of the Total Environment* 408(16)3240-3250 [Not relevant to primary or secondary research questions]

Grenni, Paola; Patrolecco, Luisa; Ademollo, Nicoletta; Tolomei, Antonella; Caracciolo, Anna Barra (2013) Degradation of Gemfibrozil and Naproxen in a river water ecosystem. *Microchemical Journal* 107: 158-164 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Griffin, Dale W.; Benzel, W. M.; Fisher, S. C.; Focazio, M. J.; Iwanowicz, L. R.; Loftin, K. A.; Reilly, T. J.; Jones, D. K. (2019) The presence of antibiotic resistance genes in coastal soil and sediment samples from the eastern seaboard of the USA. *Environmental Monitoring and Assessment* 191: 300 [Not relevant to primary or secondary research questions]

Gromadzka, Karolina; Waskiewicz, Agnieszka; Swietlik, Joanna; Bocianowski, Jan; Golinski, Piotr (2015) The role of wastewater treatment in reducing pollution of surface waters with zearalenone. *Arhiv Za Higijenu Rada I Toksikologiju-Archives of Industrial Hygiene and Toxicology* 66(2):159-164 [Not relevant to primary or secondary research questions]

Gruen, Alexandra Y.; App, Constantin B.; Breidenbach, Andreas; Meier, Jutta; Metreveli, George; Schaumann, Gabriele E.; Manz, Werner (2018) Effects of low dose silver nanoparticle treatment on the structure and community composition of bacterial freshwater biofilms. *Plos One* 13(6)e0199132 [Not relevant to primary or secondary research questions]

Gruzinov, V. M.; Dyakov, N. N.; Mezenceva, I.; Malchenko, Yu A.; Zhohova, N.; Korshenko, A. N. (2019) Sources of Coastal Water Pollution near Sevastopol. *Oceanology* 59(4) [Not relevant to primary or secondary research questions]

Gu, J.; Zhang, L.; Wang, X.; Lu, C.; Liu, J.; Liu, Y.; Li, L.; Peng, J.; Xue, M. (2019) High-throughput analysis of the effects of different fish culture methods on antibiotic resistance gene abundances in a lake. *Environmental Science and Pollution Research* 26(6):5445-5453 [Not relevant to primary or secondary research questions]

Gu, Yunyun; Yu, Jie; Hu, Xialin; Yin, Daqiang (2016) Characteristics of the alkylphenol and bisphenol A distributions in marine organisms and implications for human health: A case study of the East China Sea. *The Science of the Total Environment* 539: 460-469 [Not relevant to primary or secondary research questions]

Guan, Yongjing; Jia, Jia; Wu, Lang; Xue, Xue; Zhang, Guo; Wang, Zaizhao (2018) Analysis of Bacterial Community Characteristics, Abundance of Antibiotics and Antibiotic Resistance Genes Along a Pollution Gradient of Ba River in Xi'an, China. *Frontiers in Microbiology* 9: 3191 [Not relevant to primary or secondary research questions]

Guazzelli, Elisa; Perondi, Federico; Criscitiello, Francesco; Pretti, Carlo; Oliva, Matteo; Casu, Valentina; Maniero, Francesco; Gazzera, Lara; Galli, Giancarlo; Martinelli, Elisa (2020) New amphiphilic copolymers for PDMS-based nanocomposite films with long-term marine antifouling performance. *Journal of Materials Chemistry. B* [Not relevant to primary or secondary research questions]

Guerlet, E.; Vasseur, P.; Giambérini, L. (2010) Spatial and temporal variations of biological responses to environmental pollution in the freshwater zebra mussel. *Ecotoxicology and Environmental Safety* 73(6):1170-1181 [Not relevant to primary or secondary research questions]

Guibal, R.; Lissalde, S.; Brizard, Y.; Guibaud, G. (2018) Semi-continuous pharmaceutical and human tracer monitoring by POCIS sampling at the watershed-scale in an agricultural rural headwater river. *Journal of Hazardous Materials* 360: 106-114 [Not relevant to primary or secondary research questions]

Guibert, L. M.; Loviso, C. L.; Marcos, M. S.; Commendatore, M. G.; Dionisi, H. M.; Lozada, M. (2012) Alkane Biodegradation Genes from Chronically Polluted Subantarctic Coastal Sediments and Their Shifts in Response to Oil Exposure. *Microbial Ecology* 64(3):605-616 [Not relevant to primary or secondary research questions]

Guittonny-Philippe, A.; Masotti, V.; Höhener, P.; Boudenne, J. L.; Viglione, J.; Laffont-Schwob, I. (2014) Constructed wetlands to reduce metal pollution from industrial catchments in aquatic Mediterranean ecosystems: A review to overcome obstacles and suggest potential solutions. *Environment International* 64: 42370 [Not relevant to primary or secondary research questions]

Guler, Cuneyt; Kaplan, Volkan; Akbulut, Can (2013) Spatial distribution patterns and temporal trends of heavy-metal concentrations in a petroleum hydrocarbon-contaminated site: Karaduvar coastal aquifer (Mersin, SE Turkey). *Environmental Earth Sciences* 70(2):943-962 [Not relevant to primary or secondary research questions]

Guo, Q.; Li, N.; Chen, S.; Chen, Y.; Xie, S. (2019) Response of freshwater sediment archaeal community to metal spill. *Chemosphere* 217: 584-590 [Not relevant to primary or secondary research questions]

Guo, Q.; Li, N.; Xie, S. (2019) Heavy metal spill influences bacterial communities in freshwater sediments. *Archives of Microbiology* 201(6):847-854 [Not relevant to primary or secondary research questions]

Guo, Xing-pan; Yang, Yi; Niu, Zuo-shun; Lu, Da-Pei; Zhu, Chun-hong; Feng, Jing-nan; Wu, Jia-yuan; Chen, Yu-ru; Tou, Fei-yun; Liu, Min; Hou, Lijun (2019) Characteristics of microbial community indicate anthropogenic impact on the sediments along the Yangtze Estuary and its coastal area, China. *Science of the Total Environment* 648: 306-314 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Gupta, D. C.; Peters, E. (2005) Risk characterization and estimation of carcinogenic risk for surface water ingestion exposure to select trace metals in the area around Mandideep Industrial complex, India. *Journal of Industrial Pollution Control* 21(2)277-292 [Not relevant to primary or secondary research questions]

Gupta, Sanjay Kumar; Chabukdhara, Mayuri; Singh, Jaswant; Bux, Faizal (2015) Evaluation and Potential Health Hazard of Selected Metals in Water, Sediments, and Fish from the Gomti River. *Human and Ecological Risk Assessment* 21(1)227-240 [Not relevant to primary or secondary research questions]

Haag, Wendell R.; Culp, J. Jacob; McGregor, Monte A.; Bringolf, Robert; Stoeckel, Jim A. (2019) Growth and survival of juvenile freshwater mussels in streams: Implications for understanding enigmatic mussel declines. *Freshwater Science* 38(4)753-770 [Not relevant to primary or secondary research questions]

Hackbusch, S.; Wichels, A.; Bussmann, I. (2019) Abundance, activity and diversity of methanotrophic bacteria in the Elbe Estuary and southern North Sea. *Aquatic Microbial Ecology* 83(1)35-48 [Not relevant to primary or secondary research questions]

Haldar, Soumya; Mandal, Subir Kumar; Thorat, R. B.; Goel, Sangita; Baxi, Krushnakant D.; Parmer, Navalsang P.; Patel, Vipul; Basha, S.; Mody, K. H. (2014) Water pollution of Sabarmati River--a harbinger to potential disaster. *Environmental Monitoring and Assessment* 186(4)2231-2242 [Not relevant to primary or secondary research questions]

Halecki, Wiktor; Stachura, Tomasz; Fudala, Wioletta; Rusnak, Maria (2019) Evaluating the applicability of MESS (matrix exponential spatial specification) model to assess water quality using GIS technique in agricultural mountain catchment (Western Carpathian). *Environmental Monitoring and Assessment* 191(1)26 [Not relevant to primary or secondary research questions]

Halem, Zachery M.; Ross, Dustin J.; Cox, Rachel L. (2014) Evidence for intraspecific endocrine disruption of *Geukensia demissa* (Atlantic ribbed mussel) in an urban watershed. *Comparative Biochemistry and Physiology a-Molecular & Integrative Physiology* 175: 43983 [Not relevant to primary or secondary research questions]

Han, J.; Won, E. J.; Kang, H. M.; Lee, M. C.; Jeong, C. B.; Kim, H. S.; Hwang, D. S.; Lee, J. S. (2017) Marine copepod cytochrome P450 genes and their applications for molecular ecotoxicological studies in response to oil pollution. *Marine Pollution Bulletin* 124(2)953-961 [Not relevant to primary or secondary research questions]

Hang, Xiaoshuai; Wang, Huoyan; Zhou, Jianmin; Ma, Chengling; Du, Changwen; Chen, Xiaoqin (2009) Risk assessment of potentially toxic element pollution in soils and rice (*Oryza sativa*) in a typical area of the Yangtze River Delta. *Environmental Pollution* (Barking, Essex: 1987) 157(44082)2542-2549 [Not relevant to primary or secondary research questions]

Hanifah, Hani Purwati; Supangkat, Suhono Harso (2019) IoT-based River Water Quality Monitoring Design for Smart Environments in Cimahi City. *Proceeding of 2019 International Conference on Electrical Engineering and Informatics (iceei)* 496-499 [Not relevant to primary or secondary research questions]

Hao, R.; Zhang, Y.; Du, T.; Yang, L.; Adeleye, A. S.; Li, Y. (2017) Effect of water chemistry on disinfection by-product formation in the complex surface water system. *Chemosphere* 172: 384-391 [Not relevant to primary or secondary research questions]

Hao, Xiuzhen; Wang, Dengjun; Wang, Peiran; Wang, Yuxia; Zhou, Dongmei (2016) Evaluation of water quality in surface water and shallow groundwater: a case study of a rare earth mining area in southern Jiangxi Province, China. *Environmental Monitoring and Assessment* 188(1)24 [Not relevant to primary or secondary research questions]

Hariri, M.; Mirvaghefi, A.; Farahmand, H.; Taghavi, L.; Shahabinia, A. R. (2018) In situ assessment of Karaj River genotoxic impact with the alkaline comet assay and micronucleus test, on feral brown trout (*Salmo trutta fario*). *Environmental Toxicology and Pharmacology* 58: 59-69 [Not relevant to primary or secondary research questions]

Harnisz, Monika; Golas, Iwona; Pietruk, Marzena (2011) Tetracycline-resistant bacteria as indicators of antimicrobial resistance in protected waters-The example of the Drweca River Nature Reserve (Poland). *Ecological Indicators* 11(2)663-668 [Not relevant to primary or secondary research questions]

Harris, M. L.; Wilson, L. K.; Elliott, J. E. (2005) An assessment of PCBs and OC pesticides in eggs of double-crested (*Phalacrocorax auritus*) and pelagic (*P. pelagicus*) cormorants from the west coast of Canada, 1970 to 2002. *Ecotoxicology* 14(6)607-625 [Not relevant to primary or secondary research questions]

Haryono, F. E. D.; Ambariyanto; Sulistyo, I. (2018) Sex Diversity Approach of Spiny Lobster (*Panulirus* spp) to Marine Oil Spill Pollution in Southern Waters of Java. 116 [Not relevant to primary or secondary research questions]

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Haydar, Chaden Moussa; Nehme, Nada; Awad, Sadek; Koubaisy, Bachar; Fakih, Mohamad; Yaacoub, Ali; Toufaily, Joumana; Villeras, Frederic; Hamieh, Tayssir (2014) Water Quality of the Upper Litani River Basin, Lebanon. 8th International Conference on Material Sciences, Csm8-lsm5 55: 279-284 [Not relevant to primary or secondary research questions]

Hedrick, David B.; Peacock, Aaron D.; Tita, Guglielmo; Fleeger, John W.; Carman, Kevin R.; White, David C. (2009) Effects of Diesel and Interactions with Copper and Other Metals in an Estuarine Sediment Microbial Community. *Environmental Toxicology and Chemistry* 28(11)2289-2297 [Not relevant to primary or secondary research questions]

Heeger, D. J.; Behrmann, M.; Dinstein, I. (2017) Vision as a Beachhead. *Biological Psychiatry* 81(10)832-837 [Not relevant to primary or secondary research questions]

Hegde, V.; Jain, R.; Bappal, A.; Shambu, R.; Kotian, H. (2018) Female care givers of children with cerebral palsy: Quality of life, knowledge and practice regarding ophthalmic evaluation – a study from coastal town of southern India. *Journal of Clinical and Diagnostic Research* 12(8)NC09-NC12 [Not relevant to primary or secondary research questions]

Helton, D.; Schweitzer, G.; Berg, C.; Symons, L.; Ives, A.; Hutley, T. (2016) Scientific response to the barge ARGO in Lake Erie. 1166-1178 [Not relevant to primary or secondary research questions]

Hemalatha, D.; Amala, A.; Rangasamy, B.; Nataraj, B.; Ramesh, M. (2016) Sublethal toxicity of quinalphos on oxidative stress and antioxidant responses in a freshwater fish *Cyprinus carpio*. *Environmental Toxicology* 31(11)1399-1406 [Not relevant to primary or secondary research questions]

Héritier, Laurent; Duval, David; Galinier, Richard; Meistertzheim, Anne-Leila; Verneau, Olivier (2017) Oxidative stress induced by glyphosate-based herbicide on freshwater turtles. *Environmental Toxicology and Chemistry* 36(12)3343-3350 [Not relevant to primary or secondary research questions]

Hertkorn, N.; Harir, M.; Koch, B. P.; Michalke, B.; Schmitt-Kopplin, P. (2013) High-field NMR spectroscopy and FTICR mass spectrometry: powerful discovery tools for the molecular level characterization of marine dissolved organic matter. *Biogeosciences* 10(3)1583-1624 [Not relevant to primary or secondary research questions]

Heß, Stefanie; Gallert, Claudia (2014) Demonstration of staphylococci with inducible macrolide-lincosamide-streptogramin B (MLSB) resistance in sewage and river water and of the capacity of anhydroxythromycin to induce MLSB. *FEMS microbiology ecology* 88(1)48-59 [Not relevant to primary or secondary research questions]

Hird, Cameron M.; Urbina, Mauricio A.; Lewis, Ceri N.; Snape, Jason R.; Galloway, Tamara S. (2016) Fluoxetine Exhibits Pharmacological Effects and Trait-Based Sensitivity in a Marine Worm. *Environmental Science & Technology* 50(15)8344-8352 [Not relevant to primary or secondary research questions]

Ho, K. C.; Chow, Y. L.; Yau, J. T. S. (2003) Chemical and microbiological qualities of The East River (Dongjiang) water, with particular reference to drinking water supply in Hong Kong. *Chemosphere* 52(9)1441-1450 [Not relevant to primary or secondary research questions]

Hochberg, Rick; Atherton, Sarah; Kieneke, Alexander (2014) Marine Gastrotricha of Little Cayman Island with the description of one new species and an initial assessment of meiofaunal diversity. *Marine Biodiversity* 44(1)89-113 [Not relevant to primary or secondary research questions]

Hodges, Tyler W.; Slattery, Marc; Olson, Julie B. (2012) Unique Actinomycetes from Marine Caves and Coral Reef Sediments Provide Novel PKS and NRPS Biosynthetic Gene Clusters. *Marine Biotechnology* 14(3)270-280 [Not relevant to primary or secondary research questions]

Hollert, H.; Bluhm, K.; Keiter, S.; Böttcher, M.; Grund, S.; Seitz, N.; Otte, J.; Braunbeck, T.; Hecker, M.; Higley, E.; Giesy, J.; Takner, H.; Van Bavel, B.; Engwall, M.; Reifferscheid, G.; Manz, W.; Erdinger, L.; Schulze, T.; Luebcke-Van Varel, U.; Brack, W.; Kammann, U.; Schöneberger, R.; Suter, M.; Strähle, U. (2009) Assessing sediments and fish health using a weight-of-evidence approach - In search for the causes of fish decline in the Danube River. *Umweltwissenschaften und Schadstoff-Forschung* 21(3)260-263 [Not relevant to primary or secondary research questions]

Hong, Sun Hwa; Lee, Eun Young (2014) Vegetation restoration and prevention of coastal sand dunes erosion using ion exchange resins and the plant growth-promoting rhizobacteria *Bacillus* sp SH1RP8 isolated from indigenous plants. *International Biodeterioration & Biodegradation* 95: 262-269 [Not relevant to primary or secondary research questions]

Hong, Zhendong; Zhao, Qinghe; Chang, Jinlong; Peng, Li; Wang, Shuoqian; Hong, Yongyi; Liu, Gangjun; Ding, Shengyan (2020) Evaluation of Water Quality and Heavy Metals in Wetlands along the Yellow River in Henan Province. *Sustainability* 12(4)1300 [Not relevant to primary or secondary research questions]

Hoogenboom, R. L. A. P.; Kotterman, M. J. J.; Hoek-van Nieuwenhuizen, M.; van der Lee, M. K.; Mennes, W. C.; Jeurissen, S. M. F.; van Leeuwen, S. P. J. (2015) Dioxins, PCBs and heavy metals in

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Chinese mitten crabs from Dutch rivers and lakes. *Chemosphere* 123: 44044 [Not relevant to primary or secondary research questions]

Hosoda, Akifumi; Hotta, Yudai; Isoi, Toshiyuki; Amao, Satomi; Ito, Akiyo; Ueno, Kozue; Yoshikawa, Hiromichi; Tamura, Hiroto (2010) Diversity of octylphenol polyethoxylate-degrading bacteria in river sediments and enrichment cultures, was revealed by 16S rRNA and adh1-gene molecular analysis. *Journal of Pesticide Science* 35(4)470-478 [Not relevant to primary or secondary research questions]

Höss, S.; Traunspurger, W.; Severin, G. F.; Jüttner, I.; Pfister, G.; Schramm, K. W. (2004) Influence of 4-nonylphenol on the structure of nematode communities in freshwater microcosms. *Environmental Toxicology and Chemistry* 23(5)1268-1275 [Not relevant to primary or secondary research questions]

Hossain, F. E.; Ramim, A. M.; Rahman, M. S.; Faruque, A. M. O.; Naser, M. N.; Karim, M. M. (2017) Identification of bacterial agents causing mortality in postlarvae of giant freshwater prawn (*Macrobrachium rosenbergii*) in south-west coastal districts of Bangladesh. *Aquaculture Research* 48(7)3545-3555 [Not relevant to primary or secondary research questions]

Hosseini, Mehdi; Nabavi, Seyed Mohammad Bagher; Parsa, Yaghoob; Asfaram, Arash; Ravanpaykar, Abutaleb (2014) Blue swimming crab, *Portunus pelagicus* (Linnaeus, 1758) as Monitors of Mercury Contamination from Six Estuaries, Persian Gulf, Iran. *Indian Journal of Geo-Marine Sciences* 43(3)377-383 [Not relevant to primary or secondary research questions]

Hou, Liyuan; Mulla, Sikandar I.; Nino-Garcia, Juan Pablo; Ning, Daliang; Rashid, Azhar; Hu, Anyi; Yu, Chang-Ping (2019) Deterministic and stochastic processes driving the shift in the prokaryotic community composition in wastewater treatment plants of a coastal Chinese city. *Applied Microbiology and Biotechnology* 103(21-22)9155-9168 [Not relevant to primary or secondary research questions]

Housh, M.; Khanna, M.; Cai, X. (2015) Mix of First- and Second-Generation Biofuels to Meet Multiple Environmental Objectives: Implications for Policy at a Watershed Scale. *Water Economics and Policy* 1(3) [Not relevant to primary or secondary research questions]

Houston, Douglas; Li, Wei; Wu, Jun (2014) Disparities in Exposure to Automobile and Truck Traffic and Vehicle Emissions Near the Los Angeles-Long Beach Port Complex. *American Journal of Public Health* 104(1)156-164 [Not relevant to primary or secondary research questions]

Hu, Bifeng; Jia, Xiaolin; Hu, Jie; Xu, Dongyun; Xia, Fang; Li, Yan (2017) Assessment of Heavy Metal Pollution and Health Risks in the Soil-Plant-Human System in the Yangtze River Delta, China. *International Journal of Environmental Research and Public Health* 14(9) [Not relevant to primary or secondary research questions]

Hu, Bifeng; Wang, Jiayu; Jin, Bin; Li, Yan; Shi, Zhou (2017) Assessment of the potential health risks of heavy metals in soils in a coastal industrial region of the Yangtze River Delta. *Environmental Science and Pollution Research International* 24(24)19816-19826 [Not relevant to primary or secondary research questions]

Hu, Wenyou; Huang, Biao; Zhao, Yongcun; Sun, Weixia; Gu, Zhiqian (2014) Distribution, sources and potential risk of HCH and DDT in soils from a typical alluvial plain of the Yangtze River Delta region, China. *Environmental Geochemistry and Health* 36(3)345-358 [Not relevant to primary or secondary research questions]

Hua, Lei; You, Aiju; Han, Zengcui; Xu, Haibo (2019) Simulation analysis of the influence of heavy rainfall on urban lake. *Third International Conference on Energy Engineering and Environmental Protection* 227: UNSP-052040 [Not relevant to primary or secondary research questions]

Huang, J.; Cao, C.; Liu, J.; Yan, C.; Xiao, J. (2019) The response of nitrogen removal and related bacteria within constructed wetlands after long-term treating wastewater containing environmental concentrations of silver nanoparticles. *Science of the Total Environment* 667: 522-531 [Not relevant to primary or secondary research questions]

Huang, Juan; Xiao, Jun; Guo, Yang; Guan, Wenzu; Cao, Chong; Yan, Chunni; Wang, Mingyu (2020) Long-term effects of silver nanoparticles on performance of phosphorus removal in a laboratory-scale vertical flow constructed wetland. *Journal of Environmental Sciences (China)* 87: 319-330 [Not relevant to primary or secondary research questions]

Huang, Liang Liang; Wu, Zhi Qiang; Li, Jian Hua (2013) Fish fauna, biogeography and conservation of freshwater fish in Poyang Lake Basin, China. *Environmental Biology of Fishes* 96(44145)1229-1243 [Not relevant to primary or secondary research questions]

Huang, Minjuan; Wang, Xuemei; Wang, Baomin; Jia, Shiguo; Ye, Lyumeng; Li, Zequn; Hang, Jian (2019) Projections of long-term human multimedia exposure to metal(lloid)s and the health risks derived from atmospheric deposition: A case study in the Pearl River Delta region, South China. *Environment International* 132: 105051 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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1344-2022

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Huang, Shan; Chen, Chen; Wu, Yanyang; Wu, Qunhe; Zhang, Renduo (2011) Characterization of depth-related bacterial communities and their relationships with the environmental factors in the river sediments. *World Journal of Microbiology & Biotechnology* 27(11)2655-2664 [Not relevant to primary or secondary research questions]

Huang, Wensong; Li, Shengli; Chen, Heping; Fu, Chao (2020) A river-dominated to tide-dominated delta transition: A depositional system case study in the Orinoco heavy oil belt, Eastern Venezuelan Basin. *Marine and Petroleum Geology* 118: UNSP-104389 [Not relevant to primary or secondary research questions]

Huang, X. R.; Zhang, Q. Q.; Zhang, R. J.; Guo, X. Y. (2016) Influence of reclaimed water on bacterial community structure of cattail rhizosphere from riverine wetland. *Zhongguo Huanjing Kexue/China Environmental Science* 36(2)569-580 [Not relevant to primary or secondary research questions]

Huang, X.; Xiong, W.; Liu, W.; Guo, X. (2017) Effect of reclaimed water effluent on bacterial community structure in the *Typha angustifolia* L. rhizosphere soil of urbanized riverside wetland, China. *Journal of Environmental Sciences (China)* 55: 58-68 [Not relevant to primary or secondary research questions]

Huang, Youda; Zhang, Dainan; Yang, Yu; Zeng, Xiangying; Ran, Yong (2018) Distribution and partitioning of polybrominated diphenyl ethers in sediments from the Pearl River Delta and Guiyu, South China. *Environmental Pollution* 235: 104-112 [Not relevant to primary or secondary research questions]

Huang, Yue-hua; Dsikowitzky, Larissa; Yang, Fei; Schwarzbauer, Jan (2020) Emerging contaminants in municipal wastewaters and their relevance for the surface water contamination in the tropical coastal city Haikou, China. *Estuarine Coastal and Shelf Science* 235: 106611 [Not relevant to primary or secondary research questions]

Hudson-Edwards, K. A.; Miller, J. R.; Preston, D.; Lechner, P. J.; Macklin, M. G.; Miners, J. S.; Turner, J. N. (2003) Effects of heavy metal pollution in the Pilcomayo river system, Bolivia, on resident human populations. *Journal De Physique Iv* 107: 637-640 [Not relevant to primary or secondary research questions]

Hue, Nguyen Huu; Thanh, Nguyen Huu (2020) Assessing the Impact of Massive Development of Beach Resorts on Current Status of Coastal Erosion Along the Central Coast of Vietnam. [Not relevant to primary or secondary research questions]

Huettel, M.; Overholt, W. A.; Kostka, J. E.; Hagan, C.; Kaba, J.; Wells, W. B.; Dudley, S. (2018) Degradation of Deepwater Horizon oil buried in a Florida beach influenced by tidal pumping. *Marine Pollution Bulletin* 126: 488-500 [Not relevant to primary or secondary research questions]

Hui, Zhu; Baixing, Yan; Xiaofeng, Pan; Yuhong, Yang; Lixia, Wang (2011) Geochemical characteristics of heavy metals in riparian sediment pore water of Songhua River, Northeast China. *Chinese Geographical Science* 21(2)195-203 [Not relevant to primary or secondary research questions]

Hunt, James; Birch, Gavin; Warne, Michael (2012) Quantifying reduction in ecological risk in Penrhyn Estuary, Sydney, Australia, following groundwater remediation. *Integrated Environmental Assessment and Management* 8(1)98-106 [Not relevant to primary or secondary research questions]

Hursky, O.; Pietrock, M. (2012) Chemical contaminants and parasites: Assessment of human health risks associated with consumption of whitefish (*Coregonus clupeaformis*) from two boreal lakes in northern Saskatchewan, Canada. *Science of the Total Environment* 424: 97-103 [Not relevant to primary or secondary research questions]

Husche, G.; Hansen, P. D. (2006) Ecotoxicological classification of the Berlin river system using bioassays in respect to the European water framework directive. *Environmental Monitoring and Assessment* 121(43891)15-31 [Not relevant to primary or secondary research questions]

Ibe, Francis Chizoruo; Opara, Alexander Iheanyichukwu; Ibe, Bridget Onyekachi; Amaobi, Collins Emeka (2019) Application of assessment models for pollution and health risk from effluent discharge into a tropical stream: case study of Inyishi River, Southeastern Nigeria. *Environmental Monitoring and Assessment* 191(12)753 [Not relevant to primary or secondary research questions]

Iepure, S.; Martinez-Hernandez, V.; Herrera, S.; Rasines-Ladero, R.; de Bustamante, I. (2013) Response of microcrustacean communities from the surface-groundwater interface to water contamination in urban river system of the Jarama basin (central Spain). *Environmental Science and Pollution Research* 20(8)5813-5826 [Not relevant to primary or secondary research questions]

Iepure, S.; Meffe, R.; Carreño, F.; Rasines, R. L.; de Bustamante, I. (2014) Geochemical, geological and hydrological influence on ostracod assemblages distribution in the hyporheic zone of two mediterranean rivers in central spain. *International Review of Hydrobiology* 99(6)435-449 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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1344-2022

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Ifelebuegu, Augustine O.; Ukpabor, Justina E.; Ahukannah, Anita U.; Nnadi, Ernest O.; Theophilus, Stephen C. (2017) Environmental effects of crude oil spill on the physicochemical and hydrobiological characteristics of the Nun River, Niger Delta. *Environmental Monitoring and Assessment* 189(4)173 [Not relevant to primary or secondary research questions]

Ihunwo, O. C.; Dibofor-Orji, A. N.; Olowo, C.; Ibezim-Ezeani, M. U. (2020) Distribution and risk assessment of some heavy metals in surface water, sediment and grey mullet (*Mugil cephalus*) from contaminated creek in Woji, southern Nigeria. *Marine Pollution Bulletin* 154 [Not relevant to primary or secondary research questions]

Ilboudo, P. G.; Le Gargasson, J. B. (2017) Delivery cost analysis of a reactive mass cholera vaccination campaign: A case study of Shanchol™ vaccine use in Lake Chilwa, Malawi. *BMC Infectious Diseases* 17(1) [Not relevant to primary or secondary research questions]

Inam, Edu; Offiong, Nnanake-Abasi; Essien, Joseph; Kang, Suil; Kang, Seo-Young; Antia, Bassey (2016) Polycyclic aromatic hydrocarbons loads and potential risks in freshwater ecosystem of the Ikpa River Basin, Niger Delta-Nigeria. *Environmental Monitoring and Assessment* 188(1)49 [Not relevant to primary or secondary research questions]

Inostroza, Pedro A.; Wicht, Anna-Jorina; Huber, Thomas; Nagy, Claudia; Brack, Werner; Krauss, Martin (2016) Body burden of pesticides and wastewater-derived pollutants on freshwater invertebrates: Method development and application in the Danube River. *Environmental Pollution* 214: 77-85 [Not relevant to primary or secondary research questions]

Ipeaiyeda, A. R.; Onianwa, P. C. (2009) Impact of brewery effluent on water quality of the Olosun river in Ibadan, Nigeria. *Chemistry and Ecology* 25(3)189-204 [Not relevant to primary or secondary research questions]

Iqbal, Hafiza Hira; Shahid, Naeem; Qadir, Abdul; Ahmad, Sajid Rashid; Sarwar, Saba; Ashraf, Muhammad Rizvan; Arshad, Hafiz Muhammad; Masood, Nasir (2017) Hydrological and Ichthyological Impact Assessment of Rasul Barrage, River Jhelum, Pakistan. *Polish Journal of Environmental Studies* 26(1)107-114 [Not relevant to primary or secondary research questions]

Irdhawati, Manuruang, M.; Reichelt-Brushett, A. (2020) Trace metals and nutrients in lake sediments in the Province of Bali, Indonesia: A baseline assessment linking potential sources. *Marine and Freshwater Research* [Not relevant to primary or secondary research questions]

Isaacson, Lloyd S.; Burton, Edward D.; Bush, Richard T.; Mitchell, David R. G.; Johnston, Scott G.; Macdonald, Bennett C. T.; Sullivan, Leigh A.; White, Ian (2009) Iron(III) accumulations in inland saline waterways, Hunter Valley, Australia: Mineralogy, micromorphology and pore-water geochemistry. *Applied Geochemistry* 24(10)1825-1834 [Not relevant to primary or secondary research questions]

Islam, Fakhar Ul; Jalali, Samina; Shafqat, Mustafa Nawaz; Shah, Syed Tahir Abbas (2017) Endosulfan is toxic to the reproductive health of male freshwater fish, *Cyprinodon watsoni*. *Die Naturwissenschaften* 104(44176)104 [Not relevant to primary or secondary research questions]

Islam, G. M. Rabiul; Habib, Mohammad Ruzlan; Waid, Jillian L.; Rahman, M. Safiur; Kabir, J.; Akter, S.; Jolly, Y. N. (2017) Heavy metal contamination of freshwater prawn (*Macrobrachium rosenbergii*) and prawn feed in Bangladesh: A market-based study to highlight probable health risks. *Chemosphere* 170: 282-289 [Not relevant to primary or secondary research questions]

Islam, Md S.; Tanaka, M. (2004) Impacts of pollution on coastal and marine ecosystems including coastal and marine fisheries and approach for management: A review and synthesis. *Marine Pollution Bulletin* 48(44050)624-649 [Not relevant to primary or secondary research questions]

Iulian, C. A. (2012) Pollution sources and prevention measures of the Izvorul Muntelui lake. 3: 793-799 [Not relevant to primary or secondary research questions]

Iwegbue, Chukwujindu M. A.; Tesi, Godswill O.; Overah, Loretta C.; Emoyan, Onoriode O.; Nwajei, Godwin E.; Martincigh, Bice S. (2020) Effects of Flooding on the Sources, Spatiotemporal Characteristics and Human Health Risks of Polycyclic Aromatic Hydrocarbons in Floodplain Soils of the Lower Parts of the River Niger, Nigeria. *Polycyclic Aromatic Compounds* 40(2)228-244 [Not relevant to primary or secondary research questions]

Jafari, H.; Bagheri, R.; Forghani, G.; Esmaeili, M. (2015) The consequences of disposing wastewater in an endorheic wetland in southwest Iran. *Environmental Monitoring and Assessment* 187(6) [Not relevant to primary or secondary research questions]

Janda, Joachim; Nödler, Karsten; Brauch, Heinz-Jürgen; Zwiener, Christian; Lange, Frank T. (2019) Robust trace analysis of polar (C2-C8) perfluorinated carboxylic acids by liquid chromatography-tandem mass spectrometry: method development and application to surface water, groundwater and drinking water. *Environmental Science and Pollution Research International* 26(8)7326-7336 [Not relevant to primary or secondary research questions]

Jang, Jiyi; Kim, Minjeong; Baek, Sangsoo; Shin, Jingyeong; Shin, Juhee; Shin, Seung Gu; Kim, Young Mo; Cho, Kyung Hwa (2020) Hydrometeorological Influence on Antibiotic-Resistance Genes (ARGs)

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

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and Bacterial Community at a Recreational Beach in Korea. *Journal of Hazardous Materials* 403: 123599 [Not relevant to primary or secondary research questions]

Jangid, S.; Shringi, S. K. (2011) Effect of agricultural-industrial wastes on vegetation of some selected sites of alaniya river system near Kota, Rajasthan. *Nature Environment and Pollution Technology* 10(4)617-620 [Not relevant to primary or secondary research questions]

Janoska, Olga; Gruszecka-Kosowska, Agnieszka (2020) Water quality and Human Health Risk Assessment: a case study of the Czarna Przemsza River source in Zawiercie, Poland. *Human and Ecological Risk Assessment* 26(3)757-781 [Not relevant to primary or secondary research questions]

Jarvis, A. L.; Bernot, M. J.; Bernot, R. J. (2014) The effects of the psychiatric drug carbamazepine on freshwater invertebrate communities and ecosystem dynamics. *Science of the Total Environment* 496: 461-470 [Not relevant to primary or secondary research questions]

Jayaraju, N.; Raja Reddy, B. C. S.; Reddy, K. R. (2011) Anthropogenic impact on Andaman coast monitoring with benthic foraminifera, Andaman Sea, India. *Environmental Earth Sciences* 62(4)821-829 [Not relevant to primary or secondary research questions]

Jha, B. R.; Waidbacher, H.; Sharma, S.; Straif, M. (2010) Study of agricultural impacts through fish base variables in different rivers. *International Journal of Environmental Science and Technology* 7(3)609-615 [Not relevant to primary or secondary research questions]

Jian, M. F.; Xu, P. F.; Xiong, J. Q.; Chen, P. Q.; Li, L. Y. (2013) Risk of heavy metal pollution in surface soil and diversity of aquatic plant communities in the Le'an River-Poyang Lake Wetland. *Journal of Ecology and Rural Environment* 29(4)415-421 [Not relevant to primary or secondary research questions]

Jiang, H.; Zhou, R.; Yang, Y.; Chen, B.; Cheng, Z.; Zhang, M.; Li, J.; Zhang, G.; Zou, S. (2018) Characterizing the antibiotic resistance genes in a river catchment: Influence of anthropogenic activities. *Journal of Environmental Sciences (China)* 69: 125-132 [Not relevant to primary or secondary research questions]

Jiang, Yinghui; Xie, Huanqing; Zhang, Hua; Xie, Zhenglei; Cao, Yun (2018) Dissolved Heavy Metals Distribution and Risk Assessment in the Le'an River Subjected to Violent Mining Activities. *Polish Journal of Environmental Studies* 27(4)1559-1572 [Not relevant to primary or secondary research questions]

Jin, Guangqiu; Zhang, Zhongtian; Yang, Yihang; Hu, Shuheng; Tang, Hongwu; Barry, David Andrew; Li, Ling (2020) Mitigation of impact of a major benzene spill into a river through flow control and in-situ activated carbon absorption. *Water Research* 172: 115489 [Not relevant to primary or secondary research questions]

Jin, X.; Chi, Y.; Ji, R.; Chen, Y.; Liu, C. (2014) Analysis the environment influence of spatial and temporal variation of strategy of land-based pollution for river cross section. *Journal of Chemical and Pharmaceutical Research* 6(5)1636-1640 [Not relevant to primary or secondary research questions]

Jindal, R.; Sharma, Chetan (2011) Studies on water quality of Sutlej River around Ludhiana with reference to physicochemical parameters. *Environmental Monitoring and Assessment* 174(43922)417-425 [Not relevant to primary or secondary research questions]

Jirapongsananuruk, O.; Sripramong, C.; Pacharn, P.; Udompunturak, S.; Chinratanapisit, S.; Piboonpocanun, S.; Visitsunthorn, N.; Vichyanond, P. (2008) Specific allergy to Penaeus monodon (seawater shrimp) or Macrobrachium rosenbergii (freshwater shrimp) in shrimp-allergic children. *Clinical and Experimental Allergy: Journal of the British Society for Allergy and Clinical Immunology* 38(6)1038-1047 [Not relevant to primary or secondary research questions]

Joerger, Katharina Maria; Hess, Martin; Neusser, Timea Pamela; Schroedl, Michael (2009) Sex in the beach: spermatophores, dermal insemination and 3D sperm ultrastructure of the aphallic mesopsammic Pontohedyle milaschewitchii (Acochlidia, Opisthobranchia, Gastropoda). *Marine Biology* 156(6)1159-1170 [Not relevant to primary or secondary research questions]

Joe-Ukairo, Awoibi; Oni, Ademakinwa G. (2018) Geophysical and Hydro-Chemical Investigations of Oke Asunle Dumpsite in Ile-Ife, Southwestern Nigeria for Subsoil and Surface Water Pollution. *Journal of Health & Pollution* 8(20)181209 [Not relevant to primary or secondary research questions]

Johansson, C. Henrik; Janmar, Lisa; Backhaus, Thomas (2014) Toxicity of ciprofloxacin and sulfamethoxazole to marine periphytic algae and bacteria. *Aquatic Toxicology (Amsterdam, Netherlands)* 156: 248-258 [Not relevant to primary or secondary research questions]

Johnson, L. T.; Fernandez, L. M. (2011) A binational, supply-side evaluation for managing water quality and invasive fouling species on California's coastal boats. *Journal of Environmental Management* 92(12)3071-3081 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

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Jonander, Christina; Dahllof, Ingela (2020) Short and long-term effects of low-sulphur fuels on marine zooplankton communities. *Aquatic Toxicology* 227: 105592 [Not relevant to primary or secondary research questions]

Jones, Elizabeth R.; Simning, Danielle; Serafin, Jenifer; Sepulveda, Maria S.; Griffitt, Robert J. (2020) Acute exposure to oil induces age and species-specific transcriptional responses in embryo-larval estuarine fish. *Environmental Pollution* 263: 114325 [Not relevant to primary or secondary research questions]

Joo, S. H. (2013) The ecotoxicological impact of metal oxide Nanoparticles on pool algae in the presence and absence of disinfection byproducts: A new research direction for the public health and safety of engineered Nanoparticles used in consumer products. *Water, Air, and Soil Pollution* 224(9) [Not relevant to primary or secondary research questions]

Jose Climent, Maria; Jesus Sanchez-Martin, Maria; Sonia Rodriguez-Cruz, Maria; Pedreros, Pablo; Urrutia, Roberto; Herrero-Hernandez, Eliseo (2018) Determination of Pesticides in River Surface Waters of Central Chile Using Spe-Gc-Ms Multi-Residue Method. *Journal of the Chilean Chemical Society* 63(2)4023-4031 [Not relevant to primary or secondary research questions]

Joyeux, J. C.; Campanha Filho, E. A.; De Jesus, H. C. (2004) Trace metal contamination in estuarine fishes from Vitória Bay, ES, Brazil. *Brazilian Archives of Biology and Technology* 47(5)765-774 [Not relevant to primary or secondary research questions]

Jóźwiak, M. A.; Jóźwiak, M.; Kozłowski, R.; Rabajczyk, A. (2010) The role of indicator malacofauna in pollution assessment of inland waters exposed to anthropopressure: The case of the Kielce Lake. *Ecological Chemistry and Engineering S* 17(4)485-495 [Not relevant to primary or secondary research questions]

Jung, J. H.; Kim, M.; Yim, U. H.; Ha, S. Y.; Shim, W. J.; Chae, Y. S.; Kim, H.; Incardona, J. P.; Linbo, T. L.; Kwon, J. H. (2015) Differential Toxicokinetics Determines the Sensitivity of Two Marine Embryonic Fish Exposed to Iranian Heavy Crude Oil. *Environmental Science and Technology* 49(22)13639-13648 [Not relevant to primary or secondary research questions]

Jung, Seung Won; Park, Joon Sang; Kwon, Oh Youn; Kang, Jung-Noon; Shim, Won Joon; Kim, Young-Ok (2010) Effects of Crude Oil on Marine Microbial Communities in Short Term Outdoor Microcosms. *Journal of Microbiology* 48(5)594-600 [Not relevant to primary or secondary research questions]

Kachur, A. N.; Arzhanova, V. S.; Yelpatyevsky, P. V.; von Braun, M. C.; von Lindern, I. H. (2003) Environmental conditions in the Rudnaya River watershed - a compilation of Soviet and post-Soviet era sampling around a lead smelter in the Russian Far East. *Science of the Total Environment* 303(43862)171-185 [Not relevant to primary or secondary research questions]

Kaci, A.; Petit, F.; Lesueur, P.; Boust, D.; Vrel, A.; Berthe, T. (2014) Distinct diversity of the *czcA* gene in two sedimentary horizons from a contaminated estuarine core. *Environmental Science and Pollution Research* 21(18)10787-10802 [Not relevant to primary or secondary research questions]

Kai, X.; Zhang, W.; Qiu, X.; Chu, J.; Zhang, Y. (2018) A study of children's health risks caused by pollutants of the Qingshui River. *IPPTA: Quarterly Journal of Indian Pulp and Paper Technical Association* 30(6)601-608 [Not relevant to primary or secondary research questions]

Kalogerakis, N.; Arff, J.; Banat, I. M.; Broch, O. J.; Daffonchio, D.; Edvardsen, T.; Eguiraun, H.; Giuliano, L.; Handå, A.; López-de-Ipiña, K.; Marigomez, I.; Martinez, I.; Øie, G.; Rojo, F.; Skjermo, J.; Zanaroli, G.; Fava, F. (2015) The role of environmental biotechnology in exploring, exploiting, monitoring, preserving, protecting and decontaminating the marine environment. *New Biotechnology* 32(1)157-167 [Not relevant to primary or secondary research questions]

Kamilli, K. A.; Ofner, J.; Krause, T.; Sattler, T.; Schmitt-Kopplin, P.; Eitenberger, E.; Friedbacher, G.; Lendl, B.; Lohninger, H.; Schöler, H. F.; Held, A. (2016) How salt lakes affect atmospheric new particle formation: A case study in Western Australia. *Science of the Total Environment* 573: 985-995 [Not relevant to primary or secondary research questions]

Kaminski, Lukasz; Kulawiak, Marcin; Cizmowski, Witold; Chybicki, Andrzej; Stepnowski, Andrzej (2009) Web-based GIS dedicated for marine environment surveillance and monitoring. *Oceans 2009 - Europe*, Vols 1 and 2: 1247-1253 [Not relevant to primary or secondary research questions]

Kamruzzaman, M.; Shoma, S.; Naymul Bari, S. M. N.; Ginn, A. N.; Wiklundt, A. M.; Partridge, S. R.; Faruque, S. M.; Iredell, J. R. (2013) Genetic diversity and antibiotic resistance in *Escherichia coli* from environmental surface water in Dhaka City, Bangladesh. *Diagnostic Microbiology and Infectious Disease* 76(2)222-226 [Not relevant to primary or secondary research questions]

Kandie, Faith Jebiwot; Krauss, Martin; Massei, Riccardo; Ganatra, Akbar; Fillinger, Ulrike; Becker, Jeremias; Liess, Matthias; Torto, Baldwin; Brack, Werner (2020) Multi-compartment chemical characterization and risk assessment of chemicals of emerging concern in freshwater systems of western Kenya. *Environmental Sciences Europe* 32(1)15 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

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Kang, M.; Guo, H.; Wang, P.; Fu, P.; Ying, Q.; Liu, H.; Zhao, Y.; Zhang, H. (2019) Characterization and source apportionment of marine aerosols over the East China Sea. *Science of the Total Environment* 651: 2679-2688 [Not relevant to primary or secondary research questions]

Kang, S.; Mauter, M. S.; Elimelech, M. (2009) Microbial cytotoxicity of carbon-based nanomaterials: implications for river water and wastewater effluent. *Environmental Science and Technology* 43(7)2648-2653 [Not relevant to primary or secondary research questions]

Kang, Yuan; Cheung, Kwai Chung; Wong, Ming H. (2011) Mutagenicity, genotoxicity and carcinogenic risk assessment of indoor dust from three major cities around the Pearl River Delta. *Environment International* 37(3)637-643 [Not relevant to primary or secondary research questions]

Kappell, A. D.; Wei, Y.; Newton, R. J.; van Nostrand, J. D.; Zhou, J.; McLellan, S. L.; Hristova, K. R. (2014) The polycyclic aromatic hydrocarbon degradation potential of Gulf of Mexico native coastal microbial communities after the Deepwater Horizon oil spill. *Frontiers in Microbiology* 5(MAY) [Not relevant to primary or secondary research questions]

Karaer, Feza; Katip, Aslihan; Ileri, Saadet; Sarmasik, Sonay; Aksoy, Ertugrul; Ozturk, Cihat (2015) Spatial and Temporal Changes in Water Quality Parameters of a Shallow Lake. *Environmental Engineering and Management Journal* 14(10)2263-2274 [Not relevant to primary or secondary research questions]

Karande, Urmila B.; Kadam, Ajaykumar; Umrikar, Bhavana N.; Wagh, Vasant; Sankhua, R. N.; Pawar, N. J. (2020) Environmental modelling of soil quality, heavy-metal enrichment and human health risk in sub-urbanized semiarid watershed of western India. *Modeling Earth Systems and Environment* 6(1)545-556 [Not relevant to primary or secondary research questions]

Kareem, Dunya Omer; Ibrahim, Ahmed Abed; Ibrahem, Omer Sabah (2020) Heavy metal and radon gas concentration levels in Khasa River in Kirkuk City (NE Iraq) and the associated health effects. *Arabian Journal of Geosciences* 13(19)1023 [Not relevant to primary or secondary research questions]

Kassotis, Christopher D.; Alvarez, David A.; Taylor, Julia A.; vom Saal, Frederick S.; Nagel, Susan C.; Tillitt, Donald E. (2015) Characterization of Missouri surface waters near point sources of pollution reveals potential novel atmospheric route of exposure for bisphenol A and wastewater hormonal activity pattern. *Science of the Total Environment* 524: 384-393 [Not relevant to primary or secondary research questions]

Kaur, N.; Gupta, R.; Saini, A. (2017) Effect of heavy metal toxicity on commercially important fishes in harike wetland - A review. *Indian Journal of Environmental Protection* 37(9)779-785 [Not relevant to primary or secondary research questions]

Kausar, Firdaus; Qadir, Abdul; Ahmad, Sajid Rashid; Baqar, Mujtaba (2019) Evaluation of Surface Water Quality on Spatiotemporal Gradient Using Multivariate Statistical Techniques: A Case Study of River Chenab, Pakistan. *Polish Journal of Environmental Studies* 28(4)2645-2657 [Not relevant to primary or secondary research questions]

Kauser, I.; Ciesielski, M.; Poretsky, R. S. (2019) Ultraviolet disinfection impacts the microbial community composition and function of treated wastewater effluent and the receiving urban river. *PeerJ* 2019(8) [Not relevant to primary or secondary research questions]

Kaushal, Sujay S.; Likens, Gene E.; Pace, Michael L.; Haq, Shahan; Wood, Kelsey L.; Galella, Joseph G.; Morel, Carol; Doody, Thomas R.; Wessel, Barret; Kortelainen, Pirkko; Raike, Antti; Skinner, Valerie; Utz, Ryan; Jaworski, Norbert (2019) Novel 'chemical cocktails' in inland waters are a consequence of the freshwater salinization syndrome. *Philosophical Transactions of the Royal Society B-Biological Sciences* 374(1764)20180017 [Not relevant to primary or secondary research questions]

Kayembe, John M.; Bokwokwo, Merveille I.; Sivalingam, Periyasamy; Ngelinkoto, Patience; Otamonga, Jean-Paul; Mulaji, Crispin K.; Mubedi, Josue I.; Pote, John (2020) Effect of untreated urban effluents on the accumulation of toxic metals in river sediments under tropical conditions: Funa River, Kinshasa, Democratic Republic of the Congo. *Water and Environment Journal* 34(2)180-188 [Not relevant to primary or secondary research questions]

Kelly, R. A.; Locatelli, A.; White, M. (2015) A plan for water quality improvement in the tamar estuary and esk rivers. 2269-2275 [Not relevant to primary or secondary research questions]

Keys, William; Carson, Susan J. (2017) Rubber dam may increase the survival time of dental restorations. *Evidence-Based Dentistry* 18(1)19-20 [Not relevant to primary or secondary research questions]

Khadka, Y. J.; Iqbal, M. Z.; De Nault, K. J. (2015) Urban Pollution of Bagmati River Corridor within the Densely Populated Kathmandu Valley in Nepal. *Asian Journal of Water Environment and Pollution* 12(4)43-59 [Not relevant to primary or secondary research questions]

Khamar, M.; Cherkaoui, E.; Nounah, A. (2018) Bioaccumulation of heavy metals by the flora and benthic macrofauna of the Bouregreg estuary wetland. 149 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Khan, Mohd Yawar Ali; Hu, Hongchang; Tian, Fuqiang; Wen, Jie (2020) Monitoring the spatio-temporal impact of small tributaries on the hydrochemical characteristics of Ramganga River, Ganges Basin, India. *International Journal of River Basin Management* 18(2)231-241 [Not relevant to primary or secondary research questions]

Khandaker, Mayeen Uddin; Asaduzzaman, Khandoker; Bin Sulaiman, Abdullah Fadil; Bradley, D. A.; Isinkaye, Matthew Omoniyi (2018) Elevated concentrations of naturally occurring radionuclides in heavy mineral-rich beach sands of Langkawi Island, Malaysia. *Marine Pollution Bulletin* 127: 654-663 [Not relevant to primary or secondary research questions]

Khare, Neha; Kaushik, Megha; Martin, Juan Pedro; Mohanty, Aparajita; Gulati, Pooja (2020) Genotypic diversity in multi-drug-resistant *E. coli* isolated from animal feces and Yamuna River water, India, using rep-PCR fingerprinting. *Environmental Monitoring and Assessment* 192(11)681 [Not relevant to primary or secondary research questions]

Khonje, A.; Metcalf, C. A.; Diggle, E.; Mlozowa, D.; Jere, C.; Akesson, A.; Corbet, T.; Chimanga, Z. (2012) Cholera outbreak in districts around Lake Chilwa, Malawi: Lessons learned. *Malawi Medical Journal* 24(2)29-33 [Not relevant to primary or secondary research questions]

Khuman, S. N.; Vinod, P. G.; Bharat, G.; Kumar, Y. S. M.; Chakraborty, P. (2020) Spatial distribution and compositional profiles of organochlorine pesticides in the surface soil from the agricultural, coastal and backwater transects along the south-west coast of India. *Chemosphere* 254 [Not relevant to primary or secondary research questions]

Khushi, S.; Nahar, L.; Salim, A. A.; Capon, R. J. (2018) Cacolides: Sesterterpene butenolides from a Southern Australian marine sponge, *Cacospongia* sp. *Marine Drugs* 16(11) [Not relevant to primary or secondary research questions]

Kihlman, S. M.; Kauppila, T. (2009) Mine water-induced gradients in sediment metals and arcellacean assemblages in a boreal freshwater bay (Petkellahti, Finland). *Journal of Paleolimnology* 42(4)533-550 [Not relevant to primary or secondary research questions]

Kikuchi, Tetsuro; Fujii, Manabu; Terao, Koumei; Jiwei, Ran; Lee, Ying Ping; Yoshimura, Chihiro (2017) Correlations between aromaticity of dissolved organic matter and trace metal concentrations in natural and effluent waters: A case study in the Sagami River Basin, Japan. *The Science of the Total Environment* 576: 36-45 [Not relevant to primary or secondary research questions]

Kikuti, M.; Paploski, I. a D.; Silva, M. d C. P.; de Oliveira, E. A.; da Silva, A. W. C.; Biondo, A. W. (2011) Prevention educational program of human rabies transmitted by bats in rain forest preserved area of southern Brazilian coast. *Zoonoses and Public Health* 58(8)529-532 [Not relevant to primary or secondary research questions]

Kim, J.; Paik, H. Y.; Joung, H.; Woodhouse, L. R.; King, J. C. (2011) Plasma zinc but not the exchangeable zinc pool size differs between young and older Korean women. *Biological Trace Element Research* 142(2)130-136 [Not relevant to primary or secondary research questions]

Kinaston, R. L.; Roberts, G. L.; Buckley, H. R.; Oxenham, M. (2016) A bioarchaeological analysis of oral and physiological health on the south coast of New Guinea. *American Journal of Physical Anthropology* 160(3)414-426 [Not relevant to primary or secondary research questions]

Kingsley, Okpara; Witthayawirasak, Banchong (2020) Occurrence, Ecological and Health Risk Assessment of Phthalate Esters in Surface Water of U-Tapao Canal, Southern, Thailand. *Toxics* 8(3) [Not relevant to primary or secondary research questions]

Kiran, George S.; Sabarathnam, Balu; Thajuddin, Nooruddin; Selvin, Joseph (2014) Production of Glycolipid Biosurfactant from Sponge-Associated Marine Actinobacterium *Brachybacterium paraconglomeratum* MSA21. *Journal of Surfactants and Detergents* 17(3)531-542 [Not relevant to primary or secondary research questions]

Kiran, George Seghal; Ninawe, Arun Shivanth; Lipton, Anuj Nishanth; Pandian, Vijayalakshmi; Selvin, Joseph (2016) Rhamnolipid biosurfactants: evolutionary implications, applications and future prospects from untapped marine resource. *Critical Reviews in Biotechnology* 36(3)399-415 [Not relevant to primary or secondary research questions]

Kirkpatrick, A. J.; Gerhardt, A.; Dick, J. T. A.; McKenna, M.; Berges, J. A. (2006) Use of the multispecies freshwater biomonitor to assess behavioral changes of *Corophium volutator* (Pallas, 1766) (Crustacea, Amphipoda) in response to toxicant exposure in sediment. *Ecotoxicology and Environmental Safety* 64(3)298-303 [Not relevant to primary or secondary research questions]

Kleindienst, Sara; Herbst, Florian-Alexander; Stagars, Marion; von Netzer, Frederick; von Bergen, Martin; Seifert, Jana; Peplies, Joerg; Amann, Rudolf; Musat, Florin; Lueders, Tillmann; Knittel, Katrin (2014) Diverse sulfate-reducing bacteria of the *Desulfosarcina/Desulfococcus* clade are the key alkane degraders at marine seeps. *Isme Journal* 8(10)2029-2044 [Not relevant to primary or secondary research questions]

Knauert, Stefanie; Dawo, Ursula; Hollender, Juliane; Hommen, Udo; Knauer, Katja (2009) Effects of Photosystem II Inhibitors and Their Mixture on Freshwater Phytoplankton Succession in Outdoor

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Mesocosms. *Environmental Toxicology and Chemistry* 28(4):836-845 [Not relevant to primary or secondary research questions]

Kong, Yanli; Kang, Jing; Chen, Zhonglin; Shen, Jimin; Zhao, Ge; Fan, Leitao; Wu, Xiaofei (2016) Occurrence of organochlorine pesticides from typical water sources in YiXing City, Taihu Upper-River Basin, East China. *Rsc Advances* 6(115):114159-114170 [Not relevant to primary or secondary research questions]

Konyshina, L. G.; Shershnev, V. N.; Konovalova, N. V.; Evdokimov, A. V. (2008) Determinants of morbidity in the areas situated along the Techa and Iset Rivers. *Gigiena i sanitaria* (3):44143 [Not relevant to primary or secondary research questions]

Koo, H.; Mojib, N.; Huang, J. P.; Donahoe, R. J.; Bej, A. K. (2015) Bacterial community shift in the coastal Gulf of Mexico salt-marsh sediment microcosm in vitro following exposure to the Mississippi Canyon Block 252 oil (MC252). *3 Biotech* 5(4):379-392 [Not relevant to primary or secondary research questions]

Koo, H.; Mojib, N.; Thacker, R. W.; Bej, A. K. (2014) Comparative analysis of bacterial community-metagenomics in coastal Gulf of Mexico sediment microcosms following exposure to Macondo oil (MC252). *Antonie van Leeuwenhoek, International Journal of General and Molecular Microbiology* 106(5):993-1009 [Not relevant to primary or secondary research questions]

Korkanc, Selma Yasar; Kayikci, Sedef; Korkanc, Mustafa (2017) Evaluation of spatial and temporal water quality in the Akkaya dam watershed (Nigde, Turkey) and management implications. *Journal of African Earth Sciences* 129: 481-491 [Not relevant to primary or secondary research questions]

Kosek, K.; Kozak, K.; Koziol, K.; Jankowska, K.; Chmiel, S.; Polkowska, Z. (2018) The interaction between bacterial abundance and selected pollutants concentration levels in an arctic catchment (southwest Spitsbergen, Svalbard). *Science of the Total Environment* 622-623: 913-923 [Not relevant to primary or secondary research questions]

Kosek, K.; Koziol, K.; Luczkiewicz, A.; Jankowska, K.; Chmiel, S.; Polkowska, Ź (2019) Environmental characteristics of a tundra river system in Svalbard. Part 2: Chemical stress factors. *Science of the Total Environment* 653: 1585-1596 [Not relevant to primary or secondary research questions]

Kostka, J. E.; Prakash, O.; Overholt, W. A.; Green, S. J.; Freyer, G.; Canon, A.; Delgadio, J.; Norton, N.; Hazen, T. C.; Huettel, M. (2011) Hydrocarbon-degrading bacteria and the bacterial community response in Gulf of Mexico beach sands impacted by the deepwater horizon oil spill. *Applied and Environmental Microbiology* 77(22):7962-7974 [Not relevant to primary or secondary research questions]

Kottuparambil, S.; Kim, Y. J.; Choi, H.; Kim, M. S.; Park, A.; Park, J.; Shin, W.; Han, T. (2014) A rapid phenol toxicity test based on photosynthesis and movement of the freshwater flagellate, *Euglena agilis* Carter. *Aquatic Toxicology* 155: 41883 [Not relevant to primary or secondary research questions]

Koukousioura, Olga; Dimiza, Margarita D.; Triantaphyllou, Maria V.; Hallock, Pamela (2011) Living benthic foraminifera as an environmental proxy in coastal ecosystems: A case study from the Aegean Sea (Greece, NE Mediterranean). *Journal of Marine Systems* 88(4):489-501 [Not relevant to primary or secondary research questions]

Kralj, D.; Romic, D.; Romic, M.; Cukrov, N.; Mlakar, M.; Kontrec, J.; Barisic, D.; Sirac, S. (2016) Geochemistry of stream sediments within the reclaimed coastal floodplain as indicator of anthropogenic impact (River Neretva, Croatia). *Journal of Soils and Sediments* 16(4):1150-1167 [Not relevant to primary or secondary research questions]

Kramer, K. J. M.; Sleeuwaert, F.; Engelen, G.; Müller, C.; Brack, W.; Posthuma, L. (2019) The RiBaTox web tool: selecting methods to assess and manage the diverse problem of chemical pollution in surface waters. *Environmental Sciences Europe* 31(1) [Not relevant to primary or secondary research questions]

Krause, Kamille Elvstrom; Dinh, Khuong V.; Nielsen, Torkel Gissel (2017) Increased tolerance to oil exposure by the cosmopolitan marine copepod *Acartia tonsa*. *Science of the Total Environment* 607: 87-94 [Not relevant to primary or secondary research questions]

Kress, N.; Herut, B.; Galil, B. S. (2004) Sewage sludge impact on sediment quality and benthic assemblages off the Mediterranean coast of Israel-a long-term study. *Marine Environmental Research* 57(3):213-233 [Not relevant to primary or secondary research questions]

Krishnaiah, S.; Subba Rao, B.; Lakshmi Narasamma, K.; Amit, G. (2012) A survey of severe visual impairment in children attending schools for the blind in a coastal district of Andhra Pradesh in South India. *Eye (Basingstoke)* 26(8):1065-1070 [Not relevant to primary or secondary research questions]

Kristiansson, E.; Fick, J.; Janzon, A.; Grabic, R.; Rutgersson, C.; Weijdegård, B.; Söderström, H.; Joakim Larsson, D. G. (2011) Pyrosequencing of antibiotic-contaminated river sediments reveals high

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



levels of resistance and gene transfer elements. *PLoS ONE* 6(2) [Not relevant to primary or secondary research questions]

Kroon, Frederieke J.; Motti, Cherie E.; Jensen, Lene H.; Berry, Kathryn L. E. (2018) Classification of marine microdebris: A review and case study on fish from the Great Barrier Reef, Australia. *Scientific Reports* 8: 16422 [Not relevant to primary or secondary research questions]

Krudysz, M. A.; Froines, J. R.; Fine, P. M.; Sioutas, C. (2008) Intra-community spatial variation of size-fractionated PM mass, OC, EC, and trace elements in the Long Beach, CA area. *Atmospheric Environment* 42(21)5374-5389 [Not relevant to primary or secondary research questions]

Kruger, T.; Barnhoorn, I.; Jansen van Vuren, J.; Bornman, R. (2013) The use of the urogenital papillae of male feral African sharptooth catfish (*Clarias gariepinus*) as indicator of exposure to estrogenic chemicals in two polluted dams in an urban nature reserve, Gauteng, South Africa. *Ecotoxicology and Environmental Safety* 87: 98-107 [Not relevant to primary or secondary research questions]

Kuang, C.; Shan, Y.; Gu, J.; Shao, H.; Zhang, W.; Zhang, Y.; Zhang, J.; Liu, H. (2016) Assessment of heavy metal contamination in water body and riverbed sediments of the Yanghe River in the Bohai Sea, China. *Environmental Earth Sciences* 75(14) [Not relevant to primary or secondary research questions]

Kubicki, S.; Bollinger, A.; Katzke, N.; Jaeger, K. E.; Loeschcke, A.; Thies, S. (2019) Marine biosurfactants: biosynthesis, structural diversity and biotechnological applications. *Marine Drugs* 17(7) [Not relevant to primary or secondary research questions]

Kuemmerer, Klaus; Al-Ahmad, Ali (2010) Estimation of the cancer risk to humans resulting from the presence of cyclophosphamide and ifosfamide in surface water. *Environmental Science and Pollution Research* 17(2)486-496 [Not relevant to primary or secondary research questions]

Kumar, B.; Singh, U. K. (2018) Source apportionment of heavy metals and their ecological risk in a tropical river basin system. *Environmental Science and Pollution Research* 25(25)25443-25457 [Not relevant to primary or secondary research questions]

Kumar, D. R.; Raju, D. S.; Naidu, L.; Deshpande, S.; Chadha, M.; Agarwal, A. (2015) Prosthetic status and prosthetic needs amongst geriatric fishermen population of Kutch coast, Gujarat, India. *Roczniki Państwowego Zakładu Higieny* 66(2)167-171 [Not relevant to primary or secondary research questions]

Kumar, P.; Kaur, R.; Celestin, D.; Kumar, P. (2020) Chromium removal efficiency of plant, microbe and media in experimental VSSF constructed wetlands under monocropped and co-cropped conditions. *Environmental Science and Pollution Research* 27(2)2071-2086 [Not relevant to primary or secondary research questions]

Kumar, Saroj; Dutta, Venkatesh (2019) Constructed wetland microcosms as sustainable technology for domestic wastewater treatment: an overview. *Environmental Science and Pollution Research International* 26(12)11662-11673 [Not relevant to primary or secondary research questions]

Kumar, Suman; Kazmi, Absar Ahmad; Ghosh, Narayan Chandra; Kumar, Vinod; Rajpal, Ankur (2019) Urban stormwater runoff treatment of Nainital Lake's catchment: an application of ballasted sand flocculation technology. *Water Science and Technology-Water Supply* 19(4)1017-1025 [Not relevant to primary or secondary research questions]

Kumar, Vinod; Parihar, Ripu Daman; Sharma, Anket; Bakshi, Palak; Sidhu, Gagan Preet Singh; Bali, Aditi Shreeya; Karaouzas, Loannis; Bhardwaj, Renu; Thukral, Ashwani Kumar; Gyasi-Agyei, Yeboah; Rodrigo-Comino, Jesus (2019) Global evaluation of heavy metal content in surface water bodies: A meta-analysis using heavy metal pollution indices and multivariate statistical analyses. *Chemosphere* 236: 124364 [Not relevant to primary or secondary research questions]

Kummrow, F.; Rech, C. M.; Coimbrão, C. A.; Umbuzeiro, G. A. (2006) Blue rayon-anchored technique/*Salmonella* microsome microsuspension assay as a tool to monitor for genotoxic polycyclic compounds in Santos estuary. *Mutation Research - Genetic Toxicology and Environmental Mutagenesis* 609(1)60-67 [Not relevant to primary or secondary research questions]

Kung, T. A.; Lee, S. H.; Yang, T. C.; Wang, W. H. (2018) Survey of selected personal care products in surface water of coral reefs in Kenting National Park, Taiwan. *Science of the Total Environment* 635: 1302-1307 [Not relevant to primary or secondary research questions]

Kuo, C. Y.; Yang, H. J.; Chiang, Y. C.; Lai, D. J.; Shen, Y. H.; Liu, P. M. (2014) Concentration and composition variations of metals in the outdoor PM10 of elementary schools during river dust episodes. *Environmental Science and Pollution Research* 21(21)12354-12363 [Not relevant to primary or secondary research questions]

Kurtz, R. S. (2008) Coastal oil spill preparedness and response: The Morris J. Berman incident. *Review of Policy Research* 25(5)473-486 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Kuzmanovic, M.; Dolédec, S.; de Castro-Catala, N.; Ginebreda, A.; Sabater, S.; Muñoz, I.; Barceló, D. (2017) Environmental stressors as a driver of the trait composition of benthic macroinvertebrate assemblages in polluted Iberian rivers. *Environmental Research* 156: 485-493 [Not relevant to primary or secondary research questions]

La Porte, P. F. (2005) *Mytilus trossulus* hsp70 as a biomarker for arsenic exposure in the marine environment: Laboratory and real-world results. *Biomarkers* 10(6)417-428 [Not relevant to primary or secondary research questions]

Lambert, C.; Meité, N.; Sanogo, I.; Lobet, S.; Adjambri, E.; Eeckhoudt, S.; Hermans, C. (2019) Haemophilia in Côte d'Ivoire (the Ivory Coast) in 2017: Extensive data collection as part of the World Federation of Hemophilia's twinning programme. *Haemophilia* 25(2)236-243 [Not relevant to primary or secondary research questions]

Lamori, J. G.; Xue, J.; Rachmadi, A. T.; Lopez, G. U.; Kitajima, M.; Gerba, C. P.; Pepper, I. L.; Brooks, J. P.; Sherchan, S. (2019) Removal of fecal indicator bacteria and antibiotic resistant genes in constructed wetlands. *Environmental Science and Pollution Research* 26(10)10188-10197 [Not relevant to primary or secondary research questions]

Lan, Y.; Liang, R.; Zhao, X.; Ma, Q.; Xu, Z.; Gou, T.; Wang, L.; Zhuo, Q. (2017) Impacts of environmental pollution incident of cadmium and thallium and their emergency disposal on ecological risk of Hejiang River. *Huanjing Kexue Xuebao/Acta Scientiae Circumstantiae* 37(9)3602-3612 [Not relevant to primary or secondary research questions]

Lang, L.; Bao, M.; Jing, W.; Chen, W.; Wang, L. (2020) Clone, identification and functional characterization of a novel toll (Shtoll1) from the freshwater crab *Sinopotamon henanense* in response to cadmium exposure and *Aeromonas hydrophila* infection. *Fish and Shellfish Immunology* 98: 401-413 [Not relevant to primary or secondary research questions]

Lang, Y. H.; Li, G. L.; Yang, W.; Wang, X. M.; Peng, P. (2014) Ecological Risk and Health Risk Assessment of Dioxin-like PCBs in Liaohe Estuarine Wetland Soils, China. *Polycyclic Aromatic Compounds* 34(4)425-438 [Not relevant to primary or secondary research questions]

Lang, Yanhe; Sun, Yuan; Yu, Miao; Ji, Yubin; Wang, Lei; Zhang, Zhizhou (2019) Differential Colonization Dynamics of Marine Biofilm-Forming Eukaryotic Microbes on Different Protective Coating Materials. *Polymers* 11(1)161 [Not relevant to primary or secondary research questions]

Lang, Yinhai; Zhao, Huaxuan; Liu, Ben; Zhu, Chunmiao (2018) The Levels and Potential Carcinogenic Risks of PAHs in Liaohe Estuarine Reed Wetland Soils. *Archives of Environmental Contamination and Toxicology* 74(3)452-460 [Not relevant to primary or secondary research questions]

Langston, W. J.; Pope, N. D.; Jonas, P. J. C.; Nikitic, C.; Field, M. D. R.; Dowell, B.; Shillabeer, N.; Swarbrick, R. H.; Brown, A. R. (2010) Contaminants in fine sediments and their consequences for biota of the Severn Estuary. *Marine Pollution Bulletin* 61(43891)68-82 [Not relevant to primary or secondary research questions]

LaRowe, D. E.; Arndt, S.; Bradley, J. A.; Estes, E. R.; Hoarfrost, A.; Lang, S. Q.; Lloyd, K. G.; Mahmoudi, N.; Orsi, W. D.; Walter, S. R. Shah; Steen, A. D.; Zhao, R. (2020) The fate of organic carbon in marine sediments - New insights from recent data and analysis. *Earth-Science Reviews* 204: UNSP-103146 [Not relevant to primary or secondary research questions]

Law, Alice Yu Sheung; Wei, Xi; Zhang, Xiaowei; Mak, Nak Ki; Cheung, Kwai Chung; Wong, Ming Hung; Giesy, John Paul; Wong, Chris Kong Chu (2012) Biological analysis of endocrine-disrupting chemicals in animal meats from the Pearl River Delta, China. *Journal of Exposure Science and Environmental Epidemiology* 22(1)93-100 [Not relevant to primary or secondary research questions]

Lawrence, J. R.; Zhu, B.; Swerhone, G. D.; Roy, J.; Tumber, V.; Waiser, M. J.; Topp, E.; Korber, D. R. (2012) Molecular and microscopic assessment of the effects of caffeine, acetaminophen, diclofenac, and their mixtures on river biofilm communities. *Environmental Toxicology and Chemistry* 31(3)508-517 [Not relevant to primary or secondary research questions]

Lawrence, John R.; Paule, Armelle; Swerhone, George D. W.; Roy, Julie; Grigoryan, Alexander A.; Dynes, James J.; Chekabab, Samuel M.; Korber, Darren R. (2020) Microscale and molecular analyses of river biofilm communities treated with microgram levels of cerium oxide nanoparticles indicate limited but significant effects. *Environmental Pollution* (Barking, Essex: 1987) 256: 113515 [Not relevant to primary or secondary research questions]

Le Quesne, William J. F.; Baker-Austin, Craig; Verner-Jeffreys, David W.; Al-Sarawi, Hanan A.; Balkhy, Hanan H.; Lyons, Brett P. (2018) Antimicrobial resistance in the Gulf Cooperation Council region: A proposed framework to assess threats, impacts and mitigation measures associated with AMR in the marine and aquatic environment. *Environment International* 121(Pt 1)1003-1010 [Not relevant to primary or secondary research questions]

Leboulanger, C.; Bouvy, M.; Carré, C.; Cecchi, P.; Amalric, L.; Bouchez, A.; Pagano, M.; Sarazin, G. (2011) Comparison of the effects of two herbicides and an insecticide on tropical freshwater plankton in

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



microcosms. *Archives of Environmental Contamination and Toxicology* 61(4):599-613 [Not relevant to primary or secondary research questions]

Lebrun, J. D.; Ayrault, S.; Drouet, A.; Bordier, L.; Fechner, L. C.; Uher, E.; Chaumont, C.; Tournebize, J. (2019) Ecodynamics and bioavailability of metal contaminants in a constructed wetland within an agricultural drained catchment. *Ecological Engineering* 136: 108-117 [Not relevant to primary or secondary research questions]

Leclercq, R.; Oberlé, K.; Galopin, S.; Cattoir, V.; Budzinski, H.; Petit, F. (2013) Changes in enterococcal populations and related antibiotic resistance along a medical center-wastewater treatment plant-river Continuum. *Applied and Environmental Microbiology* 79(7):2428-2434 [Not relevant to primary or secondary research questions]

Lee, Chang-Hee; Lee, Bum-Yeon; Chang, Won Keun; Hong, Seongjin; Song, Sung Joon; Park, Jinsoon; Kwon, Bong-Oh; Khim, Jong Seong (2014) Environmental and ecological effects of Lake Shihwa reclamation project in South Korea: A review. *Ocean & Coastal Management* 102: 545-558 [Not relevant to primary or secondary research questions]

Lee, D. J.; Toscas, P. (2015) Flexible geostatistical modeling and risk assessment analysis of lead concentration levels of residential soil in the Coeur D'Alene River Basin. *Environmental and Ecological Statistics* 22(3):551-570 [Not relevant to primary or secondary research questions]

Lee, D. W.; Lee, H.; Kwon, B. O.; Khim, J. S.; Yim, U. H.; Kim, B. S.; Kim, J. J. (2018) Biosurfactant-assisted bioremediation of crude oil by indigenous bacteria isolated from Taean beach sediment. *Environmental Pollution* 241: 254-264 [Not relevant to primary or secondary research questions]

Lee, D. W.; Lee, H.; Lee, A. H.; Kwon, B. O.; Khim, J. S.; Yim, U. H.; Kim, B. S.; Kim, J. J. (2018) Microbial community composition and PAHs removal potential of indigenous bacteria in oil contaminated sediment of Taean coast, Korea. *Environmental Pollution* 234: 503-512 [Not relevant to primary or secondary research questions]

Lee, Gyu-Cheol; Kim, Min-jeong; Kim, Jong Ik; Lee, Chan Hee (2014) Occurrence and Molecular Characterization of Noroviruses in Korean Surface Water Between 2007 and 2010. *Journal of Microbiology and Biotechnology* 24(4):556-562 [Not relevant to primary or secondary research questions]

Lee, S.; Lee, Y. W. (2016) Determination of the concentrations of alternative antifouling agents on the Korean coast. *Marine Pollution Bulletin* 113(43862):253-257 [Not relevant to primary or secondary research questions]

Lee, Y. G.; An, K. G.; Ha, P. T.; Lee, K. Y.; Kang, J. H.; Cha, S. M.; Cho, K. H.; Lee, Y. S.; Chang, I. S.; Kim, K. W.; Kim, J. H. (2009) Decadal and seasonal scale changes of an artificial lake environment after blocking tidal flows in the Yeongsan Estuary region, Korea. *Science of the Total Environment* 407(23):6063-6072 [Not relevant to primary or secondary research questions]

Lempart, Anna; Kudlek, Edyta; Dudziak, Mariusz (2018) Determination of Micropollutants in Water Samples from Swimming Pool Systems. *Water* 10(8):1083 [Not relevant to primary or secondary research questions]

Lenart-Boroń, Anna; Prajsnar, Justyna; Guzik, Maciej; Boroń, Piotr; Chmiel, Maria (2020) How much of antibiotics can enter surface water with treated wastewater and how it affects the resistance of waterborne bacteria: A case study of the Bialka river sewage treatment plant. *Environmental Research* 191: 110037 [Not relevant to primary or secondary research questions]

Levin-Edens, E.; Bonilla, N.; Meschke, J. S.; Roberts, M. C. (2011) Survival of environmental and clinical strains of methicillin-resistant *Staphylococcus aureus* [MRSA] in marine and fresh waters. *Water Research* 45(17):5681-5686 [Not relevant to primary or secondary research questions]

Lew, S.; Lew, M.; Szarek, J.; Babińska, I. (2011) Seasonal patterns of the bacterioplankton community composition in a lake threatened by a pesticide disposal site. *Environmental Science and Pollution Research* 18(3):376-385 [Not relevant to primary or secondary research questions]

Ley, S. H.; Harris, S. B.; Connelly, P. W.; Mamakessick, M.; Gittelsohn, J.; Hegele, R. A.; Retnakaran, R.; Zinman, B.; Hanley, A. J. G. (2008) Adipokines and incident type 2 diabetes in an aboriginal canadian population: The sandy lake health and diabetes project. *Diabetes Care* 31(7):1410-1415 [Not relevant to primary or secondary research questions]

Li, C.; Sun, D.; Xie, X.; Xue, J. (2016) Cooperation control strategies for China's cross-region pollution in a lake basin based on green reduction cost. *Journal of the Air and Waste Management Association* 66(5):482-491 [Not relevant to primary or secondary research questions]

Li, D.; Zheng, B.; Liu, Y.; Chu, Z.; He, Y.; Huang, M. (2018) Use of multiple water surface flow constructed wetlands for non-point source water pollution control. *Applied Microbiology and Biotechnology* 102(13):5355-5368 [Not relevant to primary or secondary research questions]

Li, F.; Lin, Z. F.; Wen, J. S.; Wei, Y. S.; Gan, H. Y.; He, H. J.; Lin, J. Q.; Xia, Z.; Chen, B. S.; Guo, W. J.; Tan, C. S.; Cai, H. Y. (2017) Risk assessment of trace metal-polluted coastal sediments on

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Hainan Island: A full-scale set of 474 geographical locations covering the entire island. *Marine Pollution Bulletin* 125(43862)541-555 [Not relevant to primary or secondary research questions]

Li, F.; Zhang, X.; Xie, Y.; Wang, J. (2019) Sedimentary DNA reveals over 150 years of ecosystem change by human activities in Lake Chao, China. *Environment International* 133 [Not relevant to primary or secondary research questions]

Li, H.; Chai, L.; Yang, Z.; Yang, W.; Liao, Q.; Cao, Z.; Peng, Y. (2020) Systematic assessment of health risk from metals in surface sediment of the Xiangjiang River, China. *International Journal of Environmental Research and Public Health* 17(5) [Not relevant to primary or secondary research questions]

Li, H.; Xu, H.; Yang, Y. L.; Yang, X. L.; Wu, Y.; Zhang, S.; Song, H. L. (2019) Effects of graphite and Mn ore media on electro-active bacteria enrichment and fate of antibiotic and corresponding resistance gene in up flow microbial fuel cell constructed wetland. *Water Research* 165 [Not relevant to primary or secondary research questions]

Li, Henan; He, Weihua; Qu, Youpeng; Li, Chao; Tian, Yan; Feng, Yujie (2017) Pilot-scale benthic microbial electrochemical system (BMES) for the bioremediation of polluted river sediment. *Journal of Power Sources* 356: 430-437 [Not relevant to primary or secondary research questions]

Li, Hong-Bo; Yu, Shen; Li, Gui-Lin; Liu, Yi; Yu, Guang-Bin; Deng, Hong; Wu, Sheng-Chun; Wong, Ming-Hung (2012) Urbanization increased metal levels in lake surface sediment and catchment topsoil of waterscape parks. *Science of the Total Environment* 432: 202-209 [Not relevant to primary or secondary research questions]

Li, Hua; Xu, Han; Song, Hai-Liang; Lu, Yi; Yang, Xiao-Li (2020) Antibiotic resistance genes, bacterial communities, and functions in constructed wetland-microbial fuel cells: Responses to the co-stresses of antibiotics and zinc. *Environmental Pollution* (Barking, Essex: 1987) 265(Pt B)115084 [Not relevant to primary or secondary research questions]

Li, J.; Uter, W.; Pfahlberg, A.; Gefeller, O. (2012) A comparison of patterns of sun protection during beach holidays and everyday outdoor activities in a population sample of young German children. *The British Journal of Dermatology* 166(4)803-810 [Not relevant to primary or secondary research questions]

Li, Li; Qiu, Yanling; Zhu, Zhiliang; Zhang, Yalei; Zhao, Jianfu (2009) Heavy Metals and Organic Pollutants Monitoring in Dianshan Lake. [Not relevant to primary or secondary research questions]

Li, Maotian; Chen, Jing; Finlayson, Brian; Chen, Zhongyuan; Webber, Michael; Barnett, Jon; Wang, Mark (2019) Freshwater Supply to Metropolitan Shanghai: Issues of Quality from Source to Consumers. *Water* 11(10)2176 [Not relevant to primary or secondary research questions]

Li, N.; Chen, Y.; Zhang, Z.; Chang, S.; Huang, D.; Chen, S.; Guo, Q.; Xie, S.; Bing, Y. (2019) Response of ammonia-oxidizing archaea to heavy metal contamination in freshwater sediment. *Journal of Environmental Sciences (China)* 77: 392-399 [Not relevant to primary or secondary research questions]

Li, Peng; Pan, Yushi; Fang, Yong; Du, Mengjia; Pei, Fei; Shen, Fei; Xu, Baocai; Hu, Qiupei (2019) Concentrations and health risks of inorganic arsenic and methylmercury in shellfish from typical coastal cities in China: A simultaneous analytical method study. *Food Chemistry* 278: 587-592 [Not relevant to primary or secondary research questions]

Li, Q.; Wang, G.; Wang, H.; Shrestha, S.; Xue, B.; Sun, W.; Yu, J. (2020) Macrozoobenthos variations in shallow connected lakes under the influence of intense hydrologic pulse changes. *Journal of Hydrology* 584 [Not relevant to primary or secondary research questions]

Li, S. Y.; Hao, C. B.; Wang, L. H.; Lü, Z.; Zhang, L. N.; Liu, Y.; Feng, C. P. (2013) Microeukaryotic biodiversity in the waste ore samples surrounding an acid mine drainage lake. *Huanjing Kexue/Environmental Science* 34(10)4105-4111 [Not relevant to primary or secondary research questions]

Li, Tao; Xiang, Rong; Li, Tuanjie (2014) Influence of trace metals in recent benthic foraminifera distribution in the Pearl River Estuary. *Marine Micropaleontology* 108: 13-27 [Not relevant to primary or secondary research questions]

Li, W.; Shi, Y.; Gao, L.; Liu, J.; Cai, Y. (2015) Occurrence and human exposure of parabens and their chlorinated derivatives in swimming pools. *Environmental Science and Pollution Research* 22(22)17987-17997 [Not relevant to primary or secondary research questions]

Li, Y.; Wu, B.; Zhu, G.; Liu, Y.; Ng, W. J.; Appan, A.; Tan, S. K. (2016) High-throughput pyrosequencing analysis of bacteria relevant to cometabolic and metabolic degradation of ibuprofen in horizontal subsurface flow constructed wetlands. *Science of the Total Environment* 562: 604-613 [Not relevant to primary or secondary research questions]



Li, Y.; Zhao, R.; Wang, L.; Niu, L.; Wang, C.; Hu, J.; Wu, H.; Zhang, W.; Wang, P. (2020) Silver nanoparticles and Fe(III) co-regulate microbial community and N₂O emission in river sediments. *Science of the Total Environment* 706 [Not relevant to primary or secondary research questions]

Li, Yi; Fan, Chenyang; Wang, Linqiong; Wang, Longfei; Zhang, Wenlong; Zhang, Huanjun; Niu, Lihua (2020) Interaction type of tetrabromobisphenol A and copper manipulates ammonia-oxidizing archaea and bacteria communities in co-contaminated river sediments. *Environmental Pollution* 264: 114671 [Not relevant to primary or secondary research questions]

Lian, Meihua; Wang, Jun; Sun, Lina; Xu, Zhe; Tang, Jiaxi; Yan, Jun; Zeng, Xiangfeng (2019) Profiles and potential health risks of heavy metals in soil and crops from the watershed of Xi River in Northeast China. *Ecotoxicology and Environmental Safety* 169: 442-448 [Not relevant to primary or secondary research questions]

Liang, S. K.; Zhou, P.; Li, G. R.; Chen, Y.; Guo, L. G.; Yang, S. M.; Wu, L. (2012) Field-scale bioremediation of coarse sand-gravel beach contaminated by oil spill. *Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/Journal of Tianjin University Science and Technology* 45(4)343-348 [Not relevant to primary or secondary research questions]

Liang, X.; Liu, S.; Mo, Q.; Sun, W.; Deng, B.; Xia, G.; Xiong, L.; Li, Z. (2018) The characteristics of marine hydrocarbon accumulation and its exploration prospects in the northern section of Western Sichuan Depression, China. *Journal of Chengdu University of Technology (Science and Technology Edition)* 45(1)53-67 [Not relevant to primary or secondary research questions]

Lima, Anderson R. B.; Torres, Rodrigo A.; Jacobina, Uedson P.; Pinheiro, Marcelo A. A.; Adam, Monica L. (2019) Genomic damage in Mugil curema (Actinopterygii: Mugilidae) reveals the effects of intense urbanization on estuaries in northeastern Brazil. *Marine Pollution Bulletin* 138: 63-69 [Not relevant to primary or secondary research questions]

Limayem, A.; Martin, E. M. (2014) Quantitative risk analysis for potentially resistant *E. coli* in surface waters caused by antibiotic use in agricultural systems. *Journal of Environmental Science and Health - Part B Pesticides, Food Contaminants, and Agricultural Wastes* 49(2)124-133 [Not relevant to primary or secondary research questions]

Lin, C.; Nguyen, K. A.; Vu, C. T.; Senoro, D.; Villanueva, M. C. (2017) Contamination levels and potential sources of organic pollution in an Asian river. *Water Science and Technology* 76(9)2434-2444 [Not relevant to primary or secondary research questions]

Lin, T.; Yu, S.; Chen, W. (2016) Occurrence, removal and risk assessment of pharmaceutical and personal care products (PPCPs) in an advanced drinking water treatment plant (ADWTP) around Taihu Lake in China. *Chemosphere* 152: 44075 [Not relevant to primary or secondary research questions]

Lin, Weiwei; Dai, Jiajia; Liu, Run; Zhai, Yuhong; Yue, Dingli; Hu, Qiansheng (2019) Integrated assessment of health risk and climate effects of black carbon in the Pearl River Delta region, China. *Environmental Research* 176: 108522 [Not relevant to primary or secondary research questions]

Lin, Zhiqing; Chen, Xi; Xi, Zhuge; Lin, Shaobin; Sun, Xin; Jiang, Xiao; Tian, Haoyuan (2018) Individual heavy metal exposure and birth outcomes in Shenqiu county along the Huai River Basin in China. *Toxicology Research* 7(3)444-453 [Not relevant to primary or secondary research questions]

Linde-Arias, A. R.; Inácio, A. F.; de Alburquerque, C.; Freire, M. M.; Moreira, J. C. (2008) Biomarkers in an invasive fish species, *Oreochromis niloticus*, to assess the effects of pollution in a highly degraded Brazilian River. *Science of the Total Environment* 399(43891)186-192 [Not relevant to primary or secondary research questions]

Liu, Huihui; He, Jianyu; Zhao, Rongtao; Chi, Changfeng; Bao, Yongbo (2015) A novel biomarker for marine environmental pollution of pi-class glutathione S-transferase from *Mytilus coruscus*. *Ecotoxicology and Environmental Safety* 118: 47-54 [Not relevant to primary or secondary research questions]

Liu, J.; Yi, N. K.; Xiong, Y. J.; Huang, X. F. (2016) Effect of constructed wetland configuration on the removal of nitrogen pollutants and antibiotics in aquaculture wastewater. *Huanjing Kexue/Environmental Science* 37(9)3430-3437 [Not relevant to primary or secondary research questions]

Liu, Lin; Yang, Hongbin; Cai, Yingchun; Cao, Qianqian; Sun, Lixia; Wang, Zhuang; Li, Weihua; Liu, Guixia; Lee, Philip W.; Tang, Yun (2019) In silico prediction of chemical aquatic toxicity for marine crustaceans via machine learning. *Toxicology Research* 8(3)341-352 [Not relevant to primary or secondary research questions]

Liu, Minxia; Han, Zhiqiang; Yang, Yuyi (2019) Accumulation, temporal variation, source apportionment and risk assessment of heavy metals in agricultural soils from the middle reaches of Fenhe River basin, North China. *Rsc Advances* 9(38)21893-21902 [Not relevant to primary or secondary research questions]



Liu, R. Z.; Zhang, K.; Zhang, Z. J.; Borthwick, A. G. L. (2018) Watershed-Scale Environmental Risk Assessment of Accidental Water Pollution: The Case of Laoguan River, China. *Journal of Environmental Informatics* 31(2):87-96 [Not relevant to primary or secondary research questions]

Liu, Ruixia; Tan, Ruijie; Li, Bin; Song, Yonghui; Zeng, Ping; Li, Zongsheng (2015) Overview of POPs and heavy metals in Liao River Basin. *Environmental Earth Sciences* 73(9):5007-5017 [Not relevant to primary or secondary research questions]

Liu, S.; Liu, Y.; Yang, D.; Li, C.; Zhao, Y.; Ma, H.; Luo, X.; Lu, S. (2020) Trace elements in shellfish from Shenzhen, China: Implication of coastal water pollution and human exposure. *Environmental Pollution* 263 [Not relevant to primary or secondary research questions]

Liu, Shiliang; Pan, Guohao; Zhang, Yueqiu; Xu, Jingwei; Ma, Rui; Shen, Zhenyao; Dong, Shikui (2019) Risk assessment of soil heavy metals associated with land use variations in the riparian zones of a typical urban river gradient. *Ecotoxicology and Environmental Safety* 181: 435-444 [Not relevant to primary or secondary research questions]

Liu, Shuo; Ma, Qiusha; Wang, Baozhen; Wang, Jifu; Zhang, Ying (2014) Advanced treatment of refractory organic pollutants in petrochemical industrial wastewater by bioactive enhanced ponds and wetland system. *Ecotoxicology (London, England)* 23(4):689-698 [Not relevant to primary or secondary research questions]

Liu, X.; Guo, X.; Liu, Y.; Lu, S.; Xi, B.; Zhang, J.; Wang, Z.; Bi, B. (2019) A review on removing antibiotics and antibiotic resistance genes from wastewater by constructed wetlands: Performance and microbial response. *Environmental Pollution* 254 [Not relevant to primary or secondary research questions]

Liu, X.; Liu, J.; Feng, X. (2016) Study on the marine sedimentary environment evolution of the southern Laizhou Bay under the impact of port projects. *Journal of Ocean University of China* 15(3):553-560 [Not relevant to primary or secondary research questions]

Liu, X.; Wang, Z.; Zhang, X.; Wang, J.; Xu, G.; Cao, Z.; Zhong, C.; Su, P. (2011) Degradation of diesel-originated pollutants in wetlands by *Scirpus triquetus* and microorganisms. *Ecotoxicology and Environmental Safety* 74(7):1967-1972 [Not relevant to primary or secondary research questions]

Lo, H. S.; Xu, X.; Wong, C. Y.; Cheung, S. G. (2018) Comparisons of microplastic pollution between mudflats and sandy beaches in Hong Kong. *Environmental Pollution* 236: 208-217 [Not relevant to primary or secondary research questions]

Looper, J. K.; Cotto, A.; Kim, B. Y.; Lee, M. K.; Liles, M. R.; Ni Chathain, S. M.; Son, A. (2013) Microbial community analysis of Deepwater Horizon oil-spill impacted sites along the Gulf coast using functional and phylogenetic markers. *Environmental Sciences: Processes and Impacts* 15(11):2068-2079 [Not relevant to primary or secondary research questions]

Lovarelli, Daniela; Ingrao, Carlo; Fiala, Marco; Bacenetti, Jacopo (2018) Beyond the Water Footprint: A new framework proposal to assess freshwater environmental impact and consumption. *Journal of Cleaner Production* 172: 4189-4199 [Not relevant to primary or secondary research questions]

Lozada, Mariana; Marcos, Magali S.; Commendatore, Marta G.; Gil, Monica N.; Dionisi, Hebe M. (2014) The Bacterial Community Structure of Hydrocarbon-Polluted Marine Environments as the Basis for the Definition of an Ecological Index of Hydrocarbon Exposure. *Microbes and Environments* 29(3):269-276 [Not relevant to primary or secondary research questions]

Lozovskaya, O.; Clemente Conte, I.; Ershova, E.; Kulkova, M. (2020) Subsistence strategies on the late Mesolithic and early Neolithic lake settlement Zamostje 2 in Volga-Oka region: Evidence of fishing. *Quaternary International* 541: 74-88 [Not relevant to primary or secondary research questions]

Lü, H.; Ma, X. J.; Huang, X. J.; Lu, S.; Huang, Y. H.; Mo, C. H.; Cai, Q. Y.; Wong, M. H. (2019) Distribution, diastereomer-specific accumulation and associated health risks of hexabromocyclododecanes (HBCDs) in soil-vegetable system of the Pearl River Delta region, South China. *Journal of Environmental Management* 248 [Not relevant to primary or secondary research questions]

Lu, Hongwei; Yu, Sen (2019) Pollutant source analysis and tempo-spatial analysis of pollutant discharge intensity in a transboundary river basin. *Environmental Science and Pollution Research* 26(2):1336-1354 [Not relevant to primary or secondary research questions]

Lu, Junying; Tian, Zhe; Yu, Jianwei; Yang, Min; Zhang, Yu (2018) Distribution and Abundance of Antibiotic Resistance Genes in Sand Settling Reservoirs and Drinking Water Treatment Plants across the Yellow River, China. *Water* 10(3):246 [Not relevant to primary or secondary research questions]

Lu, Su-Ying; Zhang, Ya-Li; Geng, Sui-Na; Li, Tian-Yu; Ye, Zhuo-Ming; Zhang, Dong-Sheng; Zou, Fei; Zhou, Hong-Wei (2010) High Diversity of Extended-Spectrum Beta-Lactamase-Producing Bacteria in an Urban River Sediment Habitat. *Applied and Environmental Microbiology* 76(17):5972-5976 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Lu, Tao; Zhu, Youchao; Ke, Mingjing; Peijnenburg, W. J. G. M.; Zhang, Meng; Wang, Tingzhang; Chen, Jun; Qian, Haifeng (2019) Evaluation of the taxonomic and functional variation of freshwater plankton communities induced by trace amounts of the antibiotic ciprofloxacin. *Environment International* 126: 268-278 [Not relevant to primary or secondary research questions]

Lucena, E. E. S.; Costa, D. C. B.; da Silveira, É J. D.; Lima, K. C. (2014) Occupation and factors associated with exposure to the sun among beach workers. *Ciencia e Saude Coletiva* 19(4)1171-1177 [Not relevant to primary or secondary research questions]

Luís, Ana T.; Grande, José António; Durães, Nuno; Dávila, José Miguel; Santisteban, María; Almeida, Salomé F. P.; Sarmiento, Aguasanta M.; de la Torre, María Luisa; Fortes, Juan Carlos; da Silva, Eduardo Ferreira (2019) Biogeochemical characterization of surface waters in the Aljustrel mining area (South Portugal). *Environmental Geochemistry and Health* 41(5)1909-1921 [Not relevant to primary or secondary research questions]

Luo, Z. W.; Wang, L. L.; Lv, X. W.; Zhang, Y. H.; Zou, H. F. (2019) Influence of residue concentrations of butachlor-based herbicide factor on dong-sheng wetland rivulet fresh-water planktonic algae communities. *Fresenius Environmental Bulletin* 28(0.45833333333333)8919-8928 [Not relevant to primary or secondary research questions]

Luo, Zhiwen; Yuan, Xingzhong; Chen, Xiangying; Cui, Xiaoxia (2017) Phytoextraction potential of wetland plants for Copper in Water Bodies. *Tecnologia Y Ciencias Del Agua* 8(2)43-50 [Not relevant to primary or secondary research questions]

Luvonga, Caleb; Rimmer, Catherine A.; Yu, Lee L.; Lee, Sang Bok (2020) Analytical Methodologies for the Determination of Organoarsenicals in Edible Marine Species: A Review. *Journal of Agricultural and Food Chemistry* 68(7)1910-1934 [Not relevant to primary or secondary research questions]

Lv, Y.; Zhang, W.; Gao, Y.; Ning, S.; Yang, B. (2011) Preliminary study on responses of marine nematode community to crude oil contamination in intertidal zone of Bathing Beach, Dalian. *Marine Pollution Bulletin* 62(12)2700-2706 [Not relevant to primary or secondary research questions]

Lyons, B. P.; Bignell, J. P.; Stentiford, G. D.; Bolam, T. P. C.; Rumney, H. S.; Bersuder, P.; Barber, J. L.; Askem, C. E.; Nicolaus, M. E. E.; Maes, T. (2017) Determining Good Environmental Status under the Marine Strategy Framework Directive: Case study for descriptor 8 (chemical contaminants). *Marine Environmental Research* 124: 118-129 [Not relevant to primary or secondary research questions]

Lytle, J. S. (2005) Fate and effects of crude oil on an estuarine pond. 2967 [Not relevant to primary or secondary research questions]

M, L. N. (2013) Swimming pool attendance and respiratory health of children. *Environnement, Risques et Sante* 12(5)385-386 [Not relevant to primary or secondary research questions]

Ma, Jinzhu; Pan, Feng; He, Jiahua; Chen, Lihua; Fu, Sujing; Jia, Bing (2012) Petroleum pollution and evolution of water quality in the Malian River Basin of the Longdong Loess Plateau, Northwestern China. *Environmental Earth Sciences* 66(7)1769-1782 [Not relevant to primary or secondary research questions]

Ma, Wan-Li; Liu, Li-Yan; Qi, Hong; Zhang, Zi-Feng; Song, Wei-Wei; Shen, Ji-Min; Chen, Zhong-Lin; Ren, Nan-Qi; Grabuski, Josey; Li, Yi-Fan (2013) Polycyclic aromatic hydrocarbons in water, sediment and soil of the Songhua River Basin, China. *Environmental Monitoring and Assessment* 185(10)8399-8409 [Not relevant to primary or secondary research questions]

Ma, Y.; Wang, Z.; Tan, Y.; Xu, S.; Kong, S.; Wu, G.; Wu, X.; Li, H. (2017) Comparison of inorganic chemical compositions of atmospheric TSP, PM10 and PM2.5 in northern and southern Chinese coastal cities. *Journal of Environmental Sciences (China)* 55: 339-353 [Not relevant to primary or secondary research questions]

Maanan, Mohamed; Robin, Marc; Maanan, Mehdi; Zourarah, Bendahhou (2010) A Gis Analysis for Heavy Metal Assessment of Sediment in Coastal Lagoon. [Not relevant to primary or secondary research questions]

Madikizela, L. M.; Chimuka, L. (2017) Occurrence of naproxen, ibuprofen, and diclofenac residues in wastewater and river water of KwaZulu-Natal Province in South Africa. *Environmental Monitoring and Assessment* 189(7) [Not relevant to primary or secondary research questions]

Madureira, T. V.; Rocha, M. J.; Cruzeiro, C.; Galante, M. H.; Monteiro, R. A. F.; Rocha, E. (2011) The toxicity potential of pharmaceuticals found in the Douro River estuary (Portugal): Assessing impacts on gonadal maturation with a histopathological and stereological study of zebrafish ovary and testis after sub-acute exposures. *Aquatic Toxicology* 105(43924)292-299 [Not relevant to primary or secondary research questions]

Madureira, Tania Vieira; Rocha, Maria Joao; Cass, Quezia Bezerra; Tiritan, Maria Elizabeth (2010) Development and Optimization of a HPLC-DAD Method for the Determination of Diverse Pharmaceuticals in Estuarine Surface Waters. *Journal of Chromatographic Science* 48(3)176-182 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Mahfooz, Y.; Yasar, A.; Sohail, M. T.; Tabinda, A. B.; Rasheed, R.; Irshad, S.; Yousaf, B. (2019) Investigating the drinking and surface water quality and associated health risks in a semi-arid multi-industrial metropolis (Faisalabad), Pakistan. *Environmental Science and Pollution Research* 26(20)20853-20865 [Not relevant to primary or secondary research questions]

Mahmoud, K. M. A.; Sayed, S. S. M. (2018) Association pattern among different snail species and other types of macroinvertebrates in certain freshwater courses in Egypt. *Egyptian Journal of Aquatic Biology and Fisheries* 22(3)99-110 [Not relevant to primary or secondary research questions]

Mai, X. B.; Tao, R.; Yang, Y.; Zhang, M.; Lin, J. H.; Man, Y. (2015) Investigation of antibiotic resistance of indigenous bacteria and abundance of class I integron in matrix of constructed wetlands of different configurations. *Huanjing Kexue/Environmental Science* 36(5)1776-1784 [Not relevant to primary or secondary research questions]

Main, A. R.; Michel, N. L.; Headley, J. V.; Peru, K. M.; Morrissey, C. A. (2015) Ecological and Landscape Drivers of Neonicotinoid Insecticide Detections and Concentrations in Canada's Prairie Wetlands. *Environmental Science and Technology* 49(14)8367-8376 [Not relevant to primary or secondary research questions]

Maity, J. P.; Huang, Y. H.; Lin, H. F.; Chen, C. Y. (2020) Variation of Microbial Diversity in Catastrophic Oil Spill Area in Marine Ecosystem and Hydrocarbon Degradation of UCMs (Unresolved Complex Mixtures) by Marine Indigenous Bacteria. *Applied Biochemistry and Biotechnology* [Not relevant to primary or secondary research questions]

Malaguerra, Flavio; Albrechtsen, Hans-Jorgen; Binning, Philip John (2013) Assessment of the contamination of drinking water supply wells by pesticides from surface water resources using a finite element reactive transport model and global sensitivity analysis techniques. *Journal of Hydrology* 476: 321-331 [Not relevant to primary or secondary research questions]

Malak, Md Abdul; Sajib, Abdul Majed; Quader, Mohammad Abdul; Anjum, Humayra (2020) "We are feeling older than our age": Vulnerability and adaptive strategies of aging people to cyclones in coastal Bangladesh. *International Journal of Disaster Risk Reduction* 48: 101595 [Not relevant to primary or secondary research questions]

Malki, M.; Marín, I.; Essahale, A.; Amils, R.; Moumni, M. (2008) Physico-chemical parameters and bacterial diversity in the Moroccan's Sebou River. *Journal of Food, Agriculture and Environment* 6(1)172-176 [Not relevant to primary or secondary research questions]

Man, Y.; Wang, J.; Tam, N. F. Y.; Wan, X.; Huang, W.; Zheng, Y.; Tang, J.; Tao, R.; Yang, Y. (2020) Responses of rhizosphere and bulk substrate microbiome to wastewater-borne sulfonamides in constructed wetlands with different plant species. *Science of the Total Environment* 706 [Not relevant to primary or secondary research questions]

Manamsa, K.; Lapworth, D. J.; Stuart, M. E. (2016) Temporal variability of micro-organic contaminants in lowland chalk catchments: New insights into contaminant sources and hydrological processes. *Science of the Total Environment* 568: 566-577 [Not relevant to primary or secondary research questions]

Mandeng, E. P. B.; Bidjeck, L. M. B.; Bessa, A. Z. E.; Ntomb, Y. D.; Wadjou, J. W.; Doumo, E. P. E.; Dieudonné, L. B. (2019) Contamination and risk assessment of heavy metals, and uranium of sediments in two watersheds in Abiete-Toko gold district, Southern Cameroon. *Heliyon* 5(10) [Not relevant to primary or secondary research questions]

Mansour, S. A.; Mohamed, D. A.; Sutra, J. F. (2014) Which exposure stage (gestation or lactation) is more vulnerable to atrazine toxicity? Studies on mouse dams and their pups. *Toxicology Reports* 1: 53-68 [Not relevant to primary or secondary research questions]

Manuel Nicolaus, E. E.; Law, R. J.; Wright, S. R.; Lyons, B. P. (2015) Spatial and temporal analysis of the risks posed by polycyclic aromatic hydrocarbon, polychlorinated biphenyl and metal contaminants in sediments in UK estuaries and coastal waters. *Marine Pollution Bulletin* 95(1)469-479 [Not relevant to primary or secondary research questions]

Maranho, L. A.; Baena-Nogueras, R. M.; Lara-Martin, P. A.; DelValls, T. A.; Martin-Diaz, M. L. (2014) Bioavailability, oxidative stress, neurotoxicity and genotoxicity of pharmaceuticals bound to marine sediments. The use of the polychaete *Hediste diversicolor* as bioindicator species. *Environmental Research* 134: 353-365 [Not relevant to primary or secondary research questions]

Maranho, L. A.; Garrido-Perez, M. C.; DelValls, T. A.; Martin-Diaz, Ni L. (2015) Suitability of Standardized Acute Toxicity Tests for Marine Sediment Assessment: Pharmaceutical Contamination. *Water Air and Soil Pollution* 226(3)65 [Not relevant to primary or secondary research questions]

Maranho, L. A.; Moreira, L. B.; Baena-Nogueras, R. M.; Lara-Martin, P. A.; DelValls, T. A.; Martin-Diaz, M. L. (2015) A Candidate Short-Term Toxicity Test Using *Ampelisca brevicornis* to Assess Sublethal Responses to Pharmaceuticals Bound to Marine Sediments. *Archives of Environmental Contamination and Toxicology* 68(2)237-258 [Not relevant to primary or secondary research questions]

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Marathe, N. P.; Pal, C.; Gaikwad, S. S.; Jonsson, V.; Kristiansson, E.; Larsson, D. G. J. (2017) Untreated urban waste contaminates Indian river sediments with resistance genes to last resort antibiotics. *Water Research* 124: 388-397 [Not relevant to primary or secondary research questions]

Marcelino, V. R.; Wille, M.; Hurt, A. C.; González-Acuña, D.; Klaassen, M.; Schlub, T. E.; Eden, J. S.; Shi, M.; Iredell, J. R.; Sorrell, T. C.; Holmes, E. C. (2019) Meta-transcriptomics reveals a diverse antibiotic resistance gene pool in avian microbiomes. *BMC Biology* 17(1) [Not relevant to primary or secondary research questions]

Marchand, J.; Quiniou, L.; Riso, R.; Thebaut, M. T.; Laroche, J. (2004) Physiological cost of tolerance to toxicants in the European flounder *Platichthys flesus*, along the French Atlantic Coast. *Aquatic Toxicology* 70(4)327-343 [Not relevant to primary or secondary research questions]

Marcus Zamora, L.; King, C. K.; Payne, S. J.; Virtue, P. (2015) Sensitivity and response time of three common Antarctic marine copepods to metal exposure. *Chemosphere* 120: 267-272 [Not relevant to primary or secondary research questions]

Margaritora, Fiorenza G.; Cherubini, Emanuela; Copetti, Diego; Legnani, Elena; Seminara, Marco; Tartari, Gianni; Vagaggini, Daria (2006) Recent trophic changes in Lake Pusiano (northern Italy) with particular reference to the influence of hydrodynamics on the zooplankton community. *Chemistry and Ecology* 22: 37-47 [Not relevant to primary or secondary research questions]

Maria, V. L.; Pacheco, M.; Santos, M. A. (2006) *Anguilla anguilla* L. Genotoxic responses after in situ exposure to freshwater wetland (Pateira de Fermentelos, Portugal). *Environment International* 32(4)510-515 [Not relevant to primary or secondary research questions]

Marinho, C. H.; Giarratano, E.; Esteves, J. L.; Narvarte, M. A.; Gil, M. N. (2017) Hazardous metal pollution in a protected coastal area from Northern Patagonia (Argentina). *Environmental Science and Pollution Research International* 24(7)6724-6735 [Not relevant to primary or secondary research questions]

Marion, J. W.; Lee, J.; Rosenblum, J. S.; Buckley, T. J. (2018) Assessment of temperature and ultraviolet radiation effects on sunburn incidence at an inland U.S. Beach: A cohort study. *Environmental Research* 161: 479-484 [Not relevant to primary or secondary research questions]

Marques, Eduardo Duarte; Silva-Filho, Emmanoel; Souza, Giovana V. C.; Gomes, Olga Venimar O. (2017) Hydrogeochemical Control and Dissolved Load Origin of Surface Water from Sao Joao River Drainage Basin: Seasonal Variations Approach. *Revista Virtual De Quimica* 9(5)2100-2120 [Not relevant to primary or secondary research questions]

Marquez, F.; Primost, M. A.; Bigatti, G. (2017) Shell shape as a biomarker of marine pollution historic increase. *Marine Pollution Bulletin* 114(2)816-820 [Not relevant to primary or secondary research questions]

Marshall, J. D. (2008) Environmental inequality: Air pollution exposures in California's South Coast Air Basin. *Atmospheric Environment* 42(21)5499-5503 [Not relevant to primary or secondary research questions]

Martin, Benjamin E.; Grant, Christopher J. (2019) Potential threats to smallmouth bass (*Micropterus dolomieu*) in the Juniata River Basin, Pennsylvania, USA. *Journal of Freshwater Ecology* 34(1)591-602 [Not relevant to primary or secondary research questions]

Martin, S.; Bertaux, A.; Le Ber, F.; Maillard, E.; Imfeld, G. (2012) Seasonal changes of macroinvertebrate communities in a stormwater Wetland Collecting pesticide runoff from a vineyard catchment (Alsace, France). *Archives of Environmental Contamination and Toxicology* 62(1)29-41 [Not relevant to primary or secondary research questions]

Martins, A.; Guilhermino, L. (2018) Transgenerational effects and recovery of microplastics exposure in model populations of the freshwater cladoceran *Daphnia magna* Straus. *Science of the Total Environment* 631-632: 421-428 [Not relevant to primary or secondary research questions]

Martins, E.; Queiroz, A.; Serrao Santos, R.; Bettencourt, R. (2013) Finding immune gene expression differences induced by marine bacterial pathogens in the Deep-sea hydrothermal vent mussel *Bathymodiolus azoricus*. *Biogeosciences* 10(11)7279-7291 [Not relevant to primary or secondary research questions]

Marziah, Z.; Mahdzir, A.; Musa, M. N.; Jaafar, A. B.; Azhim, A.; Hara, H. (2016) Abundance of sulfur-degrading bacteria in a benthic bacterial community of shallow sea sediment in the off-Terengganu coast of the South China Sea. *MicrobiologyOpen* 5(6)967-978 [Not relevant to primary or secondary research questions]

Masiol, Mauro; Gianni, Biagio; Prete, Marco (2018) Herbicides in river water across the northeastern Italy: occurrence and spatial patterns of glyphosate, aminomethylphosphonic acid, and glufosinate ammonium. *Environmental Science and Pollution Research* 25(24)24368-24378 [Not relevant to primary or secondary research questions]



Masson, S.; Couillard, Y.; Campbell, P. G. C.; Olsen, C.; Pinel-Alloul, B.; Perceval, O. (2010) Responses of two sentinel species (*Hexagenia limbata* - Mayfly; *Pyganodon grandis* - Bivalve) along spatial cadmium gradients in lakes and rivers in northwestern Québec. *Journal of Environmental Monitoring* 12(1)143-158 [Not relevant to primary or secondary research questions]

Matallana-Surget, Sabine; Werner, Johannes; Wattiez, Ruddy; Lebaron, Karine; Intertaglia, Laurent; Regan, Callum; Morris, James; Teeling, Hanno; Ferrer, Manuel; Golyshin, Peter N.; Gerogiorgis, Dimitrios; Reilly, Simon; Lebaron, Philippe (2018) Proteogenomic Analysis of *Epibacterium* Mobile BBCC367, a Relevant Marine Bacterium Isolated From the South Pacific Ocean. *Frontiers in Microbiology* 9: 3125 [Not relevant to primary or secondary research questions]

Mathew, Riya Ann; Abraham, Marykutty (2020) Bioremediation of diesel oil in marine environment. *Oil & Gas Science and Technology-Revue D Ifp Energies Nouvelles* 75: 60 [Not relevant to primary or secondary research questions]

Matouke, M. M.; Abdullahi, K. L. (2020) Assessment of heavy metals contamination and human health risk in *Clarias gariepinus* [Burchell, 1822] collected from Jabi Lake, Abuja, Nigeria. *Scientific African* 7 [Not relevant to primary or secondary research questions]

Mattah, M. M.; Mattah, P. A. D.; Futagbi, G. (2015) Pesticide Application among Farmers in the Catchment of Ashaiman Irrigation Scheme of Ghana: Health Implications. *Journal of Environmental and Public Health* 2015 [Not relevant to primary or secondary research questions]

Mazza, Danielle; Harrison, Christopher; Taft, Angela; Brijnath, Bianca; Britt, Helena; Hobbs, Melissa; Stewart, Kay; Hussainy, Safeera (2012) Current contraceptive management in Australian general practice: an analysis of BEACH data. *The Medical Journal of Australia* 197(2)110-114 [Not relevant to primary or secondary research questions]

Mazzitelli, J. Y.; Bonnaffé, E.; Klopp, C.; Escudier, F.; Geret, F. (2017) De novo transcriptome sequencing and analysis of freshwater snail (*Radix balthica*) to discover genes and pathways affected by exposure to oxazepam. *Ecotoxicology* 26(1)127-140 [Not relevant to primary or secondary research questions]

McArdell, Christa S.; Molnar, Eva; Suter, Marc J. F.; Giger, Walter (2003) Occurrence and fate of macrolide antibiotics in wastewater treatment plants and in the Glatt Valley watershed, Switzerland. *Environmental Science & Technology* 37(24)5479-5486 [Not relevant to primary or secondary research questions]

McAuliffe, L.; Fortin Ensign, S.; Larson, D.; Bavaro, M.; Yetto, J.; Cathey, M.; Mukaigawara, M.; Narita, M.; Ohkusu, K.; Quast, T.; Volk, C. (2019) Severe CNS angiostrongyliasis in a young marine: a case report and literature review. *The Lancet Infectious Diseases* 19(4)e132-e142 [Not relevant to primary or secondary research questions]

McCarthy, Sarah G.; Incardona, John P.; Scholz, Nathaniel L. (2008) Coastal storms, toxic runoff, and the sustainable conservation of fish and fisheries. *Mitigating Impacts of Natural Hazards on Fishery Ecosystems* 64: 46569 [Not relevant to primary or secondary research questions]

McCormick, A.; Hoellein, T. J.; Mason, S. A.; Schluep, J.; Kelly, J. J. (2014) Microplastic is an abundant and distinct microbial habitat in an urban river. *Environmental Science and Technology* 48(20)11863-11871 [Not relevant to primary or secondary research questions]

McCullough, C. D. (2008) Approaches to remediation of acid mine drainage water in pit lakes. *International Journal of Mining, Reclamation and Environment* 22(2)105-119 [Not relevant to primary or secondary research questions]

McDonnell-Dowling, K.; Kleefeld, S.; Kelly, J. P. (2017) Consequences of oral gavage during gestation and lactation on rat dams and the neurodevelopment and behavior of their offspring. *Journal of the American Association for Laboratory Animal Science* 56(1)79-83 [Not relevant to primary or secondary research questions]

McFarlin, K. M.; Perkins, R. A.; Leigh, M. B. (2014) Oil biodegradation by Arctic marine microorganisms. 494-505 [Not relevant to primary or secondary research questions]

McGenity, T. J. (2014) Hydrocarbon biodegradation in intertidal wetland sediments. *Current Opinion in Biotechnology* 27: 46-54 [Not relevant to primary or secondary research questions]

McIlwaine, B.; Casado, M. R.; Leinster, P. (2019) Using 1st derivative reflectance signatures within a remote sensing framework to identify macroalgae in Marine environments. *Remote Sensing* 11(6) [Not relevant to primary or secondary research questions]

McKenzie, Louise A.; Brooks, Robert C.; Johnston, Emma L. (2012) A widespread contaminant enhances invasion success of a marine invader. *Journal of Applied Ecology* 49(4)767-773 [Not relevant to primary or secondary research questions]

McKnight, Donald T.; Zenger, Kyall R.; Alford, Ross A.; Huerlimann, Roger (2020) Microbiome diversity and composition varies across body areas in a freshwater turtle. *Microbiology* (Reading, England) 166(5)440-452 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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McMaster, M. E. (2011) Heated indoor swimming pools, infants, and the pathogenesis of adolescent idiopathic scoliosis: A neurogenic hypothesis. *Environmental Health: A Global Access Science Source* 10(1) [Not relevant to primary or secondary research questions]

Mejdoub, Z.; Fahde, A.; Loutfi, M.; Kabine, M. (2017) Oxidative stress responses of the mussel *Mytilus galloprovincialis* exposed to emissary's pollution in coastal areas of Casablanca. *Ocean and Coastal Management* 136: 95-103 [Not relevant to primary or secondary research questions]

Mejdoub, Zineb; Zaid, Younes; Hmimid, Fouzia; Kabine, Mostafa (2018) Assessment of metals bioaccumulation and bioavailability in mussels *Mytilus galloprovincialis* exposed to outfalls pollution in coastal areas of Casablanca. *Journal of trace elements in medicine and biology: organ of the Society for Minerals and Trace Elements (GMS)* 48: 30-37 [Not relevant to primary or secondary research questions]

Melvin, Steven D.; Lanctot, Chantal M.; Dorian, Nicholas J. C.; Bennett, WilliamW; Carroll, Anthony R. (2019) NMR-based lipidomics of fish from a metal(loid) contaminated wetland show differences consistent with effects on cellular membranes and energy storage. *Science of the Total Environment* 654: 284-291 [Not relevant to primary or secondary research questions]

Mendes, Marcia O.; Moraes, Mario A. P.; Renoiner, Ernesto I. M.; Dantas, Marta H. P.; Lanzieri, Tatiana M.; Fonseca, Carlos F.; Luna, Expedito J. A.; Hatch, Douglas L. (2009) Acute conjunctivitis with episcleritis and anterior uveitis linked to adiaspiromycosis and freshwater sponges, Amazon region, Brazil, 2005. *Emerging Infectious Diseases* 15(4)633-639 [Not relevant to primary or secondary research questions]

Méndez Collí, C.; Sierra Sosa, T. N.; Tiesler, V.; Cucina, A. (2009) Linear enamel hypoplasia at Xcambó, Yucatán, during the Maya Classic period: An evaluation of coastal marshland impact on ancient human populations. *HOMO- Journal of Comparative Human Biology* 60(4)343-358 [Not relevant to primary or secondary research questions]

Mendoza, A.; Rodríguez-Gil, J. L.; González-Alonso, S.; Mastrianni, N.; López de Alda, M.; Barceló, D.; Valcárcel, Y. (2014) Drugs of abuse and benzodiazepines in the Madrid Region (Central Spain): Seasonal variation in river waters, occurrence in tap water and potential environmental and human risk. *Environment International* 70: 76-87 [Not relevant to primary or secondary research questions]

Meng, F.; Wang, Y.; Zhang, L.; Cheng, P.; Xue, H.; Meng, D. (2016) Organic Pollutant Types and Concentration Changes of the Water from Songhua River, China, in 1975–2013. *Water, Air, and Soil Pollution* 227(6) [Not relevant to primary or secondary research questions]

Meng-jing, Tian; Xiao-ling, Ma; Jia, Jia; Yu, Qiao; Ting-yan, Wu; He-xiang, Li; Ying, Liu (2017) Study of Residents' Exposure to Arsenic Near the Yellow River Gan-Ning-Meng Reaches Using Inductively Coupled Plasma Mass Spectrometry. *Spectroscopy and Spectral Analysis* 37(5)1630-1635 [Not relevant to primary or secondary research questions]

Mensah, P. K.; Muller, W. J.; Palmer, C. G. (2012) Using growth measures in the freshwater shrimp *Caridina nilotica* as biomarkers of Roundup® pollution of South African freshwater systems. *Physics and Chemistry of the Earth* 50-52: 262-268 [Not relevant to primary or secondary research questions]

Merli, Annalisa; Reeves, Graham; Meregalli, Giovanna; Piccinini, Armando; Negri, Ilaria; Carmignano, Pasquale; Balderacchi, Matteo; Capri, Ettore (2010) Surface-water exposure to quinoxyfen: Assessment in landscape vineyards. *Journal of Hydrology* 383(43862)62-72 [Not relevant to primary or secondary research questions]

Merlo, C.; Abril, A.; Ame, M. V.; Arguello, G. A.; Carreras, H. A.; Chiappero, M. S.; Hued, A. C.; Wannaz, E.; Galanti, L. N.; Monferran, M. V.; Gonzalez, C. M.; Solis, V. M. (2011) Integral assessment of pollution in the Suquia River (Cordoba, Argentina) as a contribution to lotic ecosystem restoration programs. *Science of the Total Environment* 409(23)5034-5045 [Not relevant to primary or secondary research questions]

Mesias Monsalve, Stephanie; Martinez, Leonardo; Yohannessen Vasquez, Karla; Alvarado Orellana, Sergio; Klarian Vergara, Jose; Martin Mateo, Miguel; Costilla Salazar, Rogelio; Fuentes Alburquerque, Mauricio; Caceres Lillo, Dante D. (2018) Trace element contents in fine particulate matter (PM2.5) in urban school microenvironments near a contaminated beach with mine tailings, Chaaral, Chile. *Environmental Geochemistry and Health* 40(3)1077-1091 [Not relevant to primary or secondary research questions]

Metcalf, Sarah J.; van Putten, Elizabeth I.; Frusher, Stewart; Marshall, Nadine A.; Tull, Malcolm; Caputi, Nick; Haward, Marcus; Hobday, Alistair J.; Holbrook, Neil J.; Jennings, Sarah M.; Pecl, Gretta T.; Shaw, Jenny (2015) Measuring the vulnerability of marine social-ecological systems: a prerequisite for the identification of climate change adaptations. *Ecology and Society* 20(2)35 [Not relevant to primary or secondary research questions]

Metcalfe, C. D.; Beddows, P. A.; Bouchot, G. G.; Metcalfe, T. L.; Li, H.; Van Lavieren, H. (2011) Contaminants in the coastal karst aquifer system along the Caribbean coast of the Yucatan

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

1344-2022

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Peninsula, Mexico. *Environmental Pollution* 159(4)991-997 [Not relevant to primary or secondary research questions]

Mézin, L. C.; Hale, R. C. (2004) Effect of humic acids on toxicity of DDT and chlorpyrifos to freshwater and estuarine invertebrates. *Environmental Toxicology and Chemistry* 23(3)583-590 [Not relevant to primary or secondary research questions]

Mezzelani, M.; Gorbi, S.; Da Ros, Z.; Fattorini, D.; d'Errico, G.; Milan, M.; Bargelloni, L.; Regoli, F. (2016) Ecotoxicological potential of non-steroidal anti-inflammatory drugs (NSAIDs) in marine organisms: Bioavailability, biomarkers and natural occurrence in *Mytilus galloprovincialis*. *Marine Environmental Research* 121: 31-39 [Not relevant to primary or secondary research questions]

Mghirbi, Oussama; Bord, Jean-Paul; Le Grusse, Philippe; Mandan, Elisabeth; Fabre, Jacques (2018) Mapping for the management of diffuse pollution risks related to agricultural plant protection practices: case of the Etang de l'Or catchment area in France. *Environmental Science and Pollution Research* 25(14)14117-14137 [Not relevant to primary or secondary research questions]

Miao, Xiongyi; Miao, Dan; Hao, Yupei; Xie, Zhouqing; Zou, Shengzhang (2019) Potential health risks associated to heavy metal contamination of soils in the Yellow River Delta, China. *Journal of Coastal Conservation* 23(3)643-655 [Not relevant to primary or secondary research questions]

Miettinen, H.; Bomberg, M.; Nyssönen, M.; Reunamo, A.; Jørgensen, K. S.; Vikman, M. (2019) Oil degradation potential of microbial communities in water and sediment of Baltic Sea coastal area. *PLoS ONE* 14(7) [Not relevant to primary or secondary research questions]

Mikailova, R. A.; Kurbakov, D. N.; Sidorova, E. V.; Geshel, I. V.; Andreeva, N. V.; Sorokin, Yu V.; Panov, A. V. (2020) Comprehensive radioecological monitoring of freshwater ecosystems in the vicinity of rooppur npp (people's republic of bangladesh). *Marine Biological Journal* 5(3)30-54 [Not relevant to primary or secondary research questions]

Milakovic, Milena; Vestergaard, Gisle; Gonzalez-Plaza, Juan J.; Petric, Ines; Simatovic, Ana; Senta, Ivan; Kublik, Susanne; Schloter, Michael; Smalla, Kornelia; Udikovic-Kolic, Nikolina (2019) Pollution from azithromycin-manufacturing promotes macrolide-resistance gene propagation and induces spatial and seasonal bacterial community shifts in receiving river sediments. *Environment International* 123: 501-511 [Not relevant to primary or secondary research questions]

Milenkovski, S.; Bååth, E.; Lindgren, P. E.; Berglund, O. (2010) Toxicity of fungicides to natural bacterial communities in wetland water and sediment measured using leucine incorporation and potential denitrification. *Ecotoxicology* 19(2)285-294 [Not relevant to primary or secondary research questions]

Milijasevic, Dragana; Milanovic Petic, Ana; Brankov, Jovana; Radovanovic, M. (2011) Water Quality Assessment of the Borska Reka River Using the Wpi (water Pollution Index) Method. *Archives of Biological Sciences* 63(3)819-824 [Not relevant to primary or secondary research questions]

Milton, C.; Atkinson, A.; Michotey, V.; Jeziorski, C.; Cravo-Laureau, C.; Duran, R.; Bonin, P.; Cuny, P. (2016) Metatranscriptomes of oil-contaminated marine coastal sediment affected by oil addition and/or by the bioturbating activity of the marine polychaete *Hediste diversicolor*: Who are the microbial players? *Marine Genomics* 29: 55-59 [Not relevant to primary or secondary research questions]

Miller, Jerry R.; Mackin, Gail (2013) Concentrations, Sources, and Potential Ecological Impacts of Selected Trace Metals on Aquatic Biota within the Little Tennessee River Basin, North Carolina. *Water Air and Soil Pollution* 224(7)1613 [Not relevant to primary or secondary research questions]

Millette, D.; Walker, D. A.; Saumure, L.; Bastos Neto, A. C. (2009) Remediation and restoration of a wetland contaminated by a crude-oil spill, Paraná, Brazil. [Not relevant to primary or secondary research questions]

Miloradov, Mirjana Vojinovic; Mihajlovic, Ivana; Vyvierska, Olga; Cacho, Frantisek; Radonic, Jelena; Milic, Natasa; Spanik, Ivan (2014) Impact of Wastewater Discharges to Danube Surface Water Pollution by Emerging and Priority Pollutants in the Vicinity of Novi Sad, Serbia. *Fresenius Environmental Bulletin* 23(9)2137-2145 [Not relevant to primary or secondary research questions]

Mimura, H. (2019) Marine bacteria with strong survivability toward tributyltin. *Advances in Marine Biology* 4: 163-180 [Not relevant to primary or secondary research questions]

Minareci, Orkide; Ozturk, Meral; Minareci, Ersin (2009) Determination of Some Heavy Metal Concentrations in Water and Sediment Samples Taken from Gediz River (turkey). *Fresenius Environmental Bulletin* 18(3)270-274 [Not relevant to primary or secondary research questions]

Minh, Tam Le Thi; Phuoc, Dan Nguyen; Quoc, Tuc Dinh; Ngo, Huu Hao; Lan, Chi Do Hong (2016) Presence of e-EDCs in surface water and effluents of pollution sources in Sai Gon and Dong Nai river basin. *Sustainable Environment Research* 26(1)20-27 [Not relevant to primary or secondary research questions]



Miri, R.; Chouikhi, A. (2005) Ecotoxicological marine impacts from seawater desalination plants. *Desalination* 182(43891)403-410 [Not relevant to primary or secondary research questions]

Mishamandani, S.; Gutierrez, T.; Berry, D.; Aitken, M. D. (2016) Response of the bacterial community associated with a cosmopolitan marine diatom to crude oil shows a preference for the biodegradation of aromatic hydrocarbons. *Environmental microbiology* 18(6)1817-1833 [Not relevant to primary or secondary research questions]

Mishra, Rupesh Kumar; Verma, Dev Kumar; Ravindra; Yadav, Manoj Kumar; Pradhan, Pravata Kumar; Swaminathan, T. Raja; Sood, Neeraj (2017) Bacterial diversity and antibiotic resistance in a wetland of Lakhimpur-Kheri, Uttar Pradesh, India. *Journal of Environmental Biology* 38(1)55-66 [Not relevant to primary or secondary research questions]

Missawi, Omayma; Bousserrhine, Noureddine; Belbekhouche, Sabrina; Zitouni, Nesrine; Alphonse, Vanessa; Boughattas, Iteb; Banni, Mohamed (2020) Abundance and distribution of small microplastics (<= 3 μ m) in sediments and seaworms from the Southern Mediterranean coasts and characterisation of their potential harmful effects. *Environmental Pollution* 263: 114634 [Not relevant to primary or secondary research questions]

Misson, G.; Mainardis, M.; Incerti, G.; Goi, D.; Peressotti, A. (2020) Preliminary evaluation of potential methane production from anaerobic digestion of beach-cast seagrass wrack: The case study of high-adriatic coast. *Journal of Cleaner Production* 254 [Not relevant to primary or secondary research questions]

Mittal, P.; Prasoodanan PK, V.; Dhakan, D. B.; Kumar, S.; Sharma, V. K. (2019) Metagenome of a polluted river reveals a reservoir of metabolic and antibiotic resistance genes. *Environmental Microbiomes* 14(1) [Not relevant to primary or secondary research questions]

Mohan, R.; Venkatanarasu, B.; Rao, B.; Eswara, K.; Martha, S.; Hemasundar, H. (2019) Assessment of oral health status and dental treatment needs among 12-and 15-year-old school-going children of fisherman community residing at east coast road, Chennai: A cross-sectional study. *Journal of Pharmacy and Bioallied Sciences* 11(6)S385-S392 [Not relevant to primary or secondary research questions]

Mohanram, R.; Jagtap, C.; Kumar, P. (2016) Isolation, screening, and characterization of surface-active agent-producing, oil-degrading marine bacteria of Mumbai Harbor. *Marine Pollution Bulletin* 105(1)131-138 [Not relevant to primary or secondary research questions]

Mohanty, S. S. (2017) Impact of oil spill in the marine environment. 2: 189-198 [Not relevant to primary or secondary research questions]

Moindi, R. O.; Ngari, M. M.; Nyambati, V. C. S.; Mbakaya, C. (2016) Why mothers still deliver at home: Understanding factors associated with home deliveries and cultural practices in rural coastal Kenya, a cross-section study Global health. *BMC Public Health* 16(1) [Not relevant to primary or secondary research questions]

Moiseenko, T. I.; Voinov, A. A.; Megorsky, V. V.; Gashkina, N. A.; Kudriavtseva, L. P.; Vandish, O. I.; Sharov, A. N.; Sharova, Yu; Koroleva, I. N. (2006) Ecosystem and human health assessment to define environmental management strategies: The case of long-term human impacts on an Arctic lake. *Science of the Total Environment* 369(43891)43831 [Not relevant to primary or secondary research questions]

Moneer, A. A.; El-Sadawy, M. M.; El-Said, G. F.; Radwan, A. A. (2012) Boron human health risk assessment relative to the environmental pollution of lake edku, Egypt. *Journal of King Abdulaziz University, Marine Science* 23(2)41-55 [Not relevant to primary or secondary research questions]

Monteiro de Castro Lima, Jose Augusto; Labanowski, Jerome; Bastos, Marilia Camotti; Zanella, Renato; Prestes, Osmar Damian; Rosa de Vargas, Jocelina Paranhos; Mondamert, Leslie; Granado, Eugenie; Tiecher, Tales; Zafar, Mohsin; Troian, Alexandre; Le Guet, Thibaut; dos Santos, Danilo Rheinheimer (2020) "Modern agriculture" transfers many pesticides to watercourses: a case study of a representative rural catchment of southern Brazil. *Environmental Science and Pollution Research* 27(10)10581-10598 [Not relevant to primary or secondary research questions]

Montesdeoca-Espóna, S.; Álvarez-Raya, C.; Torres-Padrón, M. E.; Sosa-Ferrera, Z.; Santana-Rodríguez, J. J. (2019) Monitoring and environmental risk assessment of benzotriazole UV stabilizers in the sewage and coastal environment of Gran Canaria (Canary Islands, Spain). *Journal of Environmental Management* 233: 567-575 [Not relevant to primary or secondary research questions]

Montuelle, B.; Dorigo, U.; Berard, A.; Volat, B.; Bouchez, A.; Tlili, A.; Gouy, V.; Pesce, S. (2010) The periphyton as a multitemetric bioindicator for assessing the impact of land use on rivers: an overview of the ArdiSres-Morcille experimental watershed (France). *Hydrobiologia* 657(1)123-141 [Not relevant to primary or secondary research questions]

Morasch, B.; Bonvin, F.; Reiser, H.; Grandjean, D.; De Alencastro, L. F.; Perazzolo, C.; Chèvre, N.; Kohn, T. (2010) Occurrence and fate of micropollutants in the Vidy Bay of Lake Geneva, Switzerland. Part

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



II: Micropollutant removal between wastewater and raw drinking water. *Environmental Toxicology and Chemistry* 29(8)1658-1668 [Not relevant to primary or secondary research questions]

Moreira, S. M.; Lima, I.; Ribeiro, R.; Guilhermino, L. (2006) Effects of estuarine sediment contamination on feeding and on key physiological functions of the polychaete *Hediste diversicolor*: Laboratory and in situ assays. *Aquatic Toxicology* 78(2)186-201 [Not relevant to primary or secondary research questions]

Mori, J. F.; Neu, T. R.; Lu, S.; Haendel, M.; Totsche, K. U.; Kuesel, K. (2015) Iron encrustations on filamentous algae colonized by *Gallionella*-related bacteria in a metal-polluted freshwater stream. *Biogeosciences* 12(18)5277-5289 [Not relevant to primary or secondary research questions]

Morkoc, Enis; Okay, Oya S.; Edincliiler, Ayse (2008) Land-based sources of pollution along the Izmit Bay and their effect on the coastal waters. *Environmental Geology* 56(1)131-138 [Not relevant to primary or secondary research questions]

Moro, L.; Pezzotti, G.; Turemis, M.; Sanchis, J.; Farré, M.; Denaro, R.; Giacobbe, M. G.; Crisafi, F.; Giardi, M. T. (2018) Fast pesticide pre-screening in marine environment using a green microalgae-based optical bioassay. *Marine Pollution Bulletin* 129(1)212-221 [Not relevant to primary or secondary research questions]

Moroishi, Junya; Kang, Ik Joon; Nagafuchi, Ken; Honjo, Tsuneo; Shimasaki, Yohei; Oshima, Yuji (2009) Biological Monitoring to Detect Both Water Pollution and Water Quality Recovery Based on Valve Movements of Freshwater Bivalves (*Corbicula japonica*). *Journal of the Faculty of Agriculture Kyushu University* 54(2)413-420 [Not relevant to primary or secondary research questions]

Morris, L.; O'Brien, A.; Natera, S. H. A.; Lutz, A.; Roessner, U.; Long, S. M. (2018) Structural and functional measures of marine microbial communities: An experiment to assess implications for oil spill management. *Marine Pollution Bulletin* 131: 525-529 [Not relevant to primary or secondary research questions]

Morrissey, Christy A.; Mineau, Pierre; Devries, James H.; Sanchez-Bayo, Francisco; Liess, Matthias; Cavallaro, Michael C.; Liber, Karsten (2015) Neonicotinoid contamination of global surface waters and associated risk to aquatic invertebrates: a review. *Environment International* 74: 291-303 [Not relevant to primary or secondary research questions]

Mos, L.; Jack, J.; Cullont, D.; Montour, L.; Alleyne, C.; Ross, P. S. (2004) The importance of marine foods to a near-urban first nation community in coastal British Columbia, Canada: Toward a risk-benefit assessment. *Journal of Toxicology and Environmental Health-Part a-Current Issues* 67(44112)791-808 [Not relevant to primary or secondary research questions]

Moschino, V.; Schintu, M.; Marrucci, A.; Marras, B.; Nesto, N.; Da Ros, L. (2017) An ecotoxicological approach to evaluate the effects of tourism impacts in the Marine Protected Area of La Maddalena (Sardinia, Italy). *Marine Pollution Bulletin* 122(43862)306-315 [Not relevant to primary or secondary research questions]

Mottes, Charles; Lesueur-Jannoyer, Magalie; Charlier, Jean-Baptiste; Carles, Celine; Guene, Mathilde; Le Bail, Marianne; Malezieux, Eric (2015) Hydrological and pesticide transfer modeling in a tropical volcanic watershed with the WATPPASS model. *Journal of Hydrology* 529: 909-927 [Not relevant to primary or secondary research questions]

Mottin, Elmina; Caplat, Christelle; Mahaut, Marie-Laure; Costil, Katherine; Barillier, Daniel; Lebel, Jean-Marc; Serpentini, Antoine (2010) Effect of in vitro exposure to zinc on immunological parameters of haemocytes from the marine gastropod *Haliotis tuberculata*. *Fish & Shellfish Immunology* 29(5)846-853 [Not relevant to primary or secondary research questions]

Mouneyrac, C.; Buffet, P. E.; Poirier, L.; Zalouk-Vergnoux, A.; Guibbolini, M.; Faverney, C. R. D.; Gilliland, D.; Berhanu, D.; Dybowska, A.; Châtel, A.; Perrein-Ettajni, H.; Pan, J. F.; Thomas-Guyon, H.; Reip, P.; Valsami-Jones, E. (2014) Fate and effects of metal-based nanoparticles in two marine invertebrates, the bivalve mollusc *Scrobicularia plana* and the annelid polychaete *Hediste diversicolor*. *Environmental Science and Pollution Research* 21(13)7899-7912 [Not relevant to primary or secondary research questions]

Moustafa, Y. M.; Shara, S. I. (2009) Studies of seasonal variations on polynuclear aromatic hydrocarbons along the Nile river, Egypt. *Journal of Applied Sciences Research* 5(12)2349-2356 [Not relevant to primary or secondary research questions]

Mthembu, Philisiwe P.; Elumalai, Vetrimurugan; Brindha, K.; Li, Peiyue (2020) Hydrogeochemical Processes and Trace Metal Contamination in Groundwater: Impact on Human Health in the Maputaland Coastal Aquifer, South Africa. *Exposure and Health* 12(3)403-426 [Not relevant to primary or secondary research questions]

Mu, J. L.; Wang, X. H.; Jin, F.; Wang, J. Y.; Hong, H. S. (2012) The role of cytochrome P4501A activity inhibition in three- to five-ringed polycyclic aromatic hydrocarbons embryotoxicity of marine medaka (*Oryzias melastigma*). *Marine Pollution Bulletin* 64(7)1445-1451 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Muangchinda, Chanokporn; Yamazoe, Atsushi; Polrit, Duangporn; Thoetkiattikul, Honglada; Mhuantong, Wuttichai; Champreda, Verawat; Pinyakong, Onruthai (2017) Biodegradation of high concentrations of mixed polycyclic aromatic hydrocarbons by indigenous bacteria from a river sediment: a microcosm study and bacterial community analysis. *Environmental Science and Pollution Research International* 24(5)4591-4602 [Not relevant to primary or secondary research questions]

Muhammad, S.; Ahmad, K. (2020) Heavy metal contamination in water and fish of the Hunza River and its tributaries in Gilgit-Baltistan: Evaluation of potential risks and provenance. *Environmental Technology and Innovation* 20 [Not relevant to primary or secondary research questions]

Mukhtar, M. F.; Rosley, M. I. F.; Lubis, A. M. H. S.; Tamaldin, N.; Hussin, M. S. F.; Damanhuri, A. A. M.; Azlan, K. A.; Hanizat, N. H. (2020) DEVELOPMENT of RIVER TRASH COLLECTOR SYSTEM. 1529 [Not relevant to primary or secondary research questions]

Mulani, N.; Fulke, A. B.; D'Souza, E.; Ram, A.; Maloo, A.; Sayed, F.; Gajbhiye, S. N. (2017) Biodegradation of crude oil using marine *Bacillus* species from Vadinar coast, Gujarat, India. *Current Science* 112(3)569-576 [Not relevant to primary or secondary research questions]

Muli, J. R. (2005) Spatial variation of benthic macroinvertebrates and the environmental factors influencing their distribution in Lake Victoria, Kenya. *Aquatic Ecosystem Health and Management* 8(2)147-157 [Not relevant to primary or secondary research questions]

Muller, Renee; Schreiber, Ulrich; Escher, Beate I.; Quayle, Pamela; Nash, Susan M. Bengtson; Mueller, Jochen F. (2008) Rapid exposure assessment of PSII herbicides in surface water using a novel chlorophyll a fluorescence imaging assay. *Science of the Total Environment* 401(43891)51-59 [Not relevant to primary or secondary research questions]

Munier, B.; Bendell, L. I. (2018) Macro and micro plastics sorb and desorb metals and act as a point source of trace metals to coastal ecosystems. *PLoS One* 13(2)e0191759 [Not relevant to primary or secondary research questions]

Munné, A.; Solà, C.; Tirapu, L.; Barata, C.; Rieradevall, M.; Prat, N. (2012) Human Pressure and Its Effects on Water Quality and Biota in the Llobregat River. 21 [Not relevant to primary or secondary research questions]

Muohi, A. W.; Zauke, G. P.; Brumsack, H. J.; Mavuti, K. M. (2018) Bioaccumulation of trace elements in *Arthrospira fusiformis* algal blooms in Lakes Bogoria and Sonachi, Kenya: Evaluation and verification of toxicokinetic models. *Lakes and Reservoirs: Research and Management* 23(4)277-286 [Not relevant to primary or secondary research questions]

Murugan, Kasi; Prabhakaran, Perumal; Al-Sohaibani, Saleh; Sekar, Kuppusamy (2012) Identification of source of faecal pollution of Tirumanimuttar River, Tamilnadu, India using microbial source tracking. *Environmental Monitoring and Assessment* 184(10)6001-6012 [Not relevant to primary or secondary research questions]

Musa, A. I.; Shuaib, F.; Braka, F.; Mkanda, P.; Banda, R.; Korir, C.; Tegegne, S. G.; Abdullahi, S.; Umeh, G. C.; Nomhwange, T. I.; Iyal, H. A.; Ishaku, S.; Adamu, U.; Damisa, E.; Bagana, M.; Gugong, V.; Balarabe, H.; Nsubuga, P.; Vaz, R. G. (2018) Stopping circulatory vaccine-derived poliovirus in Kaduna state by scaling up special interventions in local government areas along rivers of interest- kamacha basin experience, 2013-2015. *BMC Public Health* 18 [Not relevant to primary or secondary research questions]

Mustafa, G. A.; Abd-Elgawad, A.; Ouf, A.; Siam, R. (2016) The Egyptian Red Sea coastal microbiome: A study revealing differential microbial responses to diverse anthropogenic pollutants. *Environmental Pollution* 214: 892-902 [Not relevant to primary or secondary research questions]

Mustapha, Adamu; Aris, Ahmad Zaharin (2012) Spatial aspects of surface water quality in the Jakarta Basin, Nigeria using chemometric analysis. *Journal of Environmental Science and Health Part a-Toxic/Hazardous Substances & Environmental Engineering* 47(10)1455-1465 [Not relevant to primary or secondary research questions]

Mustapha, Adamu; Aris, Ahmad Zaharin; Yusoff, Fatimah Md; Zakaria, Mohamad Pauzi; Ramli, Mohammad Firuz; Abdullah, Ahmad Makkom; Kura, Nura Umar; Narany, Tahoora Sheikhy (2014) Statistical Approach in Determining the Spatial Changes of Surface Water Quality at the Upper Course of Kano River, Nigeria. *Water Quality Exposure and Health* 6(3)127-142 [Not relevant to primary or secondary research questions]

Mutua, G. K.; Ngigi, A. N.; Getenga, Z. M. (2015) Chlorpyrifos degradation in soils with different treatment regimes within Nzoia river drainage basin, Kenya. *Bulletin of Environmental Contamination and Toxicology* 94(3)387-392 [Not relevant to primary or secondary research questions]

Nachite, D.; Dominguez, N. Del Estal; El M'ini, A.; Anfuso, G. (2020) Environmental Sensitivity Index maps in a high maritime transit area: The Moroccan coast of the Gibraltar Strait study case. *Journal of African Earth Sciences* 163: 103750 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Nadaraja, A. V.; Puthiyaveettil, P. G.; Bhaskaran, K. (2015) Surveillance of perchlorate in ground water, surface water and bottled water in Kerala, India. *Journal of Environmental Health Science and Engineering* 13(1) [Not relevant to primary or secondary research questions]

Nadiri, A. A.; Sadeghi Aghdam, F.; Khatibi, R.; Asghari Moghaddam, A. (2018) The problem of identifying arsenic anomalies in the basin of Sahand dam through risk-based 'soft modelling'. *Science of the Total Environment* 613-614: 693-706 [Not relevant to primary or secondary research questions]

Nadmitov, B.; Hong, S.; In Kang, S.; Chu, J. M.; Gomboev, B.; Janchivdorj, L.; Lee, C. H.; Khim, J. S. (2015) Large-scale monitoring and assessment of metal contamination in surface water of the Selenga River Basin (2007–2009). *Environmental Science and Pollution Research* 22(4)2856-2867 [Not relevant to primary or secondary research questions]

Naeslund, Johan; Hedman, Jenny E.; Agestrand, Cecilia (2008) Effects of the antibiotic ciprofloxacin on the bacterial community structure and degradation of pyrene in marine sediment. *Aquatic Toxicology* 90(3)223-227 [Not relevant to primary or secondary research questions]

Nafday, A. M. (2015) Public safety appraisal for siting marine liquefied natural gas terminals in California. *Journal of Energy Engineering* 141(3) [Not relevant to primary or secondary research questions]

Nagendra, R.; Reddy, A. Nallapa (2019) Benthic Foraminifera Response to Ecosystem Pollution in the Uppanar Estuary, Tamil Nadu Coast, India. *Journal of the Geological Society of India* 93(5)555-566 [Not relevant to primary or secondary research questions]

Naidu, Adonia; Macdonald, Mary Ellen; Carnevale, Franco A.; Nottaway, Waylon; Thivierge, Christine; Vignola, Serge (2014) Exploring oral health and hygiene practices in the Algonquin community of Rapid Lake, Quebec. *Rural and Remote Health* 14(4)2975 [Not relevant to primary or secondary research questions]

Naito, W.; Kamo, M.; Tsushima, K.; Iwasaki, Y. (2010) Exposure and risk assessment of zinc in Japanese surface waters. *Science of the Total Environment* 408(20)4271-4284 [Not relevant to primary or secondary research questions]

Naji, Abolfazl; Khan, Farhan R.; Hashemi, Seyed Hassan (2016) Potential human health risk assessment of trace metals via the consumption of marine fish in Persian Gulf. *Marine Pollution Bulletin* 109(1)667-671 [Not relevant to primary or secondary research questions]

Nambi, Indumathi M.; Rajasekhar, Bokam; Loganathan, Vijay; RaviKrishna, R. (2017) An assessment of subsurface contamination of an urban coastal aquifer due to oil spill. *Environmental Monitoring and Assessment* 189(4)148 [Not relevant to primary or secondary research questions]

Nardi, M.; Lira-Guedes, A. C.; Albuquerque Cunha, H. F.; Guedes, M. C.; Mustin, K.; Gomes, S. C. P. (2016) Artisanal Extraction and Traditional Knowledge Associated with Medicinal Use of Crabwood Oil (*Carapa guianensis* Aublet.) in a Peri-Urban Várzea Environment in the Amazon Estuary. *Evidence-based Complementary and Alternative Medicine* 2016 [Not relevant to primary or secondary research questions]

Nasri, A.; Jouili, S.; Boufahja, F.; Hedfi, A.; Saidi, I.; Mahmoudi, E.; Aïssa, P.; Essid, N.; Hamouda, B. (2016) Trophic restructuring (Wieser 1953) of free-living nematode in marine sediment experimentally enriched to increasing doses of pharmaceutical penicillin G. *Ecotoxicology* 25(6)1160-1169 [Not relevant to primary or secondary research questions]

Nassar, Hossam F. (2017) Monitoring and Risk Assessment of Selected Pesticide Congeners (PCBs) in Nile River Waters, Egypt. *Egyptian Journal of Chemistry* 60(6)977-984 [Not relevant to primary or secondary research questions]

Năstunecă, V.; Panainte-Lehăduș, M.; Moșneguțu, E. F.; Gavrilaș, S.; Cioca, G.; Munteanu, F. D. (2019) Removal of cypermethrin fromwater by using *fucus spiralis* marine alga. *International Journal of Environmental Research and Public Health* 16(19) [Not relevant to primary or secondary research questions]

Navanietha Krishnaraj, R.; Venkatesh Babu, S.; Ashokkumar, B.; Malliga, P.; Varalakshmi, P. (2012) Antioxidant property of fresh and marine water cyanobacterial extracts in Swiss mice. *Journal of Biopesticides* 5(SUPPL.)250-254 [Not relevant to primary or secondary research questions]

Navarrete, Ian A.; Tee, Kendric Aaron M.; Unson, Jewel Racquel S.; Hallare, Arnold V. (2018) Organochlorine pesticide residues in surface water and groundwater along Pampanga River, Philippines. *Environmental Monitoring and Assessment* 190(5)289 [Not relevant to primary or secondary research questions]

Nazarenko, E. L.; Crawford, R. J.; Ivanova, E. P. (2011) The structural diversity of carbohydrate antigens of selected gram-negative marine bacteria. *Marine Drugs* 9(10)1914-1954 [Not relevant to primary or secondary research questions]

Neethu, C. S.; Saravanan Kumar, C.; Purvaja, R.; Robin, R. S.; Ramesh, R. (2019) Oil-Spill Triggered Shift in Indigenous Microbial Structure and Functional Dynamics in Different Marine Environmental Matrices. *Scientific Reports* 9(1) [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Neff, J.; Sauer, T.; Osborn, L.; Tazik, P.; Reitsema, L. (2005) An oil spill in an Illinois Lake: Ecological and human health assessment. 5562-5574 [Not relevant to primary or secondary research questions]

Nega, M.; Braun, B.; Künzel, S.; Szewzyk, U. (2019) Evaluating the impact of wastewater effluent on microbial communities in the Panke, an Urban River. *Water (Switzerland)* 11(5) [Not relevant to primary or secondary research questions]

Neher, Timothy P.; Ma, Lanying; Moorman, Thomas B.; Howe, Adina C.; Soupir, Michelle L. (2020) Catchment-scale export of antibiotic resistance genes and bacteria from an agricultural watershed in central Iowa. *PLoS One* 15(1)e0227136 [Not relevant to primary or secondary research questions]

Neneng, L.; Nugroho, R. A.; Komai, Y.; Takayama, N.; Kawamura, K. (2020) Water quality measurements with a simple molecular analysis (PCR-RFLP) of the microbiome in a metropolitan river system in Japan. *Walailak Journal of Science and Technology* 17(3)257-268 [Not relevant to primary or secondary research questions]

Neto, J. Gabriel B.; Rodrigues, Fábio L.; Ortega, Ileana; Rodrigues, Lucas Dos S.; Lacerda, Ana L. D. F.; Coletto, Juliano L.; Kessler, Felipe; Cardoso, Luis G.; Madureira, Lauro; Proietti, Maíra C. (2020) Ingestion of plastic debris by commercially important marine fish in southeast-south Brazil. *Environmental Pollution* (Barking, Essex: 1987) 267: 115508 [Not relevant to primary or secondary research questions]

Ng-Hublin, J. S. Y.; Hargrave, D.; Combs, B.; Ryan, U. (2015) Investigation of a swimming pool-associated cryptosporidiosis outbreak in the Kimberley region of Western Australia. *Epidemiology and Infection* 143(5)1037-1040 [Not relevant to primary or secondary research questions]

Ngoye, E.; Machiwa, J. F. (2004) The influence of land-use patterns in the Ruvu river watershed on water quality in the river system. *Physics and Chemistry of the Earth* 29(15-18)1161-1166 [Not relevant to primary or secondary research questions]

Nguyen, Kien Thanh; Nguyen, Hung Manh; Truong, Cuong Kim; Ahmed, Mohammad Boshir; Huang, Yuhan; Zhou, John L. (2019) Chemical and microbiological risk assessment of urban river water quality in Vietnam. *Environmental Geochemistry and Health* 41(6)2559-2575 [Not relevant to primary or secondary research questions]

Nhi-Cong, L. T.; Lien, D. T.; Gupta, B. S.; Mai, C. T. N.; Ha, H. P.; Nguyet, N. T. M.; Duan, T. H.; Van Quyen, D.; Zaid, H. F. M.; Sankaran, R.; Show, P. L. (2020) Enhanced Degradation of Diesel Oil by Using Biofilms Formed by Indigenous Purple Photosynthetic Bacteria from Oil-Contaminated Coasts of Vietnam on Different Carriers. *Applied Biochemistry and Biotechnology* 191(1)313-330 [Not relevant to primary or secondary research questions]

Nicholls, R. S.; Duque, S.; Olaya, L. A.; López, M. C.; Sánchez, S. B.; Morales, A. L.; Palma, G. I. (2018) Elimination of onchocerciasis from Colombia: First proof of concept of river blindness elimination in the world. *Parasites and Vectors* 11(1) [Not relevant to primary or secondary research questions]

Nikolopoulou, M.; Eickenbusch, P.; Pasadakis, N.; Venieri, D.; Kalogerakis, N. (2013) Microcosm evaluation of autochthonous bioaugmentation to combat marine oil spills. *New Biotechnology* 30(6)734-742 [Not relevant to primary or secondary research questions]

Nikolopoulou, M.; Kalogerakis, N. (2009) Biostimulation strategies for fresh and chronically polluted marine environments with petroleum hydrocarbons. *Journal of Chemical Technology and Biotechnology* 84(6)802-807 [Not relevant to primary or secondary research questions]

Nikolopoulou, M.; Pasadakis, N.; Norf, H.; Kalogerakis, N. (2013) Enhanced ex situ bioremediation of crude oil contaminated beach sand by supplementation with nutrients and rhamnolipids. *Marine Pollution Bulletin* 77(43862)37-44 [Not relevant to primary or secondary research questions]

Nilsen, E. B.; Hapke, W. B.; McIlraith, B.; Markovichick, D. (2015) Reconnaissance of contaminants in larval Pacific lamprey (*Entosphenus tridentatus*) tissues and habitats in the Columbia River Basin, Oregon and Washington, USA. *Environmental Pollution* 201: 121-130 [Not relevant to primary or secondary research questions]

Nishiyama, Masateru; Ogura, Yoshitoshi; Hayashi, Tetsuya; Suzuki, Yoshihiro (2017) Antibiotic Resistance Profiling and Genotyping of Vancomycin-Resistant Enterococci Collected from an Urban River Basin in the Provincial City of Miyazaki, Japan. *Water* 9(2)79 [Not relevant to primary or secondary research questions]

Niu, H. L.; Zhu, G. W.; Zhu, M. Y.; Qin, B. Q.; Ni, S. C. (2018) Spatial-temporal distribution characteristics and source analysis of sediments in qinghai lake, china. *Desalination and Water Treatment* 127: 222-230 [Not relevant to primary or secondary research questions]

Niu, Y.; Jiao, W.; Yu, H.; Niu, Y.; Pang, Y.; Xu, X.; Guo, X. (2015) Spatial evaluation of heavy metals concentrations in the surface sediment of Taihu Lake. *International Journal of Environmental Research and Public Health* 12(12)15028-15039 [Not relevant to primary or secondary research questions]

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Nkem, B. M.; Halimoon, N.; Yusoff, F. M.; Johari, W. L. W.; Zakaria, M. P.; Medipally, S. R.; Kannan, N. (2016) Isolation, identification and diesel-oil biodegradation capacities of indigenous hydrocarbon-degrading strains of *Cellulosimicrobium cellulans* and *Acinetobacter baumannii* from tarball at Terengganu beach, Malaysia. *Marine Pollution Bulletin* 107(1)261-268 [Not relevant to primary or secondary research questions]

Nnadozie, Chika F.; Odume, Oghenekaro Nelson (2019) Freshwater environments as reservoirs of antibiotic resistant bacteria and their role in the dissemination of antibiotic resistance genes. *Environmental Pollution* (Barking, Essex: 1987) 254(Pt B)113067 [Not relevant to primary or secondary research questions]

Nödler, Karsten; Tsakiri, Maria; Aloupi, Maria; Gatidou, Georgia; Stasinakis, Athanasios S.; Licha, Tobias (2016) Evaluation of polar organic micropollutants as indicators for wastewater-related coastal water quality impairment. *Environmental Pollution* (Barking, Essex: 1987) 211: 282-290 [Not relevant to primary or secondary research questions]

Noedler, Karsten; Voutsas, Dimitra; Licha, Tobias (2014) Polar organic micropollutants in the coastal environment of different marine systems. *Marine Pollution Bulletin* 85(1)50-59 [Not relevant to primary or secondary research questions]

Nour, Hamdy El Sayed (2019) Distribution, ecological risk, and source analysis of heavy metals in recent beach sediments of Sharm El-Sheikh, Egypt. *Environmental Monitoring and Assessment* 191(9)546 [Not relevant to primary or secondary research questions]

Nour, Hamdy El Sayed; Nouh, El Said (2020) Comprehensive pollution monitoring of the Egyptian Red Sea coast by using the environmental indicators. *Environmental Science and Pollution Research* 27(23)28813-28828 [Not relevant to primary or secondary research questions]

Novak, M.; Erbanova, L.; Fottova, D.; Voldrichova, P.; Prechova, E.; Blaha, V.; Veselovsky, F.; Krachler, M. (2010) Increasing arsenic concentrations in runoff from 12 small forested catchments (Czech Republic, Central Europe): Patterns and controls. *Science of the Total Environment* 408(17)3614-3622 [Not relevant to primary or secondary research questions]

Nthunya, Lebea N.; Khumalo, Nomcebo P.; Verliefde, Arne R.; Mamba, Bhekie B.; Mhlanga, Sabelo D. (2019) Quantitative analysis of phenols and PAHs in the Nandoni Dam in Limpopo Province, South Africa: A preliminary study for dam water quality management. *Physics and Chemistry of the Earth* 112: 228-236 [Not relevant to primary or secondary research questions]

Nunes, B.; Braga, M. R.; Campos, J. C.; Gomes, R.; Ramos, A. S.; Antunes, S. C.; Correia, A. T. (2015) Ecotoxicological effect of zinc pyrithione in the freshwater fish *Gambusia holbrookii*. *Ecotoxicology* 24(9)1896-1905 [Not relevant to primary or secondary research questions]

Nwaichi, E. O.; Ntorgbo, S. A. (2016) Assessment of PAHs levels in some fish and seafood from different coastal waters in the Niger Delta. *Toxicology Reports* 3: 167-172 [Not relevant to primary or secondary research questions]

Ó Briain, O.; Marques Mendes, A. R.; McCarron, S.; Healy, M. G.; Morrison, L. (2020) The role of wet wipes and sanitary towels as a source of white microplastic fibres in the marine environment. *Water Research* 182 [Not relevant to primary or secondary research questions]

Oberbeckmann, Sonja; Loeder, Martin G. J.; Gerdts, Gunnar; Osborn, A. Mark (2014) Spatial and seasonal variation in diversity and structure of microbial biofilms on marine plastics in Northern European waters. *Fems Microbiology Ecology* 90(2)478-492 [Not relevant to primary or secondary research questions]

Oberholster, P. J.; Myburgh, J. G.; Ashton, P. J.; Botha, A. M. (2010) Responses of phytoplankton upon exposure to a mixture of acid mine drainage and high levels of nutrient pollution in Lake Loskop, South Africa. *Ecotoxicology and Environmental Safety* 73(3)326-335 [Not relevant to primary or secondary research questions]

Ocon, C. S.; Capítulo, A. R.; Paggi, A. C. (2008) Evaluation of zoobenthic assemblages and recovery following petroleum spill in a coastal area of Río de la Plata estuarine system, South America. *Environmental Pollution* 156(1)82-89 [Not relevant to primary or secondary research questions]

Odukoya, A. M.; Olobaniyi, S. B.; Oluseyi, T. O.; Adeyeye, U. A. (2017) Health risk associated with some toxic elements in surface water of Ilesha gold mine sites, southwest Nigeria. *Environmental Nanotechnology, Monitoring and Management* 8: 290-296 [Not relevant to primary or secondary research questions]

Ogbeide, Ozekele; Uhunamure, Grace; Uwagboe, Lancelot; Osakpamwan, Tray; Glory, Mfon; Chukwuka, Azubuike (2019) Comparative gill and liver pathology of *Tilapia zilli*, *Clarias gariepinus* and *Neochanna diversus* in owan river (Nigeria): Relative ecological risks of species in a pesticide-impacted river. *Chemosphere* 234: 41275 [Not relevant to primary or secondary research questions]

Ohe, Takeshi; Watanabe, Tetsushi; Wakabayashi, Keiji (2004) Mutagens in surface waters: a review. *Mutation Research* 567(43892)109-149 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Ohji, M.; Harino, H.; Langston, W. J. (2019) Differences in susceptibility of marine bacterial communities to metal pyritohones, their degradation compounds and organotin antifouling biocides. *Journal of the Marine Biological Association of the United Kingdom* 99(5)1033-1039 [Not relevant to primary or secondary research questions]

Okeke, Benedict C.; Thomson, M. Sue; Moss, Elica M. (2011) Occurrence, molecular characterization and antibiogram of water quality indicator bacteria in river water serving a water treatment plant. *The Science of the Total Environment* 409(23)4979-4985 [Not relevant to primary or secondary research questions]

Olaniran, Ademola O.; Naicker, Kovashnee; Pillay, Balakrishna (2009) Antibiotic resistance profiles of *Escherichia coli* isolates from river sources in Durban, South Africa. *World Journal of Microbiology & Biotechnology* 25(10)1743-1749 [Not relevant to primary or secondary research questions]

Olaniran, E. I.; Sogbanmu, T. O.; Saliu, J. K. (2019) Biomonitoring, physico-chemical, and biomarker evaluations of abattoir effluent discharges into the Ogun River from Kara Market, Ogun State, Nigeria, using *Clarias gariepinus*. *Environmental Monitoring and Assessment* 191(1) [Not relevant to primary or secondary research questions]

Oldenkamp, Rik; Hoeks, Selwyn; Cengic, Mirza; Barbarossa, Valerio; Burns, Emily E.; Boxall, Alistair B. A.; Ragas, Ad M. J. (2018) A High-Resolution Spatial Model to Predict Exposure to Pharmaceuticals in European Surface Waters: ePiE. *Environmental Science & Technology* 52(21)12494-12503 [Not relevant to primary or secondary research questions]

Olías, M.; Cánovas, C. R.; Basallote, M. D.; Macías, F.; Pérez-López, R.; González, R. M.; Millán-Becerro, R.; Nieto, J. M. (2019) Causes and impacts of a mine water spill from an acidic pit lake (Iberian Pyrite Belt). *Environmental Pollution* 250: 127-136 [Not relevant to primary or secondary research questions]

Olias, M.; Nieto, J. M.; Sarmiento, A. M.; Ceron, J. C.; Canovas, C. R. (2004) Seasonal water quality variations in a river affected by acid mine drainage: the Odiel River (South West Spain). *Science of the Total Environment* 333(43891)267-281 [Not relevant to primary or secondary research questions]

Oliva, Milagrosa; Jose Vicente, Juan; Gravato, Carlos; Guilhermino, Lucia; Dolores Galindo-Riano, Maria (2012) Oxidative stress biomarkers in Senegal sole, *Solea senegalensis*, to assess the impact of heavy metal pollution in a Huelva estuary (SW Spain): Seasonal and spatial variation. *Ecotoxicology and Environmental Safety* 75: 151-162 [Not relevant to primary or secondary research questions]

Oliveira, Fabiano A.; Reis, Lilian P. G.; Soto-Blanco, Benito; Melo, Marilia M. (2015) Pesticides residues in the *Prochilodus costatus* (Valenciennes, 1850) fish caught in the Sao Francisco River, Brazil. *Journal of Environmental Science and Health Part B-Pesticides Food Contaminants and Agricultural Wastes* 50(6)398-405 [Not relevant to primary or secondary research questions]

Oliver, J. D. (2005) Wound infections caused by *Vibrio vulnificus* and other marine bacteria. *Epidemiology and Infection* 133(3)383-391 [Not relevant to primary or secondary research questions]

Olivero-Verbel, Jesus; Caballero-Gallardo, Karina; Torres-Fuentes, Nivis (2009) Assessment of mercury in muscle of fish from Cartagena Bay, a tropical estuary at the north of Colombia. *International Journal of Environmental Health Research* 19(5)343-355 [Not relevant to primary or secondary research questions]

Olivier, C.; Goffart, J. P.; Baets, D.; Xanthoulis, D.; Fonder, N.; Lognay, G.; Barthélémy, J. P.; Lebrun, P. (2014) Use of micro-dams in potato furrows to reduce erosion and runoff and minimise surface water contamination through pesticides. *Communications in agricultural and applied biological sciences* 79(3)513-524 [Not relevant to primary or secondary research questions]

Olson, Alex J.; Cyphers, Trevor; Gerrish, Gretchen; Belby, Colin; King-Heiden, Tisha C. (2018) Using morphological, behavioral, and molecular biomarkers in Zebrafish to assess the toxicity of lead-contaminated sediments from a retired trapshooting range within an urban wetland. *Journal of Toxicology and Environmental Health-Part a-Current Issues* 81(18)924-938 [Not relevant to primary or secondary research questions]

Olson, R. A. (2004) Components, processes, and design of created palustrine wetlands. *Wetland and Riparian Areas of the Intermountain West: Ecology and Management* 185-215 [Not relevant to primary or secondary research questions]

Omobolanle, A. A.; Henrietta, N. (2012) Pattern of paediatric corneal laceration injuries in the University of port Harcourt teaching hospital, Rivers state, Nigeria. *BMC Research Notes* 5 [Not relevant to primary or secondary research questions]

Oner, Ozge; Celik, Ali (2011) Investigation of Some Pollution Parameters in Water and Sediment Samples Collected From the Lower Gediz River Basin. *Ekoloji* 20(78)48-52 [Not relevant to primary or secondary research questions]



Oppenheimer, Joan; Eaton, Andrew; Badruzzaman, Mohammad; Haghani, Ali W.; Jacangelo, Joseph G. (2011) Occurrence and suitability of sucralose as an indicator compound of wastewater loading to surface waters in urbanized regions. *Water Research* 45(13)4019-4027 [Not relevant to primary or secondary research questions]

Opuru, Francis E.; Kibet, Joshua K.; Kirkok, Samuel K.; Ngari, Silas M. (2019) Polycyclic aromatic hydrocarbons in the bottom sediments of Elburgon River-Kenya: precursors for cancer. *Sn Applied Sciences* 1(10)1270 [Not relevant to primary or secondary research questions]

Orisakwe, O. E.; Dagur, E. A.; Mbagwu, H. O. C.; Udowelle, N. A. (2017) Lead levels in vegetables from artisanal mining sites of Dilimi River, Bokuru and Barkin Ladi north central Nigeria: Cancer and non-cancer risk assessment. *Asian Pacific Journal of Cancer Prevention* 18(3)621-627 [Not relevant to primary or secondary research questions]

Ortega-Muñoz, A. (2015) Dental health and alimentation among the Quintana Roo Mayas: Coastal and inland sites of the classic-postclassic periods. *American Journal of Human Biology* 27(6)779-791 [Not relevant to primary or secondary research questions]

Ortiz-Ordoñez, Esperanza; López-López, Eugenia; Sedeño-Díaz, Jacinto Elías; Uría, Esther; Morales, Ignacio Andrés; Pérez, María Estela; Shibayama, Mineko (2016) Liver histological changes and lipid peroxidation in the amphibian *Ambystoma mexicanum* induced by sediment elutriates from the Lake Xochimilco. *Journal of Environmental Sciences (China)* 46: 156-164 [Not relevant to primary or secondary research questions]

Osterberg, J. S.; Cammen, K. M.; Schultz, T. F.; Clark, B. W.; Di Giulio, R. T. (2018) Genome-wide scan reveals signatures of selection related to pollution adaptation in non-model estuarine Atlantic killifish (*Fundulus heteroclitus*). *Aquatic Toxicology* 200: 73-82 [Not relevant to primary or secondary research questions]

Ostoich, M.; Carcereri, M.; Barbaro, J. (2014) River sediments' monitoring: Impact of tannery discharges. *Management of Environmental Quality: An International Journal* 25(4)379-406 [Not relevant to primary or secondary research questions]

Otte, J. C.; Andersson, C.; Abrahamson, A.; Olsman, H.; Keiter, S.; Engwall, M.; Hollert, H.; Brunström, B. (2008) A bioassay approach to determine the dioxin-like activity in sediment extracts from the Danube River: Ethoxyresorufin-O-deethylase induction in gill filaments and liver of three-spined sticklebacks (*Gasterosteus aculeatus* L.). *Environment International* 34(8)1176-1184 [Not relevant to primary or secondary research questions]

Oyetibo, G. O.; Miyauchi, K.; Huang, Y.; Ikeda-Ohtsubo, W.; Chien, M. F.; Ilori, M. O.; Amund, O. O.; Endo, G. (2019) Comparative geochemical evaluation of toxic metals pollution and bacterial communities of industrial effluent tributary and a receiving estuary in Nigeria. *Chemosphere* 227: 638-646 [Not relevant to primary or secondary research questions]

Oyoo-Okoth, Elijah; Admiraal, Wim; Osano, Odipo; Ngure, Veronica; Kraak, Michiel H. S.; Omutange, Elijah S. (2010) Monitoring exposure to heavy metals among children in Lake Victoria, Kenya: Environmental and fish matrix. *Ecotoxicology and Environmental Safety* 73(7)1797-1803 [Not relevant to primary or secondary research questions]

Ozmen, Murat; Ayas, Zafer; Gungordu, Abbas; Ekmekci, Guler F.; Yerli, Sedat (2008) Ecotoxicological assessment of water pollution in Sariyar Dam Lake, Turkey. *Ecotoxicology and Environmental Safety* 70(1)163-173 [Not relevant to primary or secondary research questions]

Packett, R.; Waters, D.; McCloskey, G. (2011) Increasing confidence in model prediction: A case study on water quality data collation for model validation in the Great Barrier Reef catchments. 4134-4140 [Not relevant to primary or secondary research questions]

Paisse, S.; Duran, R.; Coulon, F.; Goñi-Urriza, M. (2011) Are alkane hydroxylase genes (alkB) relevant to assess petroleum bioremediation processes in chronically polluted coastal sediments? *Applied Microbiology and Biotechnology* 92(4)835-844 [Not relevant to primary or secondary research questions]

Palermo, F. A.; Mosconi, G.; Angeletti, M.; Polzonetti-Magni, A. M. (2008) Assessment of water pollution in the Tronto River (Italy) by applying useful biomarkers in the fish model *Carassius auratus*. *Archives of Environmental Contamination and Toxicology* 55(2)295-304 [Not relevant to primary or secondary research questions]

Paliaga, P.; Felja, I.; Ušić, U.; Ivančić, I.; Najdek, M. (2017) Accumulation and persistence of sewage and fish cannery pollution in coastal sediments (northern Adriatic Sea). *Journal of Soils and Sediments* 17(6)1751-1766 [Not relevant to primary or secondary research questions]

Palleyi, Sanghamitra; Banoo, Sabnam; Kar, Rabi Narayan; Panda, Chitta Ranjan (2015) Textural and geochemical characteristics of off shore sediment of North Bay of Bengal: A statistical approach for marine metal pollution. *International Journal of Sediment Research* 30(3)208-222 [Not relevant to primary or secondary research questions]



Pan, C. G.; Peng, F. J.; Ying, G. G. (2018) Removal, biotransformation and toxicity variations of climbazole by freshwater algae *Scenedesmus obliquus*. *Environmental Pollution* 240: 534-540 [Not relevant to primary or secondary research questions]

Pan, Libo; Fang, Guangling; Wang, Yue; Wang, Lei; Su, Benying; Li, Dan; Xiang, Bao (2018) Potentially Toxic Element Pollution Levels and Risk Assessment of Soils and Sediments in the Upstream River, Miyun Reservoir, China. *International Journal of Environmental Research and Public Health* 15(11)2364 [Not relevant to primary or secondary research questions]

Pane, Luigi; Giacco, Elisabetta; Corra, Christian; Greco, Giuliano; Mariottini, Gian Luigi; Varisco, Franco; Faimali, Marco (2008) Ecotoxicological evaluation of harbour sediments using marine organisms from different trophic levels. *Journal of Soils and Sediments* 8(2)74-79 [Not relevant to primary or secondary research questions]

Papadakis, E. N.; Vryzas, Z.; Kotopoulou, A.; Kintzikoglou, K.; Makris, K. C.; Papadopoulou-Mourkidou, E. (2015) A pesticide monitoring survey in rivers and lakes of northern Greece and its human and ecotoxicological risk assessment. *Ecotoxicology and Environmental Safety* 116: 44075 [Not relevant to primary or secondary research questions]

Papu-Zamxaka, Vathiswa; Mathee, Angela; Harpham, Trudy; Barnes, Brendon; Roellin, Halina; Lyons, Michal; Jordaan, Wikus; Cloete, Marthinus (2010) Elevated mercury exposure in communities living alongside the Inanda Dam, South Africa. *Journal of Environmental Monitoring* 12(2)472-477 [Not relevant to primary or secondary research questions]

Parag, B.; Sasikala, Ch; Ramana, Ch V. (2013) Molecular and culture dependent characterization of endolithic bacteria in two beach sand samples and description of *Rhizobium endolithicum* sp. nov. *Antonie van Leeuwenhoek, International Journal of General and Molecular Microbiology* 104(6)1235-1244 [Not relevant to primary or secondary research questions]

Parrino, V.; Minutoli, R.; Lo Paro, G.; Surfaro, D.; Fazio, F. (2020) Environmental assessment of the pesticides in *Parablennius sanguinolentus* along the Western Calabrian coast (Italy). *Regional Studies in Marine Science* 36 [Not relevant to primary or secondary research questions]

Parthasarathy, N.; Vivek, P.; Anil, K. (2015) Liana Diversity and Their Ecosystem Services in Tropical Dry Evergreen Forest on the Coromandel Coast of India. *Biodiversity of Lianas* 5:161-178 [Not relevant to primary or secondary research questions]

Parween, M.; Ramanathan, A.; Raju, N. J. (2017) Waste water management and water quality of river Yamuna in the megacity of Delhi. *International Journal of Environmental Science and Technology* 14(10)2109-2124 [Not relevant to primary or secondary research questions]

Pascual Aguilar, Juan Antonio; Andreu, Vicente; Vazquez, Pablo; Pico, Yolanda (2014) Presence and spatial distribution of emerging contaminants (drugs of abuse) in protected agroecological systems (L'Albufera de Valencia Coastal Wetland, Spain). *Environmental Earth Sciences* 71(1)31-37 [Not relevant to primary or secondary research questions]

Pastor, J.; Hernandez, A. J. (2012) Heavy metals, salts and organic residues in old solid urban waste landfills and surface waters in their discharge areas: Determinants for restoring their impact. *Journal of Environmental Management* 95: S42-S49 [Not relevant to primary or secondary research questions]

Patoli, Shahzeb; Jabeen, Nusrat; Masood, Rai Tariq; Butt, Atif Iqbal (2015) Socioeconomic Status and Smokeless Tobacco Consumption in Fishermen Community of a Coastal Area of Karachi. *Annals Abbasi Shaheed Hospital & Karachi Medical & Dental College* 20(1)34-39 [Not relevant to primary or secondary research questions]

Patrick, A. K. (2014) Failure of the use of contraceptives among women in two health districts in Ivory Coast. *Etude de la Population Africaine* 28(3)242 [Not relevant to primary or secondary research questions]

Pavlov, D. N.; Van Zyl, W. B.; Van Heerden, J.; Grabow, W. O. K.; Ehlers, M. M. (2005) Prevalence of vaccine-derived polioviruses in sewage and river water in South Africa. *Water Research* 39(14)3309-3319 [Not relevant to primary or secondary research questions]

Pedersen, C. A.; Boccia, M. L. (2003) Oxytocin antagonism alters rat dams' oral grooming and upright posturing over pups. *Physiology and Behavior* 80(43892)233-241 [Not relevant to primary or secondary research questions]

Peluso, F.; Castelain, J. G.; Othax, N.; Rodríguez, L. (2011) Health risk by toxic substances in freshwater of Tres Arroyos, Argentina. *Acta Bioquímica Clínica Latinoamericana* 45(2)311-321 [Not relevant to primary or secondary research questions]

Peng, Shitao; Dai, Mingxin; Zhang, Juan; Zhang, Minghua; Shi, Quan; Liang, Baocui; Zheng, Tianli (2020) Dynamics of ecological risks associated with heavy metals in sediments during the construction process of the Yangtze River deepwater channel. *Journal of Cleaner Production* 269: 122231 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Peng, Ying; Fang, Wendi; Krauss, Martin; Brack, Werner; Wang, Zhihao; Li, Feilong; Zhang, Xiaowei (2018) Screening hundreds of emerging organic pollutants (EOPs) in surface water from the Yangtze River Delta (YRD): Occurrence, distribution, ecological risk. *Environmental Pollution* (Barking, Essex: 1987) 241: 484-493 [Not relevant to primary or secondary research questions]

Pengthamkeerati, P.; Kornkanitnan, N.; Sawangarreruks, S.; Wanichacheva, N.; Wainiphithapong, C.; Sananwai, N. (2013) Assessment of heavy metals in sediments of the Don Hoi Lot area in the Mae Klong estuary, Thailand. *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering* 48(11)1356-1364 [Not relevant to primary or secondary research questions]

Perez Castresana, Gabriela; Tamariz Flores, Victor; Lopez Reyes, Lucia; Hernandez Aldana, Fernando; Castelan Vega, Rosalia; Moran Perales, Jose Luis; Garcia Suastegui, Wendy Argelia; Diaz Fonseca, Alfonso; Handal Silva, Anabella (2018) Atoyac River Pollution in the Metropolitan Area of Puebla, Mexico. *Water* 10(3)267 [Not relevant to primary or secondary research questions]

Perez-Coyod, I.; Galar-Martinez, M.; Garcia-Medina, S.; Gomez-Olivan, L. M.; Gasca-Perez, E.; Martinez-Galero, E.; Islas-Flores, H.; Perez-Pasten, Borja R.; Barcelo, D.; Lopez de Alda, M.; Perez-Solsona, S.; Serra-Roig, M. P.; Montemurro, N.; Pena-Herrera, J. M.; Sanchez-Aceves, L. M. (2019) Polluted water from an urban reservoir (Madin dam, Mexico) induces toxicity and oxidative stress in *Cyprinus carpio* embryos. *Environmental Pollution* 251: 510-521 [Not relevant to primary or secondary research questions]

Peric, Mirela Sertic; Kepcija, Renata Matonickin; Milisa, Marko; Gottstein, Sanja; Lajtner, Jasna; Dragun, Zrinka; Marijic, Vlatka Filipovic; Krasnici, Nesrete; Ivankovic, Dusica; Erk, Marijana (2018) Benthos-drift relationships as proxies for the detection of the most suitable bioindicator taxa in flowing waters - a pilot-study within a Mediterranean karst river. *Ecotoxicology and Environmental Safety* 163: 125-135 [Not relevant to primary or secondary research questions]

Perugini, M.; Cavaliere, M.; Giammarino, A.; Mazzone, P.; Olivieri, V.; Amorena, M. (2004) Levels of polychlorinated biphenyls and organochlorine pesticides in some edible marine organisms from the Central Adriatic Sea. *Chemosphere* 57(5)391-400 [Not relevant to primary or secondary research questions]

Pesce, Stéphane; Bouchez, Agnès; Montuelle, Bernard (2011) Effects of organic herbicides on phototrophic microbial communities in freshwater ecosystems. *Reviews of Environmental Contamination and Toxicology* 214: 87-124 [Not relevant to primary or secondary research questions]

Peters, Daniel L.; Prowse, Terry D. (2006) Generation of streamflow to seasonal high waters in a freshwater delta, northwestern Canada. *Hydrological Processes* 20(19)4173-4196 [Not relevant to primary or secondary research questions]

Petersen, J. K.; Hasler, B.; Timmermann, K.; Nielsen, P.; Tørring, D. B.; Larsen, M. M.; Holmer, M. (2014) Mussels as a tool for mitigation of nutrients in the marine environment. *Marine Pollution Bulletin* 82(43862)137-143 [Not relevant to primary or secondary research questions]

Philips, R. C.; Hoyer, P. E.; White, S. M.; Tinkey, K. T.; Loeffelholz, M.; Andersen, C. R.; Wilkerson, M. G.; Gibson, B. R.; Kelly, B. C. (2019) Cutaneous nontuberculous mycobacteria infections: A retrospective case series of 78 patients from the Texas Gulf Coast region. *Journal of the American Academy of Dermatology* 81(3)730-739 [Not relevant to primary or secondary research questions]

Phillips, B. M.; Anderson, B. S.; Siegler, K.; Voorhees, J. P.; Budd, R.; Tjeerdema, R. (2016) The Effects of the Landguard™ A900 Enzyme on the Macroinvertebrate Community in the Salinas River, California, United States of America. *Archives of Environmental Contamination and Toxicology* 70(2)231-240 [Not relevant to primary or secondary research questions]

Phillips, N. R.; Hickey, C. W. (2010) Genotype-dependent recovery from acute exposure to heavy metal contamination in the freshwater clam *Sphaerium novaezealandiae*. *Aquatic Toxicology* 99(4)507-513 [Not relevant to primary or secondary research questions]

Pierce, E. S. (2012) Free ranging Rocky Mountain Bighorn sheep and an outbreak of inflammatory bowel disease along the Clark Fork River in Plains, Montana. *Virulence* 3(6) [Not relevant to primary or secondary research questions]

Piffady, Jeremy; Carluer, Nadia; Gouy, Veronique; le Henaff, Guy; Tormos, Thierry; Bougon, Nolwenn; Adoir, Emilie; Mellac, Katell (2020) ARPEGES: a Bayesian belief network to assess the risk of pesticide contamination for the river network of France. *Integrated Environmental Assessment and Management* [Not relevant to primary or secondary research questions]

Piñeira, J.; Quesada, H.; Rolán-Alvarez, E.; Caballero, A. (2008) Genetic impact of the Prestige oil spill in wild populations of a poor dispersal marine snail from intertidal rocky shores. *Marine Pollution Bulletin* 56(2)270-281 [Not relevant to primary or secondary research questions]

Pineiro Di Blasi, J. I.; Martinez Torres, J.; Garcia Nieto, P. J.; Alonso Fernandez, J. R.; Diaz Muniz, C.; Taboada, J. (2015) Analysis and detection of functional outliers in water quality parameters from different automated monitoring stations in the Nalon River Basin (Northern Spain). *Environmental*

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Science and Pollution Research 22(1)387-396 [Not relevant to primary or secondary research questions]

Pini, Andrea K.; Geddes, Pamela (2020) Fungi Are Capable of Mycoremediation of River Water Contaminated by *E. coli*. *Water Air and Soil Pollution* 231(2)83 [Not relevant to primary or secondary research questions]

Pintado-Herrera, M. G.; Wang, C.; Lu, J.; Chang, Y. P.; Chen, W.; Li, X.; Lara-Martín, P. A. (2017) Distribution, mass inventories, and ecological risk assessment of legacy and emerging contaminants in sediments from the Pearl River Estuary in China. *Journal of Hazardous Materials* 323: 128-138 [Not relevant to primary or secondary research questions]

Piola, R. F.; Dunmore, R. A.; Forrest, B. M. (2009) Assessing the efficacy of spray-delivered 'eco-friendly' chemicals for the control and eradication of marine fouling pests. *Biofouling* 26(2)187-203 [Not relevant to primary or secondary research questions]

Piola, Richard F.; Johnston, Emma L. (2008) Pollution reduces native diversity and increases invader dominance in marine hard-substrate communities. *Diversity and Distributions* 14(2)329-342 [Not relevant to primary or secondary research questions]

Piria, M.; Simonović, P.; Zanella, D.; Ćaleta, M.; Šprem, N.; Paunović, M.; Tomljanović, T.; Gavrilović, A.; Pecina, M.; Špelić, I.; Matulić, D.; Režić, A.; Aničić, I.; Safner, R.; Treer, T. (2019) Long-term analysis of fish assemblage structure in the middle section of the Sava River – The impact of pollution, flood protection and dam construction. *Science of the Total Environment* 651: 143-153 [Not relevant to primary or secondary research questions]

Pitchaikani, J. S.; Kadharsha, K.; Mukherjee, S. (2016) Current status of seawater quality in Digha (India), northwestern coast of the Bay of Bengal. *Environmental Monitoring and Assessment* 188(7) [Not relevant to primary or secondary research questions]

Pontes, J.; Mucha, A. P.; Santos, H.; Reis, I.; Bordalo, A.; Basto, M. C.; Bernabeu, A.; Almeida, C. M. R. (2013) Potential of bioremediation for buried oil removal in beaches after an oil spill. *Marine Pollution Bulletin* 76(43862)258-265 [Not relevant to primary or secondary research questions]

Ponti, Benedetta; Piscia, Roberta; Bettinetti, Roberta; Manca, Marina (2010) Long-term adaptation of *Daphnia* to toxic environment in Lake Orta: the effects of short-term exposure to copper and acidification. *Journal of Limnology* 69(2)217-224 [Not relevant to primary or secondary research questions]

Posthuma, Leo; Brown, Colin D.; de Zwart, Dick; Diamond, Jerome; Dyer, Scott D.; Holmes, Christopher M.; Marshall, Stuart; Burton, G. Allen (2018) Prospective mixture risk assessment and management prioritizations for river catchments with diverse land uses. *Environmental Toxicology and Chemistry* 37(3)715-728 [Not relevant to primary or secondary research questions]

Postigo, Cristina; Ginebreda, Antoni; Barbieri, Maria Vittoria; Barceló, Damià; Martín-Alonso, Jordi; de la Cal, Agustina; Boleda, Maria Rosa; Otero, Neus; Carrey, Raul; Solà, Vinyet; Queralt, Enric; Isla, Elena; Casanovas, Anna; Frances, Gemma; López de Alda, Miren (2020) Investigative monitoring of pesticide and nitrogen pollution sources in a complex multi-stressed catchment: The lower Llobregat River basin case study (Barcelona, Spain). *The Science of the Total Environment* 755(Pt 1)142377 [Not relevant to primary or secondary research questions]

Prah, J. K.; Amoah, S.; Ocansey, D. W. K.; Arthur, R.; Walker, E.; Obiri-Yeboah, D. (2019) Evaluation of urinalysis parameters and antimicrobial susceptibility of uropathogens among out-patients at University of Cape Coast Hospital. *Ghana Medical Journal* 53(1)44-51 [Not relevant to primary or secondary research questions]

Prassack, Kari Alyssa (2011) The effect of weathering on bird bone survivorship in modern and fossil saline-alkaline lake environments. *Paleobiology* 37(4)633-654 [Not relevant to primary or secondary research questions]

Printes, L. B.; Fernandes, M. N.; Espíndola, E. L. G. (2011) Laboratory measurements of biomarkers and individual performances in *Chironomus xanthus* to evaluate pesticide contamination of sediments in a river of southeastern Brazil. *Ecotoxicology and Environmental Safety* 74(3)424-430 [Not relevant to primary or secondary research questions]

Privette, C. V.; Smink, J. (2017) Assessing the potential impacts of WWTP effluent reductions within the Reedy River watershed. *Ecological Engineering* 98: 42675 [Not relevant to primary or secondary research questions]

Procópio, L. (2020) Changes in microbial community in the presence of oil and chemical dispersant and their effects on the corrosion of API 5L steel coupons in a marine-simulated microcosm. *Applied Microbiology and Biotechnology* 104(14)6397-6411 [Not relevant to primary or secondary research questions]

Proia, L.; Osorio, V. (2013) The effect of PhACs on biological communities in rivers: Field studies. 62[Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Proshad, R.; Kormoker, T.; Islam, S. (2019) Distribution, source identification, ecological and health risks of heavy metals in surface sediments of the Rupsa River, Bangladesh. *Toxin Reviews* [Not relevant to primary or secondary research questions]

Prosser, R. S.; Rochfort, Q.; McInnis, R.; Exall, K.; Gillis, P. L. (2017) Assessing the toxicity and risk of salt-impacted winter road runoff to the early life stages of freshwater mussels in the Canadian province of Ontario. *Environmental Pollution* 230: 589-597 [Not relevant to primary or secondary research questions]

Puente, A.; Juanes, J. A.; Calderón, G.; Echavarri-Erasun, B.; García, A.; García-Castrillo, G. (2009) Medium-term assessment of the effects of the Prestige oil spill on estuarine benthic communities in Cantabria (Northern Spain, Bay of Biscay). *Marine Pollution Bulletin* 58(4)487-495 [Not relevant to primary or secondary research questions]

Punniyakotti, J.; Ponnusamy, V. (2018) Environmental radiation and potential ecological risk levels in the intertidal zone of southern region of Tamil Nadu coast (HBRA), India. *Marine Pollution Bulletin* 127: 377-386 [Not relevant to primary or secondary research questions]

Qasemian, L.; Guiral, D.; Ziarelli, F.; Van Dang, T. K.; Farnet, A. M. (2012) Effects of anthracene on microbial activities and organic matter decomposition in a *Pinus halepensis* litter from a Mediterranean coastal area. *Soil Biology and Biochemistry* 46: 148-154 [Not relevant to primary or secondary research questions]

Qiao, M.; Chen, Y.; Zhang, Q.; Huang, S.; Ma, M.; Wang, C.; Wang, Z. (2006) Identification of Ah receptor agonists in sediment of Meiliang Bay, Taihu Lake, China. *Environmental Science and Technology* 40(5)1415-1419 [Not relevant to primary or secondary research questions]

Qin, Huanhuan; Gao, Bai; He, Liu; Hu, Xiaohong; Dong, Lei; Sanjay, Dhawan; Dong, Andre; Sun, Zhanxue; Wan, Wei (2019) Hydrogeochemical Characteristics and Controlling Factors of the Lhasa River under the Influence of Anthropogenic Activities. *Water* 11(5)948 [Not relevant to primary or secondary research questions]

Qin, Yanwen; Wen, Quan; Ma, Yingqun; Yang, Chenchen; Liu, Zhichao (2018) Antibiotics pollution in Gonghu Bay in the period of water diversion from Yangtze River to Taihu Lake. *Environmental Earth Sciences* 77(11)419 [Not relevant to primary or secondary research questions]

Qin, Z.; Shi, H.; Wang, M.; Bai, Z.; Yang, Z.; Hao, Y. (2018) Spatial Distribution and Correlation of Soil Cadmium Contamination in Xiangjiang River Tributary Basin of China. *Research of Environmental Sciences* 31(8)1399-1406 [Not relevant to primary or secondary research questions]

Qin, Z.; Zhao, Z.; Xia, L.; Adam, A.; Li, Y.; Chen, D.; Mela, S. M.; Li, H. (2019) The dissipation and risk alleviation mechanism of PAHs and nitrogen in constructed wetlands: The role of submerged macrophytes and their biofilms-leaves. *Environment International* 131 [Not relevant to primary or secondary research questions]

Qu, Xiaodong; Ren, Ze; Zhang, Min; Liu, Xiaobo; Peng, Wenqi (2017) Sediment heavy metals and benthic diversities in Hun-Tai River, northeast of China. *Environmental Science and Pollution Research* 24(11)10662-10673 [Not relevant to primary or secondary research questions]

Quero, G. M.; Luna, G. M. (2017) Surfing and dining on the “plastisphere”: Microbial life on plastic marine debris. *Advances in Oceanography and Limnology* 8(2)199-207 [Not relevant to primary or secondary research questions]

Quillet, Laurent; Besaury, Ludovic; Popova, Milka; Paisse, Sandrine; Deloffre, Julien; Ouddane, Baghdad (2012) Abundance, Diversity and Activity of Sulfate-Reducing Prokaryotes in Heavy Metal-Contaminated Sediment from a Salt Marsh in the Medway Estuary (UK). *Marine Biotechnology* 14(3)363-381 [Not relevant to primary or secondary research questions]

Rainbow, P. S.; Geffard, A.; Jeantet, A. Y.; Smith, B. D.; Amiard, J. C.; Amiard-Triquet, C. (2004) Enhanced food-chain transfer of copper from a diet of copper-tolerant estuarine worms. *Marine Ecology Progress Series* 271: 183-191 [Not relevant to primary or secondary research questions]

Rainbow, P. S.; Smith, B. D.; Luoma, S. N. (2009) Differences in trace metal bioaccumulation kinetics among populations of the polychaete *Nereis diversicolor* from metal-contaminated estuaries. *Marine Ecology Progress Series* 376: 173-184 [Not relevant to primary or secondary research questions]

Raluy, R. G.; Serra, L.; Uche, J.; Valero, A. (2005) Life cycle assessment of water production technologies. Part 2: Reverse osmosis desalination versus the Ebro River Water Transfer. *International Journal of Life Cycle Assessment* 10(5)346-354 [Not relevant to primary or secondary research questions]

Ramessar, Kerisha; Olaniran, Ademola O. (2019) Antibiogram and molecular characterization of methicillin-resistant *Staphylococcus aureus* recovered from treated wastewater effluent and receiving surface water in Durban, South Africa. *World Journal of Microbiology & Biotechnology* 35(9)142 [Not relevant to primary or secondary research questions]



Ramos Martinez, J. I.; Gonzalez-Riopedre, M.; Barcia, R. (2012) Role of protein kinases C (PKC) in the relationship between the neuroendocrine and immune systems in marine mussels: The model of *Mytilus galloprovincialis* Lamark (1819). *Italian Journal of Zoology* 79(2):162-168 [Not relevant to primary or secondary research questions]

Ramos, A. M.; Whelan, M. J.; Cosgrove, S.; Villa, R.; Jefferson, B.; Campo, P.; Jarvis, P.; Guymer, I. (2017) A multi-component method to determine pesticides in surface water by liquid-chromatography tandem quadrupole mass spectrometry. *Water and Environment Journal* 31(3):380-387 [Not relevant to primary or secondary research questions]

Ranjbar Jafarabadi, A.; Riyahi Bakhtiari, A.; Shadmehri Toosi, A. (2017) Comprehensive and comparative ecotoxicological and human risk assessment of polycyclic aromatic hydrocarbons (PAHs) in reef surface sediments and coastal seawaters of Iranian Coral Islands, Persian Gulf. *Ecotoxicology and Environmental Safety* 145: 640-652 [Not relevant to primary or secondary research questions]

Rashid, A.; Siddika, A.; Rahman, M. T. U. (2017) Assessment the presence of Heavy Metal (HM) concentration in river water and fish species and associated human health hazard due to the fish consumption of Turag River in Bangladesh. 61-70 [Not relevant to primary or secondary research questions]

Rashid, I.; Romshoo, S. A. (2013) Impact of anthropogenic activities on water quality of Lidder River in Kashmir Himalayas. *Environmental Monitoring and Assessment* 185(6):4705-4719 [Not relevant to primary or secondary research questions]

Rastogi, Gurdeep; Barua, Sutapa; Sani, Rajesh K.; Peyton, Brent M. (2011) Investigation of Microbial Populations in the Extremely Metal-Contaminated Coeur d'Alene River Sediments. *Microbial Ecology* 62(1):41275 [Not relevant to primary or secondary research questions]

Ratiu, Ileana-Andreea; Beldean-Galea, Mihail Simion; Bocos-Bintintan, Victor; Costea, Dorin-Daniel (2018) Priority Pollutants Present in the Tisza River Hydrographic Basin and their Effects on Living Organisms. *Jordan Journal of Chemistry* 13(1):15-33 [Not relevant to primary or secondary research questions]

Raychaudhuri, S.; Mishra, M.; Salodkar, S.; Sudarshan, M.; Thakur, A. R. (2008) Traditional aquaculture practice at East Calcutta Wetland: The safety assessment. *American Journal of Environmental Sciences* 4(2):140-144 [Not relevant to primary or secondary research questions]

Reddy, U. A.; Prabhakar, P. V.; Rao, G. S.; Rao, P. R.; Sandeep, K.; Rahman, M. F.; Kumari, S. I.; Grover, P.; Khan, H. A.; Mahboob, M. (2015) Biomarkers of oxidative stress in rat for assessing toxicological effects of heavy metal pollution in river water. *Environmental Science and Pollution Research* 22(17):13453-13463 [Not relevant to primary or secondary research questions]

Redondo-Hasselberharm, P. E.; Gort, G.; Peeters, E. T. H. M.; Koelmans, A. A. (2020) Nano- and microplastics affect the composition of freshwater benthic communities in the long term. *Science Advances* 6(5):eaay4054 [Not relevant to primary or secondary research questions]

Reed, J. R.; Lombard, A. T.; Sink, K. J. (2020) A diversity of spatial management instruments can support integration of fisheries management and marine spatial planning. *Marine Policy* 119 [Not relevant to primary or secondary research questions]

Reemtsma, T.; Alder, L.; Banasiak, U. (2013) Emerging pesticide metabolites in groundwater and surface water as determined by the application of a multethod for 150 pesticide metabolites. *Water Research* 47(15):5535-5545 [Not relevant to primary or secondary research questions]

Rehman, Inayat Ur; Ishaq, Muhammad; Ali, Liaqat; Khan, Sardar; Ahmad, Imtiaz; Din, Imran Ud; Ullah, Hameed (2018) Enrichment, spatial distribution of potential ecological and human health risk assessment via toxic metals in soil and surface water ingestion in the vicinity of Sewakht mines, district Chitral, Northern Pakistan. *Ecotoxicology and Environmental Safety* 154: 127-136 [Not relevant to primary or secondary research questions]

Rehse, S.; Kloas, W.; Zarfl, C. (2018) Microplastics reduce short-term effects of environmental contaminants. Part I: Effects of bisphenol a on freshwater zooplankton are lower in presence of polyamide particles. *International Journal of Environmental Research and Public Health* 15(2) [Not relevant to primary or secondary research questions]

Reid, T.; Droppo, I. G.; Chaganti, S. R.; Weisener, C. G. (2019) Microbial metabolic strategies for overcoming low-oxygen in naturalized freshwater reservoirs surrounding the Athabasca Oil Sands: A proxy for End-Pit Lakes? *Science of the Total Environment* 665: 113-124 [Not relevant to primary or secondary research questions]

Ren, Hanwei; Troger, Rikard; Ahrens, Lutz; Wiberg, Karin; Yin, Daqiang (2020) Screening of organic micropollutants in raw and drinking water in the Yangtze River Delta, China. *Environmental Sciences Europe* 32(1):67 [Not relevant to primary or secondary research questions]



Renzi, Monia; Pauna, Valentina H.; Provenza, Francesca; Munari, Cristina; Mistri, Michele (2020) Marine Litter in Transitional Water Ecosystems: State of The Art Review Based on a Bibliometric Analysis. *Water* 12(2)612 [Not relevant to primary or secondary research questions]

Reyes, Vincent C.; Gedalanga, Phillip B.; Merino, Nancy; Van Nostrand, Joy D.; Keely, Scott P.; De Long, Susan K.; Zhou, Jizhong; Mahendra, Shailly (2018) Differential Sensitivity of Wetland-Derived Nitrogen Cycling Microorganisms to Copper Nanoparticles. *Acs Sustainable Chemistry & Engineering* 6(9)11642-11652 [Not relevant to primary or secondary research questions]

Rheinheimer dos Santos, D.; Monteiro de Castro Lima, J. A.; Paranhos Rosa de Vargas, J.; Camotti Bastos, M.; Santana dos Santos, M. A.; Mondamert, L.; Labanowski, J. (2020) Pesticide bioaccumulation in epilithic biofilms as a biomarker of agricultural activities in a representative watershed. *Environmental Monitoring and Assessment* 192(6) [Not relevant to primary or secondary research questions]

Rhodes, G.; Porter, J.; Pickup, R. W. (2012) The bacteriology of Windermere and its catchment: insights from 70 years of study. *Freshwater Biology* 57(2)305-320 [Not relevant to primary or secondary research questions]

Ribeiro de Sousa, Diana Nara; Mozeto, Antonio Aparecido; Carneiro, Renato Lajarin; Fadini, Pedro Sergio (2014) Electrical conductivity and emerging contaminant as markers of surface freshwater contamination by wastewater. *Science of the Total Environment* 484: 19-26 [Not relevant to primary or secondary research questions]

Ricciardi, F.; Bonnneau, C.; Faggiano, L.; Geiszinger, A.; Guasch, H.; Lopez-Doval, J.; Muñoz, I.; Proia, L.; Ricart, M.; Romaní, A.; Sabater, S. (2009) Is chemical contamination linked to the diversity of biological communities in rivers? *TrAC - Trends in Analytical Chemistry* 28(5)592-602 [Not relevant to primary or secondary research questions]

Riera, R.; Nunez, J.; Del Carmen Brito, M. (2012) Influence of a Freshwater Runoff on Temporal Variations of an Intertidal Meiofauna Assemblage. *Vie Et Milieu-Life and Environment* 62(3)105-114 [Not relevant to primary or secondary research questions]

Rinawati, Takada, Hideshige (2017) Distribution and Source of Sedimentary Polycyclic Aromatic Hydrocarbon (PAHs) in River Sediment of Jakarta. *Indonesian Journal of Chemistry* 17(3)394-400 [Not relevant to primary or secondary research questions]

Rispens, J. R.; Jones, S. A.; Clemons, N. S.; Ahmed, S.; Harduar-Morano, L.; Johnson, M. D.; Edge, C.; Vyas, A.; Bourgikos, E.; Orr, M. F. (2020) Anhydrous ammonia chemical release - Lake County, Illinois, April 2019. *Morbidity and Mortality Weekly Report* 69(4)109-113 [Not relevant to primary or secondary research questions]

Riva, Consuelo; Cristoni, Simone; Binelli, Andrea (2012) Effects of triclosan in the freshwater mussel *Dreissena polymorpha*: A proteomic investigation. *Aquatic Toxicology* 118: 62-71 [Not relevant to primary or secondary research questions]

Robards, M. D.; Reeves, R. R. (2011) The global extent and character of marine mammal consumption by humans: 1970-2009. *Biological Conservation* 144(12)2770-2786 [Not relevant to primary or secondary research questions]

Rønberg, S.; Østerhus, J. I.; Landfald, B. (2011) Dynamics of bacterial community exposed to hydrocarbons and oleophilic fertilizer in high-Arctic intertidal beach. *Polar Biology* 34(10)1455-1465 [Not relevant to primary or secondary research questions]

Roberts, Marilyn C.; Soge, Olusegun O.; No, David (2013) Comparison of multi-drug resistant environmental methicillin-resistant *Staphylococcus aureus* isolated from recreational beaches and high touch surfaces in built environments. *Frontiers in Microbiology* 4: 74 [Not relevant to primary or secondary research questions]

Robertson, Ben P.; Gardner, Jonathan P. A.; Savage, Candida (2015) Macrofaunal-mud relations strengthen the foundation for benthic index development: A case study from shallow, temperate New Zealand estuaries. *Ecological Indicators* 58: 161-174 [Not relevant to primary or secondary research questions]

Robson, M.; Spence, K.; Beech, L. (2006) Stream quality in a small urbanised catchment. *Science of the Total Environment* 357(43891)194-207 [Not relevant to primary or secondary research questions]

Rocha, O.; Neto, A. J. G.; dos Santos Lima, J. C.; Freitas, E. C.; Miguel, M.; da Silva Mansano, A.; Moreira, R. A.; Daam, M. A. (2018) Sensitivities of three tropical indigenous freshwater invertebrates to single and mixture exposures of diuron and carbofuran and their commercial formulations. *Ecotoxicology* 27(7)834-844 [Not relevant to primary or secondary research questions]

Rocha, Thiago Lopes; Gomes, Tania; Mestre, Nelia C.; Cardoso, Catia; Bebianno, Maria Joao (2015) Tissue specific responses to cadmium-based quantum dots in the marine mussel *Mytilus galloprovincialis*. *Aquatic Toxicology* 169: 43374 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Rodrigue, M.; Elango, V.; Curtis, D.; Collins, A. W.; Pardue, J. H. (2020) Biodegradation of MC252 polycyclic aromatic hydrocarbons and alkanes in two coastal wetlands. *Marine Pollution Bulletin* 157 [Not relevant to primary or secondary research questions]

Rodrigues, D. F.; Sakata, S. K.; Comasseto, J. V.; Bícego, M. C.; Pellizari, V. H. (2009) Diversity of hydrocarbon-degrading *Klebsiella* strains isolated from hydrocarbon-contaminated estuaries. *Journal of Applied Microbiology* 106(4)1304-1314 [Not relevant to primary or secondary research questions]

Rodrigues, Edmo M.; Kalks, Karlos H. M.; Totola, Marcos R. (2015) Prospect, isolation, and characterization of microorganisms for potential use in cases of oil bioremediation along the coast of Trindade Island, Brazil. *Journal of Environmental Management* 156: 15-22 [Not relevant to primary or secondary research questions]

Rodrigues, S. M.; Almeida, C. M. R.; Silva, D.; Cunha, J.; Antunes, C.; Freitas, V.; Ramos, S. (2019) Microplastic contamination in an urban estuary: Abundance and distribution of microplastics and fish larvae in the Douro estuary. *Science of the Total Environment* 659: 1071-1081 [Not relevant to primary or secondary research questions]

Rodriguez-R, L. M.; Overholt, W. A.; Hagan, C.; Huettel, M.; Kostka, J. E.; Konstantinidis, K. T. (2015) Microbial community successional patterns in beach sands impacted by the Deepwater Horizon oil spill. *ISME Journal* 9(9)1928-1940 [Not relevant to primary or secondary research questions]

Roling, Wilfred F. M.; van Bodegom, Peter M. (2014) Toward quantitative understanding on microbial community structure and functioning: a modeling-centered approach using degradation of marine oil spills as example. *Frontiers in Microbiology* 5: 125 [Not relevant to primary or secondary research questions]

Rooney, R. C.; Davy, C.; Gilbert, J.; Prosser, R.; Robichaud, C.; Sheedy, C. (2020) Periphyton bioconcentrates pesticides downstream of catchment dominated by agricultural land use. *Science of the Total Environment* 702 [Not relevant to primary or secondary research questions]

Rosen, Gunther; Miller, Kyle (2011) A Postexposure Feeding Assay Using the Marine Polychaete *Neanthes Arenaceodentata* Suitable for Laboratory and in Situ Exposures. *Environmental Toxicology and Chemistry* 30(3)730-737 [Not relevant to primary or secondary research questions]

Rostom, Neven G.; Shalaby, Adel A.; Issa, Yousry M.; Afifi, Ahmed A. (2017) Evaluation of Mariut Lake water quality using Hyperspectral Remote Sensing and laboratory works. *Egyptian Journal of Remote Sensing and Space Sciences* 20: S39-S48 [Not relevant to primary or secondary research questions]

Rowan, J. S.; Black, S.; Franks, S. W. (2012) Sediment fingerprinting as an environmental forensics tool explaining cyanobacteria blooms in lakes. *Applied Geography* 32(2)832-843 [Not relevant to primary or secondary research questions]

Rowney, Nicole C.; Johnson, Andrew C.; Williams, Richard J. (2009) Cytotoxic drugs in drinking water: a prediction and risk assessment exercise for the thames catchment in the United kingdom. *Environmental Toxicology and Chemistry* 28(12)2733-2743 [Not relevant to primary or secondary research questions]

Ruan, Y.; Zhang, X.; Qiu, J. W.; Leung, K. M. Y.; Lam, J. C. W.; Lam, P. K. S. (2018) Stereoisomer-Specific Trophodynamics of the Chiral Brominated Flame Retardants HBCD and TBECH in a Marine Food Web, with Implications for Human Exposure. *Environmental Science and Technology* 52(15)8183-8193 [Not relevant to primary or secondary research questions]

Ruckart, P. Z.; Bove, F. J.; Shanley, E.; Maslia, M. (2015) Evaluation of contaminated drinking water and male breast cancer at Marine Corps Base Camp Lejeune, North Carolina: A case control study. *Environmental Health: A Global Access Science Source* 14(1) [Not relevant to primary or secondary research questions]

Ruckart, Perri Zeitz; Bove, Frank J.; Maslia, Morris (2013) Evaluation of exposure to contaminated drinking water and specific birth defects and childhood cancers at Marine Corps Base Camp Lejeune, North Carolina: a case-control study. *Environmental Health: A Global Access Science Source* 12: 104 [Not relevant to primary or secondary research questions]

Ruddy, Brian M.; Huettel, Markus; Kostka, Joel E.; Lobodin, Vladislav V.; Bythell, Benjamin J.; McKenna, Amy M.; Aepli, Christoph; Reddy, Christopher M.; Nelson, Robert K.; Marshall, Alan G.; Rodgers, Ryan P. (2014) Targeted Petroleomics: Analytical Investigation of Macondo Well Oil Oxidation Products from Pensacola Beach. *Energy & Fuels* 28(6)4043-4050 [Not relevant to primary or secondary research questions]

Rueda Furlan, Joao Pedro; Rodrigues dos Santos, Lucas David; Silva Moretto, Jessica Aparecida; Ramos, Micaela Santana; Lage Gallo, Inara Fernanda; Dias Alves, Georgia de Assis; Pauelli, Ana Carolina; de Souza Rocha, Cecilia Cristina; Cesila, Cibele Aparecida; Gallimberti, Matheus; Devoz, Paula Picoli; Barbosa Junior, Fernando; Stehling, Eliana Guedes (2020) Occurrence and abundance of clinically relevant antimicrobial resistance genes in environmental samples after the

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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Brumadinho dam disaster, Brazil. *Science of the Total Environment* 726: 138100 [Not relevant to primary or secondary research questions]

Ruiz, Claudia C.; Agraharkar, Mahendra (2003) Unusual marine pathogens causing cellulitis and bacteremia in hemodialysis patients: report of two cases and review of the literature. *Hemodialysis International. International Symposium on Home Hemodialysis* 7(4):356-359 [Not relevant to primary or secondary research questions]

Ruiz, F.; Abad, M.; Bodergat, A. M.; Carbonel, P.; Rodriguez-Lazaro, J.; Yasuhara, M. (2005) Marine and brackish-water ostracods as sentinels of anthropogenic impacts. *Earth-Science Reviews* 72(43862):89-111 [Not relevant to primary or secondary research questions]

Ruiz, F.; Borrego, J.; González-Regalado, M. L.; López González, N.; Carro, B.; Abad, M. (2008) Impact of millennial mining activities on sediments and microfauna of the Tinto River estuary (SW Spain). *Marine Pollution Bulletin* 56(7):1258-1264 [Not relevant to primary or secondary research questions]

Ruiz-Díaz, M. S.; Mora-García, G. J.; Salguedo-Madrid, G. I.; Alario, Á; Gómez-Camargo, D. E. (2017) Analysis of health indicators in two rural communities on the Colombian Caribbean coast: Poor water supply and education level are associated with water-related diseases. *American Journal of Tropical Medicine and Hygiene* 97(5):1378-1392 [Not relevant to primary or secondary research questions]

Rumisha, C.; Leermakers, M.; Elskens, M.; Mdegela, R. H.; Gwakisa, P.; Kochzius, M. (2017) Genetic diversity of the giant tiger prawn *Penaeus monodon* in relation to trace metal pollution at the Tanzanian coast. *Marine Pollution Bulletin* 114(2):759-767 [Not relevant to primary or secondary research questions]

Rumolo, P.; Barra, M.; Gherardi, S.; Marsella, E.; Sprovieri, M. (2011) Stable isotopes and C/N ratios in marine sediments as a tool for discriminating anthropogenic impact. *Journal of Environmental Monitoring* 13(12):3399-3408 [Not relevant to primary or secondary research questions]

Rusconi, M.; Marziali, L.; Stefani, F.; Valsecchi, S.; Bettinetti, R.; Mazzoni, M.; Rosignoli, F.; Polesello, S. (2015) Evaluating the impact of a fluoropolymer plant on a river macrobenthic community by a combined chemical, ecological and genetic approach. *Science of the Total Environment* 538: 654-663 [Not relevant to primary or secondary research questions]

Russo, N.; Pino, A.; Toscano, A.; Cirelli, G. L.; Caggia, C.; Arioli, S.; Randazzo, C. L. (2019) Occurrence, diversity, and persistence of antibiotic resistant enterococci in full-scale constructed wetlands treating urban wastewater in Sicily. *Bioresource Technology* 274: 468-478 [Not relevant to primary or secondary research questions]

Rusu, Lacramioara; Suceveanu, Mirela; Suteu, Daniela; Favier, Lidia; Harja, Maria (2017) Assessment of Groundwater and Surface Water Contamination by Landfill Leachate: A Case Study in Neamt County, Romania. *Environmental Engineering and Management Journal* 16(3):633-641 [Not relevant to primary or secondary research questions]

Rutjes, Saskia A.; van den Berg, Harold H. J. L.; Lodder, Willernijn J.; Husman, Ana Maria de Roda (2006) Real-time detection of noroviruses in surface water by use of a broadly reactive nucleic acid sequence-based amplification assay. *Applied and Environmental Microbiology* 72(8):5349-5358 [Not relevant to primary or secondary research questions]

Sabater, S.; Buchaca, T.; Cambra, J.; Catalan, J.; Guasch, H.; Ivorra, N.; Muñoz, I.; Navarro, E.; Real, M.; Romaní, A. (2003) Structure and function of benthic algal communities in an extremely acid river. *Journal of Phycology* 39(3):481-489 [Not relevant to primary or secondary research questions]

Sabatino, G.; Di Bella, M.; Caridi, F.; Italiano, F.; Romano, D.; Magazu, S.; Gisci, A.; Faggio, G.; Messina, G.; Santangelo, S.; Leonetti, F.; Tripodo, A. (2019) Radiological assessment, mineralogy and geochemistry of the heavy-mineral placers from the Calabrian coast (South Italy). *Journal of Instrumentation* 14: P05015 [Not relevant to primary or secondary research questions]

Sadowsy, Ewa; Luczkiewicz, Aneta (2014) Drug-resistant and hospital-associated *Enterococcus faecium* from wastewater, riverine estuary and anthropogenically impacted marine catchment basin. *Bmc Microbiology* 14: 66 [Not relevant to primary or secondary research questions]

Sah, Ruchika; Baroth, Anju; Hussain, Syed Ainul (2020) First account of spatio-temporal analysis, historical trends, source apportionment and ecological risk assessment of banned organochlorine pesticides along the Ganga River. *Environmental Pollution* 263: 114229 [Not relevant to primary or secondary research questions]

Saha, M.; Sarkar, S. K.; Bhattacharya, B. (2006) Interspecific variation in heavy metal body concentrations in biota of Sunderban mangrove wetland, northeast India. *Environment International* 32(2):203-207 [Not relevant to primary or secondary research questions]

Saha, P.; Paul, B. (2019) Assessment of heavy metal toxicity related with human health risk in the surface water of an industrialized area by a novel technique. *Human and Ecological Risk Assessment* 25(4):966-987 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Sakai, N.; Shirasaka, J.; Matsui, Y.; Ramlil, M. R.; Yoshida, K.; Ali Mohd, M.; Yoneda, M. (2017) Occurrence, fate and environmental risk of linear alkylbenzene sulfonate in the Langat and Selangor River basins, Malaysia. *Chemosphere* 172: 234-241 [Not relevant to primary or secondary research questions]

Sakai, Nobumitsu; Alsaad, Zohour; Thuong, Nguyen Thi; Shiota, Kenji; Yoneda, Minoru; Ali Mohd, Mustafa (2017) Source profiling of arsenic and heavy metals in the Selangor River basin and their maternal and cord blood levels in Selangor State, Malaysia. *Chemosphere* 184: 857-865 [Not relevant to primary or secondary research questions]

Sakset, Amphorn; Gallardo, Wenresti G.; Ikejima, Kou (2012) Physicochemical conditions and biodiversity in the freshwater fishing area of Pak Phanang River Basin, Thailand. *International Journal of Sustainable Development and World Ecology* 19(2)172-188 [Not relevant to primary or secondary research questions]

Salam, M. A.; Kabir, M. M.; Yee, L. F.; Rak, Al Eh A.; Khan, M. S. (2019) Water Quality Assessment of Perak River, Malaysia. *Pollution* 5(3)637-648 [Not relevant to primary or secondary research questions]

Salazar, D.; Ginn, O.; Brown, J.; Soria, F.; Garvizu, C. (2020) Assessment of antibiotic resistant coliforms from bioaerosol samples collected above a sewage-polluted river in La Paz, Bolivia. *International Journal of Hygiene and Environmental Health* 228: 113494 [Not relevant to primary or secondary research questions]

Saleem, Muhammad; Iqbal, Javed; Shah, Munir H. (2014) Dissolved concentrations, sources, and risk evaluation of selected metals in surface water from Mangla Lake, Pakistan. *TheScientificWorldJournal* 2014: 948396 [Not relevant to primary or secondary research questions]

Salibián, A. (2006) Ecotoxicological assessment of the highly polluted reconquista river of Argentina. 185 [Not relevant to primary or secondary research questions]

Samanta, S. (2013) Metal and pesticide pollution scenario in Ganga River system. *Aquatic Ecosystem Health and Management* 16(4)454-464 [Not relevant to primary or secondary research questions]

Sampei, Natsuki; Matsumoto, Keigo; Miura, Chiaki; Sakurai, Seigo; Takeuchi, Tomokazu; Ohkouchi, Yumiko; Sugita, Kazutoshi; Inaba, Kazuho (2019) Historical analysis of domestic wastewater pollution and its measures in Lake Teganuma basin using surfactant concentrations recorded in sediment core samples. *Sn Applied Sciences* 1(4)376 [Not relevant to primary or secondary research questions]

Samuelsson, G. S.; Hedman, J. E.; Elmquist Kruså, M.; Gunnarsson, J. S.; Cornelissen, G. (2015) Capping in situ with activated carbon in Trondheim harbor (Norway) reduces bioaccumulation of PCBs and PAHs in marine sediment fauna. *Marine Environmental Research* 109: 103-112 [Not relevant to primary or secondary research questions]

San Martín, Y. B. (2011) Bioremediation: A tool for the management of oil pollution in marine ecosystems. *Biotecnología Aplicada* 28(2)60-76 [Not relevant to primary or secondary research questions]

Sanadhya, Sudhanshu; Chadha, Manish; Chaturvedi, Mayank Kumar; Chaudhary, Monika; Lerra, Sahul; Meena, Manoj Kumar; Bakutra, Gaurav; Acharya, Sharad; Pandey, Avni; Tak, Mridula; Asawa, Kailash; Kamate, Shivalingesh (2014) Prevalence of malocclusion and orthodontic treatment needs among 12-15-year-old schoolchildren of fishermen of Kutch coast, Gujarat, India. *International Maritime Health* 65(3)106-113 [Not relevant to primary or secondary research questions]

Sanchez, Charles A.; Barraj, Leila M.; Blount, Benjamin C.; Scrafford, Carolyn G.; Valentin-Blasini, Liza; Smith, Kimberly M.; Krieger, Robert I. (2009) Perchlorate exposure from food crops produced in the lower Colorado River region. *Journal of Exposure Science & Environmental Epidemiology* 19(4)359-368 [Not relevant to primary or secondary research questions]

Sánchez-Mateos, S.; Pérez, L. V.; Córdova Suárez, M. A.; Cabrera-Riofrio, D. A. (2020) Heavy metal contamination in the Cotopaxi and Tungurahua rivers: a health risk. *Environmental Earth Sciences* 79(6) [Not relevant to primary or secondary research questions]

Sandanger, T. M.; Brustad, M.; Sandau, C. D.; Lund, E. (2006) Levels of persistent organic pollutants (POPs) in a coastal northern Norwegian population with high fish-liver intake. *Journal of environmental monitoring: JEM* 8(5)552-557 [Not relevant to primary or secondary research questions]

Sandini-Neto, L.; Pereira, L.; Martins, C. C.; Silva de Assis, H. C.; Camus, L.; Lana, P. C. (2016) Antioxidant responses in estuarine invertebrates exposed to repeated oil spills: Effects of frequency and dosage in a field manipulative experiment. *Aquatic Toxicology* 177: 237-249 [Not relevant to primary or secondary research questions]

Santhiya, G.; Lakshumanan, C.; Selvin, Joseph; Asha, D. (2011) Microbiological analysis of seawater and sediments in urban shorelines: Occurrence of heavy metals resistance bacteria on Chennai

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



beaches, Bay of Bengal. *Microchemical Journal* 99(2)197-202 [Not relevant to primary or secondary research questions]

Santiago, A. N.; Bonansea, R. I.; Valdés, M. E. (2018) Organic Pollutants in the Suquía River Basin. 62 [Not relevant to primary or secondary research questions]

Santisi, S.; Catalfamo, M.; Bonsignore, M.; Gentile, G.; Di Salvo, E.; Genovese, M.; Mahjoubi, M.; Cherif, A.; Mancini, G.; Hassanshahian, M.; Pioggia, G.; Cappello, S. (2019) Biodegradation ability of two selected microbial autochthonous consortia from a chronically polluted marine coastal area (Priolo Gargallo, Italy). *Journal of Applied Microbiology* 127(3)618-629 [Not relevant to primary or secondary research questions]

Santofimia, E.; González-Toril, E.; López-Pamo, E.; Gomariz, M.; Amils, R.; Aguilera, Á (2013) Microbial Diversity and Its Relationship to Physicochemical Characteristics of the Water in Two Extreme Acidic Pit Lakes from the Iberian Pyrite Belt (SW Spain). *PLoS ONE* 8(6) [Not relevant to primary or secondary research questions]

Santoro, A.; Blo, G.; Mastrolitti, S.; Fagioli, F. (2009) Bioaccumulation of Heavy Metals by Aquatic Macroinvertebrates Along the Basento River in the South of Italy. *Water Air and Soil Pollution* 201(43922)19-31 [Not relevant to primary or secondary research questions]

Sarker, Md Jahangir; Polash, Amin Ullah; Islam, Md Ariful; Rima, Nazmun Naher; Farhana, Tania (2020) Heavy metals concentration in native edible fish at upper Meghna River and its associated tributaries in Bangladesh: a prospective human health concern. *Sn Applied Sciences* 2(10)1667 [Not relevant to primary or secondary research questions]

Sarma, H.; Nava, A. R.; Manriquez, A. M. E.; Dominguez, D. C.; Lee, W. Y. (2019) Biodegradation of bisphenol A by bacterial consortia isolated directly from river sediments. *Environmental Technology and Innovation* 14 [Not relevant to primary or secondary research questions]

Sarria-Villa, Rodrigo; Ocampo-Duque, William; Páez, Martha; Schuhmacher, Marta (2016) Presence of PAHs in water and sediments of the Colombian Cauca River during heavy rain episodes, and implications for risk assessment. *The Science of the Total Environment* 540: 455-465 [Not relevant to primary or secondary research questions]

Sasank, B. Viswanath; Rajalakshmi, N.; Dhatathreyan, K. S. (2016) Performance analysis of polymer electrolyte membrane (PEM) fuel cell stack operated under marine environmental conditions. *Journal of Marine Science and Technology* 21(3)471-478 [Not relevant to primary or secondary research questions]

Saso, Aiko; Kondo, Osamu (2019) Periodontal disease in the Neolithic Jomon: inter-site comparisons of inland and coastal areas in central Honshu, Japan. *Anthropological Science* 127(1)13-25 [Not relevant to primary or secondary research questions]

Satapathy, Shreemayee; Panda, C. R. (2018) Source identification, environmental risk assessment and human health risks associated with toxic elements present in a coastal industrial environment, India. *Environmental Geochemistry and Health* 40(6)2243-2257 [Not relevant to primary or secondary research questions]

Savadatti, S. S.; Liu, M.; Caglayan, C.; Reuther, J.; Lewis-Michl, E. L.; Aldous, K. M.; Parsons, P. J.; Kannan, K.; Rej, R.; Wang, W.; Palmer, C. D.; Steuerwald, A. J.; Wattigney, W. A.; Irvin-Barnwell, E.; Hwang, S. A. (2019) Biomonitoring of populations in Western New York at risk for exposure to Great Lakes contaminants. *Environmental Research* 179 [Not relevant to primary or secondary research questions]

Scherner, Fernando; Horta, Paulo Antunes; de Oliveira, Eurico Cabral; Simonassi, Jose Carlos; Hall-Spencer, Jason M.; Chow, Fungyi; Nunes, Jose Marcos C.; Barreto Pereira, Sonia Maria (2013) Coastal urbanization leads to remarkable seaweed species loss and community shifts along the SW Atlantic. *Marine Pollution Bulletin* 76(43862)106-115 [Not relevant to primary or secondary research questions]

Schneider, L.; Maher, W.; Potts, J.; Gruber, B.; Batley, G.; Taylor, A.; Chariton, A.; Krikowa, F.; Zawadzki, A.; Heijnis, H. (2014) Recent history of sediment metal contamination in Lake Macquarie, Australia, and an assessment of ash handling procedure effectiveness in mitigating metal contamination from coal-fired power stations. *Science of the Total Environment* 490: 659-670 [Not relevant to primary or secondary research questions]

Schneiker, Susanne; dos Santos, Vitor A. P. Martins; Bartels, Daniela; Bekel, Thomas; Brecht, Martina; Buhmester, Jens; Chernikova, Tatyana N.; Denaro, Renata; Ferrer, Manuel; Gertler, Christoph; Goesmann, Alexander; Golyshina, Olga V.; Kaminski, Filip; Khachane, Amit N.; Lang, Siegmund; Linke, Burkhard; McHardy, Alice C.; Meyer, Oliver; Folker; Nechitaylo, Taras; Puehler, Alfred; Regenhardt, Daniela; Rupp, Oliver; Sabirova, Julia S.; Selbitschka, Werner; Yakimov, Michail M.; Timmis, Kenneth N.; Vorhoelter, Frank-Jorg; Weidner, Stefan; Kaiser, Olaf; Golyshin, Peter N. (2006) Genome sequence of the ubiquitous hydrocarbon-degrading marine bacterium *Alcanivorax borkumensis*. *Nature Biotechnology* 24(8)997-1004 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Schoenfuss, H. L.; Wang, L. C.; Korn, V. R.; King, C. K.; Kohno, S.; Hummel, S. L. (2020) Understanding the ecological consequences of ubiquitous contaminants of emerging concern in the Laurentian Great Lakes watershed: A continuum of evidence from the laboratory to the environment. 101 [Not relevant to primary or secondary research questions]

Scholz-Starke, B.; Bo, L.; Holbach, A.; Norra, S.; Floehr, T.; Hollert, H.; Roß-Nickoll, M.; Schäffer, A.; Ottermanns, R. (2018) Simulation-based assessment of the impact of fertiliser and herbicide application on freshwater ecosystems at the Three Gorges Reservoir in China. *Science of the Total Environment* 639: 286-303 [Not relevant to primary or secondary research questions]

Schoonover, C. M.; Wieker, J.; Pope, R.; Brown, C.; Cooper, E.; DeWitt, J.; Gunselman, S.; Jensen, C.; Stevens, W.; Yri, J.; Nezat, C.; Joyner-Matos, J. (2016) Development of functional trait biomarkers for trace metal exposure in freshwater clams (*Musculium* spp.). *Comparative Biochemistry and Physiology - Part A : Molecular and Integrative Physiology* 200: 21-34 [Not relevant to primary or secondary research questions]

Schwab, B. W.; Hayes, E. P.; Fiori, J. M.; Mastrocco, F. J.; Roden, N. M.; Cragin, D.; Meyerhoff, R. D.; D'Aco, V. J.; Anderson, P. D. (2005) Human pharmaceuticals in US surface waters: A human health risk assessment. *Regulatory Toxicology and Pharmacology* 42(3):296-312 [Not relevant to primary or secondary research questions]

Schwarz, J. M. (2019) Frank Beach Award Winner - The future of mental health research: Examining the interactions of the immune, endocrine and nervous systems between mother and infant and how they affect mental health. *Hormones and Behavior* 114 [Not relevant to primary or secondary research questions]

Scott, W. C.; Du, B.; Haddad, S. P.; Breed, C. S.; Saari, G. N.; Kelly, M.; Broach, L.; Chambliss, C. K.; Brooks, B. W. (2016) Predicted and observed therapeutic dose exceedances of ionizable pharmaceuticals in fish plasma from urban coastal systems. *Environmental Toxicology and Chemistry* 35(4):983-995 [Not relevant to primary or secondary research questions]

Seddeek, M. K.; Badran, H. M.; Sharshar, T.; Elnimr, T. (2005) Characteristics, spatial distribution and vertical profile of gamma-ray emitting radionuclides in the coastal environment of North Sinai. *Journal of Environmental Radioactivity* 84(1):21-50 [Not relevant to primary or secondary research questions]

Segura, F. R.; Nunes, E. A.; Paniz, F. P.; Paulelli, A. C. C.; Rodrigues, G. B.; Braga, G. Ú L.; dos Reis Pedreira Filho, W.; Barbosa, F.; Cerchiaro, G.; Silva, F. F.; Batista, B. L. (2016) Potential risks of the residue from Samarco's mine dam burst (Bento Rodrigues, Brazil). *Environmental Pollution* 218: 813-825 [Not relevant to primary or secondary research questions]

Semenov, M. Yu; Semenov, Yu M.; Snytko, V. A.; Silaev, A. V. (2019) Landscape-Ecological Approach in Identifying Distribution Patterns of Pollutants Within the Lake Baikal Drainage Basin. *Geography and Natural Resources* 40(2):137-143 [Not relevant to primary or secondary research questions]

Semenov, Mikhail Y.; Marinaite, Irina I.; Golobokova, Lyudmila P.; Khuriganova, Olga I.; Khodzher, Tamara V.; Semenov, Yuri M. (2017) Source apportionment of polycyclic aromatic hydrocarbons in Lake Baikal water and adjacent air layer. *Chemistry and Ecology* 33(10):977-990 [Not relevant to primary or secondary research questions]

Sener, Sehnaz; Davraz, Aysen; Karaguzel, Remzi (2013) Evaluating the anthropogenic and geologic impacts on water quality of the Egirdir Lake, Turkey. *Environmental Earth Sciences* 70(6):2527-2544 [Not relevant to primary or secondary research questions]

Seopela, Mathapelo Pearl; McCrindle, Robert Ian; Combrinck, Sandra; Augustyn, Wilma (2020) Occurrence, distribution, spatio-temporal variability and source identification of n-alkanes and polycyclic aromatic hydrocarbons in water and sediment from Loskop dam, South Africa. *Water Research* 186: 116350 [Not relevant to primary or secondary research questions]

Setia, R.; Dhaliwal, S. S.; Kumar, V.; Singh, R.; Kukal, S. S.; Pateriya, B. (2020) Impact assessment of metal contamination in surface water of Sutlej River (India) on human health risks. *Environmental Pollution* 265 [Not relevant to primary or secondary research questions]

Shabbaj, Ibrahim I.; Alghamdi, Mansour A.; Khoder, Mamdouh I. (2018) Street Dust-Bound Polycyclic Aromatic Hydrocarbons in a Saudi Coastal City: Status, Profile, Sources, and Human Health Risk Assessment. *International Journal of Environmental Research and Public Health* 15(11) [Not relevant to primary or secondary research questions]

Shackeroff, Janna M.; Campbell, Lisa M.; Crowder, Larry B. (2011) Social-Ecological Guilds: Putting People into Marine Historical Ecology. *Ecology and Society* 16(1):52 [Not relevant to primary or secondary research questions]

Shafiq-Ur-Rehman, S.; Shaheen, S.; Dhara, S.; Misra, N. L.; Srivastava, A. (2015) Assessment of trace element distribution in red-bloom (E. Shafiqii) and water of dal lake, Kashmir valley, by total reflection X-ray fluorescence spectrometry. *Management of Water, Energy and Bio-resources in the Era of Climate Change: Emerging Issues and Challenges* 363-370 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Shah, M. M. (2018) Improved model for calculation of evaporation from water pools. *Science and Technology for the Built Environment* 24(10)1064-1074 [Not relevant to primary or secondary research questions]

Shakir, Abdullah; Chaudhry, Abdul Shakoor; Qazi, Javed Iqbal (2013) Impact of anthropogenic activities on physico-chemical parameters of water and mineral uptake in Catla catla from river Ravi, Pakistan. *Environmental Monitoring and Assessment* 185(3)2833-2842 [Not relevant to primary or secondary research questions]

Shala, Albona; Sallaku, Fatbardh; Shala, Agron; Ukaj, Shkelzim (2015) The Effects of Industrial and Agricultural Activity on the Water Quality of the Sitnica River (kosovo). *Geoadria* 20(1)13-21 [Not relevant to primary or secondary research questions]

Shamshad, I.; Khan, S.; Waqas, M.; Ahmad, N.; Ur-Rehman, K.; Khan, K. (2015) Removal and bioaccumulation of heavy metals from aqueous solutions using freshwater algae. *Water Science and Technology* 71(1)38-44 [Not relevant to primary or secondary research questions]

Sharifan, Hamidreza; Klein, David; Morse, Audra N. (2016) UV filters interaction in the chlorinated swimming pool, a new challenge for urbanization, a need for community scale investigations. *Environmental Research* 148: 273-276 [Not relevant to primary or secondary research questions]

Sharma, A.; Bhattacharya, A.; Bora, C. R.; Shukla, V.; Parihar, P. (2012) Diversity of enteropathogens in river narmada and their environmental and health implications. *Microorganisms in Environmental Management: Microbes and Environment* 9789400000000: 35-60 [Not relevant to primary or secondary research questions]

Sharma, Brij Mohan; Melymuk, Lisa; Bharat, Girija K.; Přibylová, Petra; Sáňka, Ondřej; Klánová, Jana; Nizzetto, Luca (2018) Spatial gradients of polycyclic aromatic hydrocarbons (PAHs) in air, atmospheric deposition, and surface water of the Ganges River basin. *The Science of the Total Environment* 627: 1495-1504 [Not relevant to primary or secondary research questions]

Sharma, S.; Nagpal, A. K.; Kaur, I. (2019) Appraisal of heavy metal contents in groundwater and associated health hazards posed to human population of Ropar wetland, Punjab, India and its environs. *Chemosphere* 227: 179-190 [Not relevant to primary or secondary research questions]

Shaw, Kristi S.; Goldstein, Rachel E. Rosenberg; He, Xin; Jacobs, John M.; Crump, Byron C.; Sapkota, Amy R. (2014) Antimicrobial Susceptibility of *Vibrio vulnificus* and *Vibrio parahaemolyticus* Recovered from Recreational and Commercial Areas of Chesapeake Bay and Maryland Coastal Bays. *Plos One* 9(2)e89616 [Not relevant to primary or secondary research questions]

She, S. K.; Wong, S. H.; Poon, Gigi W. C. (2013) Operating Experience of Inflatable Dam for Pollution Control in Deep Bay, Hong Kong, China. [Not relevant to primary or secondary research questions]

Shen, Qiang; Li, Dewang; Li, Dunhai; Liu, Yongding; Li, Jianyong; Li, Sixin (2020) Study on the safe disposal and resource utilization of cyanobacterial bloom biomass in Dianchi Lake, China. *Journal of Applied Phycology* 32(2)1201-1213 [Not relevant to primary or secondary research questions]

Shenoy, K. (2013) Epidemiological pattern and risk factors of corneal ulcers in malabar region of coastal Kerala. *Research Journal of Pharmaceutical, Biological and Chemical Sciences* 4(2)1479-1488 [Not relevant to primary or secondary research questions]

Shetty, Ganaraj; Hegde, Chethan (2019) The Epidemiological Survey to Identify the Signs of Temporomandibular Joint Disorders in Asymptomatic Young Individuals Attending a Tertiary Care Hospital in Coastal Karnataka. *Journal of Evolution of Medical and Dental Sciences-Jemds* 8(9)594-598 [Not relevant to primary or secondary research questions]

Shi, C. H.; Wang, Y. Y.; Chai, L. Y.; Liu, J. Y. (2020) Assessment of heavy metal and human health risk in surface soils around Dongting Lake wetland, China. *Zhongguo Youse Jinshu Xuebao/Chinese Journal of Nonferrous Metals* 30(1)150-161 [Not relevant to primary or secondary research questions]

Shi, Wei; Deng, Dongyang; Wang, Yuting; Hu, Guanjiu; Guo, Jing; Zhang, Xiaowei; Wang, Xinru; Giesy, John P.; Yu, Hongxia; Wang, Ziheng (2016) Causes of endocrine disrupting potencies in surface water in East China. *Chemosphere* 144: 1435-1442 [Not relevant to primary or secondary research questions]

Shi, X.; Ng, K. K.; Li, X. R.; Ng, H. Y. (2015) Investigation of intertidal wetland sediment as a novel inoculation source for anaerobic saline wastewater treatment. *Environmental Science and Technology* 49(10)6231-6239 [Not relevant to primary or secondary research questions]

Shin, P. K. S.; Lam, N. W. Y.; Wu, R. S. S.; Qian, P. Y.; Cheung, S. G. (2008) Spatio-temporal changes of marine macrobenthic community in sub-tropical waters upon recovery from eutrophication. I. Sediment quality and community structure. *Marine Pollution Bulletin* 56(2)282-296 [Not relevant to primary or secondary research questions]



Shinde, A. H.; Raval, I. H.; Haldar, S. (2020) SXT int harboring bacteria as effective indicators to determine high-risk reservoirs of multiple antibiotic resistance in different aquatic environments of western coast of Gujarat, India. *Ecological Indicators* 113 [Not relevant to primary or secondary research questions]

Shinde, V. L.; Meena, R. M.; Shenoy, B. D. (2018) Phylogenetic characterization of culturable bacteria and fungi associated with tarballs from Betul beach, Goa, India. *Marine Pollution Bulletin* 128: 593-600 [Not relevant to primary or secondary research questions]

Shora, L. M.; Valleb, S. N.; Munozb, G.; Panerob, M. A.; Rodenburgc, L. A. (2009) Challenges to water quality sustainability from chronic PAH pollution in an urban estuary. [Not relevant to primary or secondary research questions]

Shreedhar, Sowmya; Devasya, Rekha Punchapady; Naregundi, Karunakara; Young, Chiu-Chung; Bhagwath, Arun Ananthapadmanabha (2014) Phosphate solubilizing uranium tolerant bacteria associated with monazite sand of a natural background radiation site in South-West coast of India. *Annals of Microbiology* 64(4)1683-1689 [Not relevant to primary or secondary research questions]

Sibley, P. K.; Harris, M. L.; Bestari, K. T.; Steele, T. A.; Robinson, R. D.; Gensemer, R. W.; Day, K. E.; Solomon, K. R. (2004) Response of zooplankton and phytoplankton communities to creosote-impregnated Douglas fir pilings in freshwater microcosms. *Archives of Environmental Contamination and Toxicology* 47(1)56-66 [Not relevant to primary or secondary research questions]

Sikder, M. Tajuddin; Kihara, Yusuke; Yasuda, Masaomi; Yustiwati; Mihara, Yoshihiro; Tanaka, Shunitz; Odgerel, Dalkhjav; Mijiddorj, Badamtsetseg; Syawal, Suhaimi M.; Hosokawa, Toshiyuki; Saito, Takeshi; Kurasaki, Masaaki (2013) River Water Pollution in Developed and Developing Countries: Judge and Assessment of Physicochemical Characteristics and Selected Dissolved Metal Concentration. *Clean-Soil Air Water* 41(1)60-68 [Not relevant to primary or secondary research questions]

Silva, C.; Yáñez, E.; Martín-Díaz, M. L.; Riba, I.; Delvalls, T. A. (2013) Integrated ecotoxicological assessment of marine sediments affected by land-based marine fish farm effluents: Physicochemical, acute toxicity and benthic community analyses. *Ecotoxicology* 22(6)996-1011 [Not relevant to primary or secondary research questions]

Silva, D. T.; Lehmann, D.; Tennant, M. T.; Jacoby, P.; Wright, H.; Stanley, F. J. (2008) Effect of swimming pools on antibiotic use and clinic attendance for infections in two Aboriginal communities in Western Australia. *Medical Journal of Australia* 188(10)594-598 [Not relevant to primary or secondary research questions]

Silva, I. R.; Ferreira, D. F. (2010) Evaluation of environmental sensitivity to oil spills on beaches located on the Tinharae/Boipeba Archipelago, South Coast of Bahia State, Brazil. *Brazilian Petroleum, Gas and Biofuels Institute [IBP] Rio Oil and Gas Conference* (Rio de Janeiro, Brazil, 9/13-16/2010) Techn [Not relevant to primary or secondary research questions]

Silva, Jose D. B.; Barletta, Mario; Lima, Andre R. A.; Ferreira, Guilherme V. B. (2018) Use of resources and microplastic contamination throughout the life cycle of grunts (Haemulidae) in a tropical estuary. *Environmental Pollution* 242: 1010-1021 [Not relevant to primary or secondary research questions]

Silva, P.; Rocha, M. J.; Cruzeiro, C.; Malhão, F.; Reis, B.; Urbatzka, R.; Monteiro, R. A. F.; Rocha, E. (2012) Testing the effects of ethinylestradiol and of an environmentally relevant mixture of xenoestrogens as found in the Douro River (Portugal) on the maturation of fish gonads-A stereological study using the zebrafish (*Danio rerio*) as model. *Aquatic Toxicology* 124-125: 44105 [Not relevant to primary or secondary research questions]

Silva-Cavalcanti, Jacqueline Santos; Silva, José Diego B.; França, Elton José de; Araújo, Maria Christina Barbosa de; Gusmão, Felipe (2017) Microplastics ingestion by a common tropical freshwater fishing resource. *Environmental Pollution* (Barking, Essex: 1987) 221: 218-226 [Not relevant to primary or secondary research questions]

Simmons, R. G.; Sanders, J. N.; Geist, C.; Gawron, L.; Myers, K.; Turok, D. K. (2019) Predictors of contraceptive switching and discontinuation within the first 6 months of use among Highly Effective Reversible Contraceptive Initiative Salt Lake study participants. *American Journal of Obstetrics and Gynecology* 220(4)376.e1-376.e12 [Not relevant to primary or secondary research questions]

Simonin, Marie; Colman, Benjamin P.; Anderson, Steven M.; King, Ryan S.; Ruis, Matthew T.; Avellan, Astrid; Bergemann, Christina M.; Perrotta, Brittany G.; Geitner, Nicholas K.; Ho, Mengchi; de la Barrera, Belen; Unrine, Jason M.; Lowry, Gregory V.; Richardson, Curtis J.; Wiesner, Mark R.; Bernhardt, Emily S. (2018) Engineered nanoparticles interact with nutrients to intensify eutrophication in a wetland ecosystem experiment. *Ecological Applications: A Publication of the Ecological Society of America* 28(6)1435-1449 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards



Singh, J.; Upadhyay, S. K.; Pathak, R. K.; Gupta, V. (2011) Accumulation of heavy metals in soil and paddy crop (*Oryza sativa*), irrigated with water of Ramgarh Lake, Gorakhpur, UP, India. *Toxicological and Environmental Chemistry* 93(3)462-473 [Not relevant to primary or secondary research questions]

Singh, K. P.; Mohan, D.; Singh, V. K.; Malik, A. (2005) Studies on distribution and fractionation of heavy metals in Gomti river sediments - a tributary of the Ganges, India. *Journal of Hydrology* 312(43922)14-27 [Not relevant to primary or secondary research questions]

Siqueira, Gilmar W.; Aprile, Fabio (2013) Evaluation of environmental risk by metallic contamination and organic compounds in sediments of the Aura River basin, Belem, Para - Brazil. *Acta Amazonica* 43(1)51-61 [Not relevant to primary or secondary research questions]

Sirpu Natesh, Nagabhishek; Arumugam, Madankumar; Karanam, Gayathri (2018) Apoptotic role of marine sponge symbiont *Bacillus subtilis* NMK17 through the activation of caspase-3 in human breast cancer cell line. *Molecular Biology Reports* 45(6)2641-2651 [Not relevant to primary or secondary research questions]

Skorbiłowicz, M.; Skorbiłowicz, E.; Wójtowicz, P.; Ofman, P.; Zamojska, E. (2016) The impact of sewage treatment plant on the amount of heavy metals in water of the Supraśl river catchment area. *Journal of Ecological Engineering* 17(1)136-142 [Not relevant to primary or secondary research questions]

Sladky, J. L.; Klima, J.; Grooms, L.; Kerlin, B. A.; O'Brien, S. H. (2012) The PFA-100® does not predict delta-granule platelet storage pool deficiencies. *Haemophilia* 18(4)626-629 [Not relevant to primary or secondary research questions]

Slootmaekers, B.; Catarci Carteny, C.; Belpaire, C.; Saverwyns, S.; Fremout, W.; Blust, R.; Bervoets, L. (2019) Microplastic contamination in gudgeons (*Gobio gobio*) from Flemish rivers (Belgium). *Environmental Pollution* 244: 675-684 [Not relevant to primary or secondary research questions]

Slye, Jaime L.; Kennedy, James H.; Johnson, David R.; Atkinson, Sam F.; Dyer, Scott D.; Ciarlo, Michael; Stanton, Kathleen; Sanderson, Hans; Nielsen, Allen M.; Price, Bradford B. (2011) Relationships between benthic macroinvertebrate community structure and geospatial habitat, in-stream water chemistry, and surfactants in the effluent-dominated Trinity River, Texas, USA. *Environmental Toxicology and Chemistry* 30(5)1127-1138 [Not relevant to primary or secondary research questions]

Smith, Geoffrey D.; Blazer, Vicki S.; Walsh, Heather L.; Iwanowicz, Luke R.; Starliper, Clifford; Sperry, Adam J. (2015) The Effects of Disease-Related Mortality of Young-of-Year Smallmouth Bass on Population Characteristics in the Susquehanna River Basin, Pennsylvania and Potential Implications to Conservation of Black Bass Diversity. *Black Bass Diversity: Multidisciplinary Science for Conservation* 82: 319-332 [Not relevant to primary or secondary research questions]

Snousy, M. G.; Zawrah, M. F.; Rashad, A. M.; Ebied, M. A.; El-Sayed, E.; Tantawy, M. A. (2015) HPLC evaluation of PAHS polluted soil in coastal petroleum refinery site Northwestern Suez Gulf, Egypt. *Research Journal of Environmental Toxicology* 9(5)251-260 [Not relevant to primary or secondary research questions]

Sola, C.; Burgos, M.; Plazuelo, A.; Toja, J.; Plans, M.; Prat, N. (2004) Heavy metal bioaccumulation and macroinvertebrate community changes in a Mediterranean stream affected by acid mine drainage and an accidental spill (Guadianar River, SW Spain). *Science of the Total Environment* 333(43891)109-126 [Not relevant to primary or secondary research questions]

Solé, M.; Baena, M.; Arnau, S.; Carrasson, M.; Maynou, F.; Cartes, J. E. (2010) Muscular cholinesterase activities and lipid peroxidation levels as biomarkers in several Mediterranean marine fish species and their relationship with ecological variables. *Environment International* 36(2)202-211 [Not relevant to primary or secondary research questions]

Song, Chen; Liu, Xiaoling; Song, Yonghui; Liu, Ruixia; Gao, Hongjie; Han, Lu; Peng, Jianfeng (2017) Key blackening and stinking pollutants in Dongsha River of Beijing: Spatial distribution and source identification. *Journal of Environmental Management* 200: 335-346 [Not relevant to primary or secondary research questions]

Song, H. L.; Li, H.; Zhang, S.; Yang, Y. L.; Zhang, L. M.; Xu, H.; Yang, X. L. (2018) Fate of sulfadiazine and its corresponding resistance genes in up-flow microbial fuel cell coupled constructed wetlands: Effects of circuit operation mode and hydraulic retention time. *Chemical Engineering Journal* 350: 920-929 [Not relevant to primary or secondary research questions]

Sonnenschein, E. C.; Gärdes, A.; Seebah, S.; Torres-Monroy, I.; Grossart, H. P.; Ullrich, M. S. (2011) Development of a genetic system for *Marinobacter adhaerens* HP15 involved in marine aggregate formation by interacting with diatom cells. *Journal of Microbiological Methods* 87(2)176-183 [Not relevant to primary or secondary research questions]

Sørmo, E. G.; Lie, E.; Ruus, A.; Gaustad, H.; Skaare, J. U.; Jenssen, B. M. (2011) Trophic level determines levels of brominated flame-retardants in coastal herring gulls. *Ecotoxicology and Environmental Safety* 74(7)2091-2098 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Sousa, João C. G.; Barbosa, Marta O.; Ribeiro, Ana R. L.; Ratola, Nuno; Pereira, Manuel F. R.; Silva, Adrián M. T. (2020) Distribution of micropollutants in estuarine and sea water along the Portuguese coast. *Marine Pollution Bulletin* 154: 111120 [Not relevant to primary or secondary research questions]

Spearow, Jimmy L.; Kota, Rama S.; Ostrach, David J. (2011) Environmental Contaminant Effects on Juvenile Striped Bass in the San Francisco Estuary, California, USA. *Environmental Toxicology and Chemistry* 30(2)393-402 [Not relevant to primary or secondary research questions]

Spivey, A. (2003) How safe are swimming pools? *Environmental Health Perspectives* 111(13) [Not relevant to primary or secondary research questions]

Sprovieri, M.; Barra, M.; Del Core, M.; Di Martino, G.; Giaramita, L.; Gherardi, S.; Innangi, S.; Oliveri, E.; Passaro, S.; Romeo, T.; Rumolo, P.; Manta, D. S.; Tamburrino, S.; Tonielli, R.; Traina, A.; Tranchida, G.; Vallefuoco, M.; Mazzola, S.; Andaloro, F. (2013) Marine pollution from shipwrecks at the sea bottom: A case study from the Mediterranean basin. *Mediterranean Sea: Ecosystems, Economic Importance and Environmental Threats* 35-64 [Not relevant to primary or secondary research questions]

Srikanth, K.; Rao, J. V. (2014) Spatial and seasonal variation of potential toxic elements in Adocia pigmentifera, seawater and sediment from Rameswaram, southeast coast of India. *Environmental Earth Sciences* 72(8)2905-2916 [Not relevant to primary or secondary research questions]

Srinivas, R.; Singh, A. P.; Sharma, R. (2017) A Scenario Based Impact Assessment of Trace Metals on Ecosystem of River Ganges Using Multivariate Analysis Coupled with Fuzzy Decision-Making Approach. *Water Resources Management* 31(13)4165-4185 [Not relevant to primary or secondary research questions]

Srivastava, Pooja; Sreekrishnan, T. R.; Nema, A. K. (2017) Human health risk assessment and PAHs in a stretch of river Ganges near Kanpur. *Environmental Monitoring and Assessment* 189(9)445 [Not relevant to primary or secondary research questions]

Stabili, Loredana; Rizzo, Lucia; Basso, Lorena; Marzano, Marinella; Fosso, Bruno; Pesole, Graziano; Piraino, Stefano (2020) The Microbial Community Associated with *Rhizostoma pulmo*: Ecological Significance and Potential Consequences for Marine Organisms and Human Health. *Marine Drugs* 18(9) [Not relevant to primary or secondary research questions]

Stalder, T.; Barraud, O.; Jové, T.; Casellas, M.; Gaschet, M.; Dagot, C.; Ploy, M. C. (2014) Quantitative and qualitative impact of hospital effluent on dissemination of the integron pool. *ISME Journal* 8(4)768-777 [Not relevant to primary or secondary research questions]

Staley, C.; Johnson, D.; Gould, T. J.; Wang, P.; Phillips, J.; Cotner, J. B.; Sadowsky, M. J. (2015) Frequencies of heavy metal resistance are associated with land cover type in the Upper Mississippi River. *Science of the Total Environment* 511: 461-468 [Not relevant to primary or secondary research questions]

Standley, Laurel J.; Rudel, Ruthann A.; Swartz, Christopher H.; Attfield, Kathleen R.; Christian, Jeff; Erickson, Mike; Brody, Julia G. (2008) Wastewater-contaminated groundwater as a source of endogenous hormones and pharmaceuticals to surface water ecosystems. *Environmental Toxicology and Chemistry* 27(12)2457-2468 [Not relevant to primary or secondary research questions]

Stange, Daniela; Sieratowicz, Agnes; Horres, Ralf; Oehlmann, Jörg (2012) Freshwater mudsnail (*Potamopyrgus antipodarum*) estrogen receptor: identification and expression analysis under exposure to (xeno-)hormones. *Ecotoxicology and Environmental Safety* 75(1)94-101 [Not relevant to primary or secondary research questions]

Stark, J. S.; Riddle, M. J.; Snape, I.; Scouller, R. C. (2003) Human impacts in Antarctic marine soft-sediment assemblages: correlations between multivariate biological patterns and environmental variables at Casey Station. *Estuarine Coastal and Shelf Science* 56(43924)717-734 [Not relevant to primary or secondary research questions]

Stassen, Marinke J. M.; Preeker, N. Louise; Ragas, Ad M. J.; van de Ven, Max W. P. M.; Smolders, Alfons J. P.; Roeleveld, Nel (2012) Metal exposure and reproductive disorders in indigenous communities living along the Pilcomayo River, Bolivia. *Science of the Total Environment* 427: 26-34 [Not relevant to primary or secondary research questions]

Staton, Shawn K.; Dextrase, A.; Metcalfe-Smith, J. L.; Di Maio, J.; Nelson, M.; Parish, J.; Kilgour, B.; Holm, E. (2003) Status and trends of Ontario's Sydenham River ecosystem in relation to aquatic species at risk. *Environmental Monitoring and Assessment* 88(43891)283-310 [Not relevant to primary or secondary research questions]

Stauffert, M.; Cravo-Laureau, C.; Duran, R. (2015) Dynamic of sulphate-reducing microorganisms in petroleum-contaminated marine sediments inhabited by the polychaete *Hediste diversicolor*. *Environmental Science and Pollution Research* 22(20)15273-15284 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Stauffert, M.; Cravo-Laureau, C.; Duran, R. (2016) Structure of hydrocarbonoclastic nitrate-reducing bacterial communities in bioturbated coastal marine sediments. *FEMS Microbiology Ecology* 89(3)580-593 [Not relevant to primary or secondary research questions]

Stehle, S.; Dabrowski, J. M.; Bangert, U.; Schulz, R. (2016) Erosion rills offset the efficacy of vegetated buffer strips to mitigate pesticide exposure in surface waters. *Science of the Total Environment* 545-546: 171-183 [Not relevant to primary or secondary research questions]

Stephansen, D. A.; Nielsen, A. H.; Hvítved-Jacobsen, T.; Arias, C. A.; Brix, H.; Vollertsen, J. (2014) Distribution of metals in fauna, flora and sediments of wet detention ponds and natural shallow lakes. *Ecological Engineering* 66: 43-51 [Not relevant to primary or secondary research questions]

Stickney, J. W.; Nikitin, A. G.; Nikitin, G. A.; Morgan, R. M. (2010) An efficient enrichment technique for isolation and quantification of indigenous diesel fuel-utilizing bacteria present in freshwater sediments. *Journal of Biotech Research* 2(1)44136 [Not relevant to primary or secondary research questions]

Stoyanova, Teodora; Traykov, Ivan; Yaneva, Ivanka; Bogoev, Valentin (2012) Accumulation of Heavy Metals in the Macrozoobenthos of the Luda River, Bulgaria. *Biotechnology & Biotechnological Equipment* 26(3)2981-2986 [Not relevant to primary or secondary research questions]

Strivens, Jonathan; Hayman, Nicholas; Rosen, Gunther; Myers-Pigg, Allison (2020) Toward Validation of Toxicological Interpretation of Diffusive Gradients in Thin Films in Marine Waters Impacted by Copper. *Environmental Toxicology and Chemistry* 39(4)873-881 [Not relevant to primary or secondary research questions]

Su, Sicong; Li, Chenyu; Yang, Jiping; Xu, Qunying; Qiu, Zhigang; Xue, Bin; Wang, Shang; Zhao, Chen; Xiao, Zhonghai; Wang, Jingfeng; Shen, Zhiqiang (2020) Distribution of Antibiotic Resistance Genes in Three Different Natural Water Bodies-A Lake, River and Sea. *International Journal of Environmental Research and Public Health* 17(2) [Not relevant to primary or secondary research questions]

Suarez-Suarez, Ana; Lopez-Lopez, Arantxa; Tovar-Sanchez, Antonio; Yarza, Pablo; Orfila, Alejandro; Terrados, Jorge; Arnds, Julia; Marques, Silvia; Niemann, Helge; Schmitt-Kopplin, Philippe; Amann, Rudolf; Rossello-Mora, Ramon (2011) Response of sulfate-reducing bacteria to an artificial oil-spill in a coastal marine sediment. *Environmental Microbiology* 13(6)1488-1499 [Not relevant to primary or secondary research questions]

Subirats, Jessica; Triado-Margarit, Xavier; Mandaric, Ladislav; Acuna, Vicenc; Balcazar, Jose Luis; Sabater, Sergi; Borrego, Carles M. (2017) Wastewater pollution differently affects the antibiotic resistance gene pool and biofilm bacterial communities across streambed compartments. *Molecular Ecology* 26(20)5567-5581 [Not relevant to primary or secondary research questions]

Sucahyo, David; van Straalen, Nico M.; Krave, Agna; van Gestel, Cornelis A. M. (2008) Acute toxicity of pesticides to the tropical freshwater shrimp *Caridina laevis*. *Ecotoxicology and Environmental Safety* 69(3)421-427 [Not relevant to primary or secondary research questions]

Suja, L. D.; Chen, X.; Summers, S.; Paterson, D. M.; Gutierrez, T. (2019) Chemical dispersant enhances microbial exopolymer (EPS) production and formation of marine oil/dispersant snow in surface waters of the subarctic northeast Atlantic. *Frontiers in Microbiology* 10(MAR) [Not relevant to primary or secondary research questions]

Sukumaran, S.; Mulik, J.; Rokade, M. A.; Kamble, A. (2014) Impact of 'Chitra' Oil Spill on Tidal Pool Macrobenthic Communities of a Tropical Rocky Shore (Mumbai, India). *Estuaries and Coasts* 37(6)1415-1431 [Not relevant to primary or secondary research questions]

Sun, J. T.; Pan, L. L.; Zhan, Yu; Tsang, Daniel C. W.; Zhu, L. Z.; Li, X. D. (2017) Atrazine contamination in agricultural soils from the Yangtze River Delta of China and associated health risks. *Environmental Geochemistry and Health* 39(2)369-378 [Not relevant to primary or secondary research questions]

Sun, J.; Letcher, R. J.; Eens, M.; Covaci, A.; Fernie, K. J. (2020) Perfluoroalkyl acids and sulfonamides and dietary, biological and ecological associations in peregrine falcons from the Laurentian Great Lakes Basin, Canada. *Environmental Research* 191 [Not relevant to primary or secondary research questions]

Sun, Q.; Zhu, L.; Dong, M. (2006) Risk assessment of organic pesticides pollution in surface water of Hangzhou. *Environmental Monitoring and Assessment* 117(43891)377-385 [Not relevant to primary or secondary research questions]

Sun, Y.; Luo, H. (2018) Homologous recombination in core genomes facilitates marine bacterial adaptation. *Applied and Environmental Microbiology* 84(11) [Not relevant to primary or secondary research questions]

Sundar, K.; Mukherjee, A.; Sadiq, M.; Chandrasekaran, N. (2011) Cr (III) bioremoval capacities of indigenous and adapted bacterial strains from Palar river basin. *Journal of Hazardous Materials* 187(43891)553-561 [Not relevant to primary or secondary research questions]

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Sundin, J.; Jutfelt, F.; Thorlacius, M.; Fick, J.; Brodin, T. (2019) Behavioural alterations induced by the anxiolytic pollutant oxazepam are reversible after depuration in a freshwater fish. *Science of the Total Environment* 665: 390-399 [Not relevant to primary or secondary research questions]

Suneel, V.; Vethamony, P.; Naik, B. G.; Krishna, M. S.; Jadhav, L. (2015) Identifying the source of tar balls deposited along the beaches of Goa in 2013 and comparing with historical data collected along the West Coast of India. *Science of the Total Environment* 527-528: 313-321 [Not relevant to primary or secondary research questions]

Suriya, Jayaraman; Chandra Shekar, Mootapally; Nathani, Neelam Mustakali; Suganya, Thangaiyan; Bharathiraja, Subramanian; Krishnan, Muthukalingan (2017) Assessment of bacterial community composition in response to uranium levels in sediment samples of sacred Cauvery River. *Applied Microbiology and Biotechnology* 101(2)831-841 [Not relevant to primary or secondary research questions]

Suthar, Surindra; Sharma, Jitender; Chabukdhara, Mayuri; Nema, Arvind K. (2010) Water quality assessment of river Hindon at Ghaziabad, India: impact of industrial and urban wastewater. *Environmental Monitoring and Assessment* 165(43922)103-112 [Not relevant to primary or secondary research questions]

Sutton, Kathryn T.; Cohen, Risa A. (2012) APG-containing product reduces dissolved oxygen in freshwater pond mesocosms: implications for benthic macroinvertebrate abundance. *Fundamental and Applied Limnology* 180(4)291-298 [Not relevant to primary or secondary research questions]

Tahboub, Yahya R.; Zaater, Mohammad F.; Khater, Dima F. (2017) Semi-volatile organic pollutants in Jordanian surface water. *Arabian Journal of Chemistry* 10: S3318-S3323 [Not relevant to primary or secondary research questions]

Tairova, Zhanna M.; Giessing, Anders M. B.; Hansen, Rikke; Andersen, Ole (2009) 1-Hydroxypyrene as a biomarker of PAH exposure in the marine polychaete *Nereis diversicolor*. *Marine Environmental Research* 67(1)38-46 [Not relevant to primary or secondary research questions]

Takeda, T.; Fujii, M.; Izumoto, W.; Hattori, Y.; Matsushita, T.; Yamada, H.; Ishii, Y. (2020) Gestational dioxin exposure suppresses prolactin-stimulated nursing in lactating dam rats to impair development of postnatal offspring. *Biochemical Pharmacology* 178 [Not relevant to primary or secondary research questions]

Talebi, M.; Pourshafie, M. R.; Katouli, M.; Möllby, R. (2008) Molecular structure and transferability of Tn1546-like elements in *Enterococcus faecium* isolates from clinical, sewage, and surface water samples in Iran. *Applied and Environmental Microbiology* 74(5)1350-1356 [Not relevant to primary or secondary research questions]

Tan, Kok Weng; Sze, Ke Zheng; Khaw, Eu Han (2018) Determination of Heavy Metals Concentration and Risk Assessment for Tropical Fishes in Kampar Mining Lake, Malaysia. *Fresenius Environmental Bulletin* 27(8)5340-5347 [Not relevant to primary or secondary research questions]

Tanaka, Daisuke; Tanaka, Shunsuke; Yamashiro, Yoko; Nakamura, Shogo (2008) Distribution of oil-degrading bacteria in coastal seawater, Toyama Bay, Japan. *Environmental Toxicology* 23(5)563-569 [Not relevant to primary or secondary research questions]

Tang, J.; Bu, Y.; Zhang, X. X.; Huang, K.; He, X.; Ye, L.; Shan, Z.; Ren, H. (2016) Metagenomic analysis of bacterial community composition and antibiotic resistance genes in a wastewater treatment plant and its receiving surface water. *Ecotoxicology and Environmental Safety* 132: 260-269 [Not relevant to primary or secondary research questions]

Tang, Lin; Deng, Sihan; Tan, Di; Long, Jiumei; Lei, Ming (2019) Heavy metal distribution, translocation, and human health risk assessment in the soil-rice system around Dongting Lake area, China. *Environmental Science and Pollution Research* 26(17)17655-17665 [Not relevant to primary or secondary research questions]

Tang, Ting; Stamm, Christian; van Griensven, Ann; Seuntjens, Piet; Broders, Jan (2017) Hysteresis and parent-metabolite analyses unravel characteristic pesticide transport mechanisms in a mixed land use catchment. *Water Research* 124: 663-672 [Not relevant to primary or secondary research questions]

Tanjung, Rosye Hefmi Rechnely; Hamuna, Baigo; Alianto (2019) Assessment of Water Quality and Pollution Index in Coastal Waters of Mimika, Indonesia. *Journal of Ecological Engineering* 20(2)87-94 [Not relevant to primary or secondary research questions]

Tao, Y.; Zhao, R. (2020) Occurrence and distribution of persistent organic pollutants in water of Chinese lakes and reservoirs. *Hupo Kexue/Journal of Lake Sciences* 32(2)309-324 [Not relevant to primary or secondary research questions]

Taylor, A. M.; Edge, K. J.; Ubrihien, R. P.; Maher, W. A. (2017) The freshwater bivalve *Corbicula australis* as a sentinel species for metal toxicity assessment: An in situ case study integrating chemical and biomarker analyses. *Environmental Toxicology and Chemistry* 36(3)709-719 [Not relevant to primary or secondary research questions]

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Tejeda-Benitez, L.; Flegal, R.; Odigie, K.; Olivero-Verbel, J. (2016) Pollution by metals and toxicity assessment using *Caenorhabditis elegans* in sediments from the Magdalena River, Colombia. *Environmental Pollution* 212: 238-250 [Not relevant to primary or secondary research questions]

Teklehaymanot, T.; Giday, M. (2010) Quantitative ethnobotany of medicinal plants used by Kara and Kwego semi-pastoralist people in lower Omo River Valley, Debub Omo Zone, Southern Nations, Nationalities and Peoples Regional State, Ethiopia. *Journal of Ethnopharmacology* 130(1):76-84 [Not relevant to primary or secondary research questions]

Terry, N.; Day-Lewis, F. D.; Lane, J. W.; Trost, J. J.; Bekins, B. A. (2019) Geophysical mapping of plume discharge to surface water at a crude oil spill site: Inversion versus machine learning. *Geophysics* 84(5):EN67-EN80 [Not relevant to primary or secondary research questions]

Tesi, Godswill O.; Iwegbue, Chukwujindu M. A.; Emuh, Fidelis N.; Nwajei, Godwin E. (2016) Lagdo Dam Flood Disaster of 2012: An Assessment of the Concentrations, Sources, and Risks of PAHs in Floodplain Soils of the Lower Reaches of River Niger, Nigeria. *Journal of Environmental Quality* 45(1):305-314 [Not relevant to primary or secondary research questions]

Tetreault, G. R.; Brown, C. J.; Bennett, C. J.; Oakes, K. D.; McMaster, M. E.; Servos, M. R. (2013) Fish community responses to multiple municipal wastewater inputs in a watershed. *Integrated environmental assessment and management* 9(3):456-468 [Not relevant to primary or secondary research questions]

Thellmann, Paul; Kuch, Bertram; Wurm, Karl; Koehler, Heinz- R.; Triebeskorn, Rita (2017) Water quality assessment in the "German River of the years 2014/2015": how a case study on the impact of a storm water sedimentation basin displayed impairment of fish health in the Argen River (Southern Germany). *Environmental Sciences Europe* 29: 10 [Not relevant to primary or secondary research questions]

Theodorakis, C. W.; Lee, K. L.; Adams, S. M.; Law, C. B. (2006) Evidence of altered gene flow, mutation rate, and genetic diversity in redbreast sunfish from a pulp-mill-contaminated river. *Environmental Science and Technology* 40(1):377-386 [Not relevant to primary or secondary research questions]

Thessen, A. E.; McGinnis, S.; North, E. W. (2016) Lessons learned while building the Deepwater Horizon Database: Toward improved data sharing in coastal science. *Computers and Geosciences* 87: 84-90 [Not relevant to primary or secondary research questions]

Thiel, M.; Penna-Díaz, M. A.; Luna-Jorquera, G.; Salas, S.; Sellanes, J.; Stotz, W. (2014) Citizen scientists and marine research: Volunteer participants, their contributions, and projection for the future. *Oceanography and Marine Biology: An Annual Review* 52: 257-314 [Not relevant to primary or secondary research questions]

Thiros, S. A. (2010) Section 2. - Conceptual understanding and groundwater quality of the basin-fill aquifer in Salt Lake Valley, Utah. *US Geological Survey Professional Paper* (1781)13-33 [Not relevant to primary or secondary research questions]

Thit, Amalie; Dybowska, Agnieszka; Kobler, Carsten; Kennaway, Gabrielle; Selck, Henriette (2015) Influence of copper oxide nanoparticle shape on bioaccumulation, cellular internalization and effects in the estuarine sediment-dwelling polychaete, *Nereis diversicolor*. *Marine Environmental Research* 111: 89-98 [Not relevant to primary or secondary research questions]

Thiyagarajan, V.; Tsoi, M. M. Y.; Zhang, W.; Qian, P. Y. (2010) Temporal variation of coastal surface sediment bacterial communities along an environmental pollution gradient. *Marine Environmental Research* 70(1):56-64 [Not relevant to primary or secondary research questions]

Thomas, Jesse C.; Oladeinde, Adelumola; Kieran, Troy J.; Finger, John W.; Bayona-Vasquez, Natalia J.; Cartee, John C.; Beasley, James C.; Seaman, John C.; McArthur, J. Vaun; Rhodes, Olin E.; Glenn, Travis C. (2020) Co-occurrence of antibiotic, biocide, and heavy metal resistance genes in bacteria from metal and radionuclide contaminated soils at the Savannah River Site. *Microbial Biotechnology* 13(4):1179-1200 [Not relevant to primary or secondary research questions]

Tien, C. J.; Chuang, T. L.; Chen, C. S. (2011) The Role of Naturally Occurring River Biofilms on the Degradation Kinetics of Diazinon. *Clean - Soil, Air, Water* 39(10):931-938 [Not relevant to primary or secondary research questions]

Timmermann, K.; Banta, G. T.; Klinge, L.; Andersen, O. (2011) Effects of bioturbation on the fate of oil in coastal sandy sediments - An in situ experiment. *Chemosphere* 82(10):1358-1366 [Not relevant to primary or secondary research questions]

Tincani Osorio, Flavio Henrique; Oliveira Silva, Luis Felipe; Stein Piancini, Laercio Dante; Barni Azevedo, Ana Carolina; Liebel, Samuel; Yamamoto, Flavia Yoshie; Philippi, Vivian Pra; Silva Oliveira, Marcos Leandro; Ortolani-Machado, Claudia Feijo; Filipak Neto, Francisco; Cestari, Marta Margarete; da Silva de Assis, Helena Cristina; de Oliveira Ribeiro, Ciro Alberto (2014) Water quality assessment of the Tubaro River through chemical analysis and biomarkers in the Neotropical fish *Geophagus brasiliensis*. *Environmental Science and Pollution Research* 21(15):9145-9160 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Titilawo, Yinka; Adeniji, Abiodun; Adeniyi, Mobolaji; Okoh, Anthony (2018) Determination of levels of some metal contaminants in the freshwater environments of Osun State, Southwest Nigeria: A risk assessment approach to predict health threat. *Chemosphere* 211: 834-843 [Not relevant to primary or secondary research questions]

Tiwari, D.; Bajpai, R. (2014) Physico-chemical and phylogenetic profile of River Pandu at Kanpur. *Indian Journal of Ecology* 41(2)331-335 [Not relevant to primary or secondary research questions]

Todaro, M. Antonio; Perissinotto, Renzo; Bownes, Sarah J. (2015) Two new marine Gastrotricha from the Indian Ocean coast of South Africa. *Zootaxa* 3905(2)193-208 [Not relevant to primary or secondary research questions]

Todorova, N. H.; Mironova, R. S.; Karamfilov, V. K. (2014) Comparative molecular analysis of bacterial communities inhabiting pristine and polluted with polycyclic aromatic hydrocarbons Black Sea coastal sediments. *Marine Pollution Bulletin* 83(1)231-240 [Not relevant to primary or secondary research questions]

Toelgesy, Csaba; Batori, Zoltan; Erdoes, Laszlo; Galle, Robert; Koermoezzi, Laszlo (2015) Plant diversity patterns of a Hungarian steppe-wetland mosaic in relation to grazing regime and land use history. *Tuexenia* (35)399-416 [Not relevant to primary or secondary research questions]

Tollefson, K. E.; Bratsberg, E.; Bøyum, O.; Finne, E. F.; Gregersen, I. K.; Hegseth, M.; Sandberg, C.; Hylland, K. (2006) Use of fish in vitro hepatocyte assays to detect multi-endpoint toxicity in Slovenian river sediments. *Marine Environmental Research* 62(SUPPL. 1)S356-S359 [Not relevant to primary or secondary research questions]

Tornero, V.; Arias, A. M.; Blasco, J. (2014) Trace element contamination in the Guadalquivir River Estuary ten years after the Aznalcollar mine spill. *Marine Pollution Bulletin* 86(43862)349-360 [Not relevant to primary or secondary research questions]

Torpy, Aaron; Wilson, Nicholas C.; MacRae, Colin M.; Pownceby, Mark I.; Biswas, Pradip K.; Rahman, Md Aminur; Zaman, Mohammad N. (2020) Deciphering the Complex Mineralogy of River Sand Deposits through Clustering and Quantification of Hyperspectral X-Ray Maps. *Microscopy and Microanalysis* 26(4)768-792 [Not relevant to primary or secondary research questions]

Torres, M. A.; Barros, M. P.; Campos, S. C. G.; Pinto, E.; Rajamani, S.; Sayre, R. T.; Colepicolo, P. (2008) Biochemical biomarkers in algae and marine pollution: A review. *Ecotoxicology and Environmental Safety* 71(1)42005 [Not relevant to primary or secondary research questions]

Tournebize, J.; Passeport, E.; Chaumont, C.; Fesneau, C.; Guenne, A.; Vincent, B. (2013) Pesticide de-contamination of surface waters as a wetland ecosystem service in agricultural landscapes. *Ecological Engineering* 56: 52-60 [Not relevant to primary or secondary research questions]

Tovar-Sánchez, A.; Sánchez-Quiles, D.; Rodríguez-Romero, A. (2019) Massive coastal tourism influx to the Mediterranean Sea: The environmental risk of sunscreens. *Science of the Total Environment* 656: 316-321 [Not relevant to primary or secondary research questions]

Traina, Anna; Bono, Gioacchino; Bonsignore, Maria; Falco, Francesca; Giuga, Marta; Quinci, Enza Maria; Vitale, Sergio; Sprovieri, Mario (2019) Heavy metals concentrations in some commercially key species from Sicilian coasts (Mediterranean Sea): Potential human health risk estimation. *Ecotoxicology and Environmental Safety* 168: 466-478 [Not relevant to primary or secondary research questions]

Trapp, J.; Armengaud, J.; Pible, O.; Gaillard, J. C.; Abbaci, K.; Habtoul, Y.; Chaumot, A.; Geffard, O. (2015) Proteomic investigation of male Gammarus fossarum, a freshwater crustacean, in response to endocrine disruptors. *Journal of Proteome Research* 14(1)292-303 [Not relevant to primary or secondary research questions]

Tremblay, J.; Yergeau, E.; Fortin, N.; Cobanli, S.; Elias, M.; King, T. L.; Lee, K.; Greer, C. W. (2017) Chemical dispersants enhance the activity of oil- and gas condensate-degrading marine bacteria. *ISME Journal* 11(12)2793-2808 [Not relevant to primary or secondary research questions]

Triassi, Maria; Nardone, Antonio; Giovinetti, Maria Cristina; De Rosa, Elvira; Canzanella, Silvia; Sarnacchiaro, Pasquale; Montuori, Paolo (2019) Ecological risk and estimates of organophosphate pesticides loads into the Central Mediterranean Sea from Volturino River, the river of the "Land of Fires" area, southern Italy. *The Science of the Total Environment* 678: 741-754 [Not relevant to primary or secondary research questions]

Triki, H. Z.; Laabir, M.; Lafabrie, C.; Malouche, D.; Bancon-Montigny, C.; Gonzalez, C.; Deidun, A.; Pringault, O.; Daly-Yahia, O. K. (2017) Do the levels of industrial pollutants influence the distribution and abundance of dinoflagellate cysts in the recently-deposited sediment of a Mediterranean coastal ecosystem? *Science of the Total Environment* 595: 380-392 [Not relevant to primary or secondary research questions]

Tripathi, B. D.; Tripathi, S. (2014) Issues and challenges of River Ganga. *Our National River Ganga: Lifeline of Millions* 9783320000000: 211-221 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Tripathi, P. K.; Singh, A. (2003) Toxic effects of dimethoate and carbaryl pesticides on reproduction and related enzymes of the freshwater snail *Lymnaea acuminata*. *Bulletin of Environmental Contamination and Toxicology* 71(3):535-542 [Not relevant to primary or secondary research questions]

Truman, Pamela S.; van den Hurk, Peter (2010) Xenoestrogen exposure and effects in bluegill from the Reedy River, South Carolina, USA. *Archives of Environmental Contamination and Toxicology* 58(1):165-175 [Not relevant to primary or secondary research questions]

Tsatsaros, Julie H.; Brodie, Jon E.; Bohnet, Iris C.; Valentine, Peter (2013) Water Quality Degradation of Coastal Waterways in the Wet Tropics, Australia. *Water Air and Soil Pollution* 224(3):1443 [Not relevant to primary or secondary research questions]

Tu, Y. T.; Ou, J. H.; Tsang, D. C. W.; Dong, C. D.; Chen, C. W.; Kao, C. M. (2018) Source identification and ecological impact evaluation of PAHs in urban river sediments: A case study in Taiwan. *Chemosphere* 194: 666-674 [Not relevant to primary or secondary research questions]

Tukahebwa, Edridah M.; Magnussen, Pascal; Madsen, Henry; Kabatereine, Narcis B.; Nuwaha, Fred; Wilson, Shona; Vennervald, Birgitte J. (2013) A Very High Infection Intensity of *Schistosoma mansoni* in a Ugandan Lake Victoria Fishing Community Is Required for Association with Highly Prevalent Organ Related Morbidity. *Plos Neglected Tropical Diseases* 7(7):e2268 [Not relevant to primary or secondary research questions]

Tulstrup, M. V. L.; Roager, H. M.; Thaarup, I. C.; Frandsen, H. L.; Frøkiær, H.; Licht, T. R.; Bahl, M. I. (2018) Antibiotic treatment of rat dams affects bacterial colonization and causes decreased weight gain in pups. *Communications Biology* 1(1) [Not relevant to primary or secondary research questions]

Tyler, C. R.; Routledge, E. J.; Van Aerle, R. (2008) Estrogenic effects of treated sewage effluent on fish: Steroids and surfactants in english rivers. *The Toxicology of Fishes* 971-1003 [Not relevant to primary or secondary research questions]

Urban, J. D.; Tachovsky, J. A.; Haws, L. C.; Staskal, D. Wikoff; Harris, M. A. (2009) Assessment of human health risks posed by consumption of fish from the Lower Passaic River, New Jersey. *Science of the Total Environment* 408(2):209-224 [Not relevant to primary or secondary research questions]

Urban-Malinga, B.; Zalewski, M.; Jakubowska, A.; Wodzinowski, T.; Malinga, M.; Palys, B.; Dąbrowska, A. (2020) Microplastics on sandy beaches of the southern Baltic Sea. *Marine Pollution Bulletin* 155 [Not relevant to primary or secondary research questions]

Valenti Jr, T. W.; Perez-Hurtado, P.; Chambliss, C. K.; Brooks, B. W. (2009) Aquatic toxicity of sertraline to *Pimephales promelas* at environmentally relevant surface water pH. *Environmental Toxicology and Chemistry* 28(12):2685-2694 [Not relevant to primary or secondary research questions]

Van Damme, P. A.; Hamel, C.; Ayala, A.; Bervoets, L. (2008) Macroinvertebrate community response to acid mine drainage in rivers of the High Andes (Bolivia). *Environmental Pollution* 156(3):1061-1068 [Not relevant to primary or secondary research questions]

Van Geest, J. L.; Poirier, D. G.; Solomon, K. R.; Sibley, P. K. (2011) A comparison of the bioaccumulation potential of three freshwater organisms exposed to sediment-associated contaminants under laboratory conditions. *Environmental Toxicology and Chemistry* 30(4):939-949 [Not relevant to primary or secondary research questions]

Varol, Memet (2020) Environmental, ecological and health risks of trace metals in sediments of a large reservoir on the Euphrates River (Turkey). *Environmental Research* 187: 109664 [Not relevant to primary or secondary research questions]

Vásquez Piñeros, M. A.; Martínez-Lavanchy, P. M.; Schmidt, K.; Mardones, M.; Heipieper, H. J. (2019) Changes in bacterial diversity and catabolic gene abundance during the removal of dimethylphenol isomers in laboratory-scale constructed wetlands. *Applied Microbiology and Biotechnology* 103(1):505-517 [Not relevant to primary or secondary research questions]

Vázquez, S.; Monien, P.; Pepino Minetti, R.; Jürgens, J.; Curtosi, A.; Villalba Primitz, J.; Frickenhaus, S.; Abele, D.; Mac Cormack, W.; Helmke, E. (2017) Bacterial communities and chemical parameters in soils and coastal sediments in response to diesel spills at Carlini Station, Antarctica. *Science of the Total Environment* 605-606: 26-37 [Not relevant to primary or secondary research questions]

Venier, Paola; De Pitta, Cristiano; Pallavicini, Alberto; Marsano, Francesco; Varotto, Laura; Romualdi, Chiara; Dondero, Francesco; Viarengo, Aldo; Lanfranchi, Gerolamo (2006) Development of mussel mRNA profiling: Can gene expression trends reveal coastal water pollution? *Mutation Research-Fundamental and Molecular Mechanisms of Mutagenesis* 602(43862):121-134 [Not relevant to primary or secondary research questions]

Verlecar, Xivanand N.; Desai, Somsekhar R.; Sarkar, Anupam; Dalal, S. G. (2006) Biological indicators in relation to coastal pollution along Karnataka coast, India. *Water Research* 40(17):3304-3312 [Not relevant to primary or secondary research questions]



Verslycke, Tim; Poelmans, Sofie; De Wasch, Katia; De Brabander, Hubert F.; Janssen, Colin R. (2004) Testosterone and energy metabolism in the estuarine mysid *Neomysis integer* (Crustacea: Mysidacea) following exposure to endocrine disruptors. *Environmental Toxicology and Chemistry* 23(5)1289-1296 [Not relevant to primary or secondary research questions]

Vetrimurugan, E.; Brindha, K.; Elango, L.; Ndwandwe, Osman Muzi (2017) Human exposure risk to heavy metals through groundwater used for drinking in an intensively irrigated river delta. *Applied Water Science* 7(6)3267-3280 [Not relevant to primary or secondary research questions]

Vetrimurugan, E.; Jonathan, M. P.; Sarkar, S. K.; Rodríguez-González, Francisco; Roy, Priyadarsi D.; Velumani, S.; Sakthi, J. S. (2020) Occurrence, distribution and provenance of micro plastics: A large scale quantitative analysis of beach sediments from southeastern coast of South Africa. *The Science of the Total Environment* 746: 141103 [Not relevant to primary or secondary research questions]

Victoria Monferran, Magdalena; Nicolas Galanti, Lucas; Ines Bonansea, Rocio; Valeria Ame, Maria; Alberto Wunderlin, Daniel (2011) Integrated survey of water pollution in the Suquia River basin (Cordoba, Argentina). *Journal of Environmental Monitoring* 13(2)398-409 [Not relevant to primary or secondary research questions]

Vidal-Dorsch, D. E.; Bay, S. M.; Mays, M. A.; Greenstein, D. J.; Young, D.; Wolf, J. C.; Pham, D.; Loguinov, A. V.; Vulpe, C. (2012) Using gene expression to assess the status of fish from anthropogenically influenced estuarine wetlands. *Environmental Science and Technology* 46(1)69-77 [Not relevant to primary or secondary research questions]

Vidyasakar, A.; Neelavannan, K.; Krishnakumar, S.; Prabaharan, G.; Priyanka, T. Sathyabama Alias; Magesh, N. S.; Godson, Prince S.; Srinivasalu, S. (2018) Macrodebris and microplastic distribution in the beaches of Rameswaram Coral Island, Gulf of Mannar, Southeast coast of India: A first report. *Marine Pollution Bulletin* 137: 610-616 [Not relevant to primary or secondary research questions]

Viggør, S.; Jøesaar, M.; Vedler, E.; Kiiker, R.; Pärnpuu, L.; Heinaru, A. (2015) Occurrence of diverse alkane hydroxylase alkB genes in indigenous oil-degrading bacteria of Baltic Sea surface water. *Marine Pollution Bulletin* 101(2)507-516 [Not relevant to primary or secondary research questions]

Viggør, Signe; Juhanson, Jaanis; Joesaar, Merike; Mitt, Mario; Truu, Jaak; Vedler, Eve; Heinaru, Ain (2013) Dynamic changes in the structure of microbial communities in Baltic Sea coastal seawater microcosms modified by crude oil, shale oil or diesel fuel. *Microbiological Research* 168(7)415-427 [Not relevant to primary or secondary research questions]

Vila, J.; Nieto, J. M.; Mertens, J.; Springael, D.; Grifoll, M. (2010) Microbial community structure of a heavy fuel oil-degrading marine consortium: Linking microbial dynamics with polycyclic aromatic hydrocarbon utilization. *FEMS Microbiology Ecology* 73(2)349-362 [Not relevant to primary or secondary research questions]

Villena, M. J.; Romo, S. (2003) Phytoplankton changes in a shallow Mediterranean lake (Albufera of Valencia, Spain) after sewage diversion. *Hydrobiologia* 506(43891)281-287 [Not relevant to primary or secondary research questions]

Vincze, Krisztina; Scheil, Volker; Kuch, Bertram; Koehler, Heinz R.; Triebskorn, Rita (2015) Impact of wastewater on fish health: a case study at the Neckar River (Southern Germany) using biomarkers in caged brown trout as assessment tools. *Environmental Science and Pollution Research* 22(15)11822-11839 [Not relevant to primary or secondary research questions]

Vishwanath, P.; Devegowda, D.; Prashant, A.; Nayak, N.; D'Souza, V.; Venkatesh, T.; Scott, C. (2012) Environmental lead levels in a coastal city of India: The lead burden continues. *Indian Journal of Medical Sciences* 66(11)260-266 [Not relevant to primary or secondary research questions]

Visvanathan, P.; Govindaraju, M.; Thangaraj, M. (2015) Genetic diversity assessment of green mussel, *perna viridis* in south Indian coastal region using microsatellite markers. *Asian Journal of Microbiology, Biotechnology and Environmental Sciences* 17(4)1027-1031 [Not relevant to primary or secondary research questions]

Vivant, A. L.; Boutin, C.; Prost-Boucle, S.; Papias, S.; Ziebal, C.; Pourcher, A. M. (2019) Fate of two strains of extended-spectrum beta-lactamase producing *Escherichia coli* in constructed wetland microcosm sediments: Survival and change in antibiotic resistance profiles. *Water Science and Technology* 79(8)1550-1560 [Not relevant to primary or secondary research questions]

Voloshenko-Rossin, A.; Gasser, G.; Cohen, K.; Gun, J.; Cumbal-Flores, L.; Parra-Morales, W.; Sarabia, F.; Ojeda, F.; Lev, O. (2015) Emerging pollutants in the Esmeraldas watershed in Ecuador: discharge and attenuation of emerging organic pollutants along the San Pedro-Guayllabamba-Esmeraldas rivers. *Environmental Science-Processes & Impacts* 17(1)41-53 [Not relevant to primary or secondary research questions]

Vorkamp, K.; Christensen, J. H.; Riget, F. (2004) Polybrominated diphenyl ethers and organochlorine compounds in biota from the marine environment of East Greenland. *Science of the Total Environment* 331(43891)143-155 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Vu, C. T.; Lin, C.; Nguyen, K. A.; Shern, C. C.; Kuo, Y. M. (2018) Ecological risk assessment of heavy metals sampled in sediments and water of the Houjing River, Taiwan. *Environmental Earth Sciences* 77(10) [Not relevant to primary or secondary research questions]

Vystavna, Y.; Le Coustumer, P.; Huneau, F. (2013) Monitoring of trace metals and pharmaceuticals as anthropogenic and socio-economic indicators of urban and industrial impact on surface waters. *Environmental Monitoring and Assessment* 185(4)3581-3601 [Not relevant to primary or secondary research questions]

Wagner, Martin; Scherer, Christian; Alvarez-Muñoz, Diana; Brennholt, Nicole; Bourrain, Xavier; Buchinger, Sebastian; Fries, Elke; Grosbois, Cécile; Klasmeier, Jörg; Marti, Teresa; Rodriguez-Mozaz, Sara; Urbatzka, Ralph; Vethaak, A. Dick; Winther-Nielsen, Margrethe; Reifferscheid, Georg (2014) Microplastics in freshwater ecosystems: what we know and what we need to know. *Environmental Sciences Europe* 26(1)12 [Not relevant to primary or secondary research questions]

Wahi, Gita; Zorzi, Alexandra; Macnab, Andrew; Panagiotopoulos, Constadina (2009) Prevalence of type 2 diabetes, obesity and the metabolic syndrome among Canadian First Nations children in a remote Pacific coast community. *Paediatrics & Child Health* 14(2)79-83 [Not relevant to primary or secondary research questions]

Waite, H. R.; Donnelly, M. J.; Walters, L. J. (2018) Quantity and types of microplastics in the organic tissues of the eastern oyster *Crassostrea virginica* and Atlantic mud crab *Panopeus herbstii* from a Florida estuary. *Marine Pollution Bulletin* 129(1)179-185 [Not relevant to primary or secondary research questions]

Walls, L. D.; Li, L. Y.; Hall, K. J. (2013) Trace metal contamination due to acid rock drainage and its impacts on the fish-bearing Pennask Creek watershed, British Columbia. *Water, Air, and Soil Pollution* 224(10) [Not relevant to primary or secondary research questions]

Wang, B.; Yu, G.; Yu, Y. J.; Huang, J.; Hu, H. Y.; Wang, L. S. (2009) Health risk assessment of organic pollutants in Jiangsu reach of the Huaihe River, China. *Water Science and Technology: A Journal of the International Association on Water Pollution Research* 59(5)907-916 [Not relevant to primary or secondary research questions]

Wang, C.; Xing, R.; Sun, M.; Ling, W.; Shi, W.; Cui, S.; An, L. (2020) Microplastics profile in a typical urban river in Beijing. *Science of the Total Environment* 743 [Not relevant to primary or secondary research questions]

Wang, Ce; Cyterski, Mike; Feng, Yujie; Gao, Peng; Sun, Qingfang (2015) Spatiotemporal characteristics of organic contaminant concentrations and ecological risk assessment in the Songhua River, China. *Environmental Science. Processes & Impacts* 17(11)1967-1975 [Not relevant to primary or secondary research questions]

Wang, Ce; Feng, Yujie; Sun, Qingfang; Zhao, Shanshan; Gao, Peng; Li, Bai-Lian (2012) A multimedia fate model to evaluate the fate of PAHs in Songhua River, China. *Environmental Pollution* (Barking, Essex: 1987) 164: 81-88 [Not relevant to primary or secondary research questions]

Wang, F.; Leung, A. O. W.; Wu, S. C.; Yang, M. S.; Wong, M. H. (2009) Chemical and ecotoxicological analyses of sediments and elutriates of contaminated rivers due to e-waste recycling activities using a diverse battery of bioassays. *Environmental Pollution* 157(7)2082-2090 [Not relevant to primary or secondary research questions]

Wang, Guoguang; Liu, Yu; Tao, Wei; Zhao, Xinda; Li, Xianguo (2019) Reflection of concentrations of polybrominated diphenyl ethers in health risk assessment: A case study in sediments from the metropolitan river, North China. *Environmental Pollution* 247: 80-88 [Not relevant to primary or secondary research questions]

Wang, H.; Liu, T.; Feng, S.; Zhang, W. (2017) Metal removal and associated binding fraction transformation in contaminated river sediment washed by different types of agents. *PLoS ONE* 12(3) [Not relevant to primary or secondary research questions]

Wang, Hong-wei; Cai, Fang; Zhao, Chun-long; Yang, Chao-chen; Fan, Yu; Ding, Yan; Zhang, Jia-yu; Liu, Jia-hua (2015) The evaluation of water quality and survey of benthic diversity in the Baiyangdian Lake (China). *Proceedings of the 3rd International Conference on Advances in Energy and Environmental Science* 2015 31: 385-388 [Not relevant to primary or secondary research questions]

Wang, Hong-Zhu; Liu, Xue-Qin; Wang, Hai-Jun (2016) The Yangtze River Floodplain: Threats and Rehabilitation. *Fishery Resources, Environment, and Conservation in the Mississippi and Yangtze (changjiang) River Basins* 84: 263-291 [Not relevant to primary or secondary research questions]

Wang, Hui; Liu, Zhe; Sun, Lina; Wang, Yinggang; Luo, Qing; Wu, Hao; Wang, Xiaoxu (2018) Characterization and Risk Assessment of Polycyclic Aromatic Hydrocarbons in Surface Water from Liaohe River, Northeast China. *Polycyclic Aromatic Compounds* 38(5)389-401 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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Wang, J. Y.; An, X. L.; Huang, F. Y.; Su, J. Q. (2020) Antibiotic resistome in a landfill leachate treatment plant and effluent-receiving river. *Chemosphere* 242 [Not relevant to primary or secondary research questions]

Wang, J.; Shen, Q.; Yang, Y. (2019) Cr(VI)-contaminated wetland soil remediation by plant microbial fuel cells and its mechanism. *Huanjing Kexue Xuebao/Acta Scientiae Circumstantiae* 39(2)518-526 [Not relevant to primary or secondary research questions]

Wang, Jian-Hua; Lu, Jian; Zhang, Yu-Xuan; Wu, Jun; Luo, Yongming; Liu, Hao (2018) Metagenomic analysis of antibiotic resistance genes in coastal industrial mariculture systems. *Bioresource Technology* 253: 235-243 [Not relevant to primary or secondary research questions]

Wang, L.; Cai, Y.; Fang, L. (2009) Pollution in Taihu Lake China: Causal chain and policy options analyses. *Frontiers of Earth Science in China* 3(4)437-444 [Not relevant to primary or secondary research questions]

Wang, Lan; Zhang, Jing; Li, HuiLin; Yang, Hong; Peng, Chao; Peng, ZhengSong; Lu, Lu (2018) Shift in the microbial community composition of surface water and sediment along an urban river. *Science of the Total Environment* 627: 600-612 [Not relevant to primary or secondary research questions]

Wang, M.; Tang, J.; Zhu, W.; Liang, H.; Wang, R. (2012) Evaluation of the effects of ecological remediation on the water quality and biological toxicity of Dagu Drainage River in Tianjin. *Shengtai Xuebao/ Acta Ecologica Sinica* 32(14)4535-4543 [Not relevant to primary or secondary research questions]

Wang, N.; Ingersoll, C. G.; Ivey, C. D.; Hardesty, D. K.; May, T. W.; Augspurger, T.; Roberts, A. D.; Van Genderen, E.; Barnhart, M. C. (2010) Sensitivity of early life stages of freshwater mussels (Unionidae) to acute and chronic toxicity of lead, cadmium, and zinc in water. *Environmental Toxicology and Chemistry* 29(9)2053-2063 [Not relevant to primary or secondary research questions]

Wang, Qing; Lin, Hui-rong; Zhang, Shu-ting; Yu, Xin (2012) Real-time PCR detection and quantification of emerging waterborne pathogens (EWP) and antibiotic resistance genes (ARGs) in the downstream area of Jialong River. *Huan Jing Ke Xue= Huanjing Kexue* 33(8)2685-2690 [Not relevant to primary or secondary research questions]

Wang, R. Y.; Li, H. X.; Peng, X. Q.; Zhang, G. Y.; Zhang, L. Y. (2019) New ecological dam for sediment and overlying water pollution treatment based on microbial fuel cell principle. *Environmental Science and Pollution Research* 26(18)18615-18623 [Not relevant to primary or secondary research questions]

Wang, Ruo-Nan; Zhang, Yuan; Cao, Zhen-Hua; Wang, Xin-Yu; Ma, Ben; Wu, Wen-Bin; Hu, Nan; Huo, Zheng-Yang; Yuan, Qing-Bin (2019) Occurrence of super antibiotic resistance genes in the downstream of the Yangtze River in China: Prevalence and antibiotic resistance profiles. *The Science of the Total Environment* 651(Pt 2)1946-1957 [Not relevant to primary or secondary research questions]

Wang, Shanshan; Xue, Nana; Li, Wenfeng; Zhang, Daoyong; Pan, Xiangliang; Luo, Yongming (2020) Selectively enrichment of antibiotics and ARGs by microplastics in river, estuary and marine waters. *The Science of the Total Environment* 708: 134594 [Not relevant to primary or secondary research questions]

Wang, W.; Qian, Y.; Boyd, J. M.; Wu, M.; Hruday, S. E.; Li, X. F. (2013) Halobenzoquinones in swimming pool waters and their formation from personal care products. *Environmental Science and Technology* 47(7)3275-3282 [Not relevant to primary or secondary research questions]

Wang, X.; Ren, L.; Jiao, F.; Liu, W. (2017) The ecological risk assessment and suggestions on heavy metals in river sediments of Jinan. *Water Science and Technology* 76(8)2177-2187 [Not relevant to primary or secondary research questions]

Wang, Xi; Li, Junqi; Li, Yingxia; Shen, Zhenyao; Wang, Xuan; Yang, Zhifeng; Lou, Inchio (2014) Is urban development an urban river killer? A case study of Yongding Diversion Channel in Beijing, China. *Journal of Environmental Sciences* 26(6)1232-1237 [Not relevant to primary or secondary research questions]

Wang, Xiaoshuang; Dong, Shaoxia (2020) Assessment of exposure of children swimmers to trihalomethanes in an indoor swimming pool. *Journal of Water and Health* 18(4)533-544 [Not relevant to primary or secondary research questions]

Wang, Y.; Liu, Y.; Huang, J.; Wu, T.; Huang, J. (2020) Analysis and Prevention of Urban River Pollution. 1549: [Not relevant to primary or secondary research questions]

Wang, Yan; Li, Chunjie; Yuan, He; Wong, May CM; Zou, Jing; Shi, Zongdao; Zhou, Xuedong (2016) Rubber dam isolation for restorative treatment in dental patients. *The Cochrane Database of Systematic Reviews* 9: CD009858 [Not relevant to primary or secondary research questions]

Wang, Yi; Wang, Peng; Bai, Yujun; Tian, Zaixing; Li, Jingwen; Shao, Xue; Mustavich, Laura F.; Li, Bai-Lian (2013) Assessment of surface water quality via multivariate statistical techniques: A case study of

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



the Songhua River Harbin region, China. *Journal of Hydro-Environment Research* 7(1)30-40 [Not relevant to primary or secondary research questions]

Wang, Yizhen; Liu, Mingzhe; Dai, Yi; Luo, Yang; Zhang, Shilu (2020) Health and ecotoxicological risk assessment for human and aquatic organism exposure to polycyclic aromatic hydrocarbons in the Baiyangdian Lake. *Environmental Science and Pollution Research International* [Not relevant to primary or secondary research questions]

Warburton, M. L.; Schulze, R. E.; Jewitt, G. P. W. (2012) Hydrological impacts of land use change in three diverse South African catchments. *Journal of Hydrology* 414-415: 118-135 [Not relevant to primary or secondary research questions]

Ward, C. S.; Pan, J. F.; Colman, B. P.; Wang, Z.; Gwin, C. A.; Williams, T. C.; Ardis, A.; Gunsch, C. K.; Hunt, D. E. (2019) Conserved Microbial Toxicity Responses for Acute and Chronic Silver Nanoparticle Treatments in Wetland Mesocosms. *Environmental Science and Technology* 53(6)3268-3276 [Not relevant to primary or secondary research questions]

Wardlaw, G. D.; Arey, J. S.; Reddy, C. M.; Nelson, R. K.; Ventura, G. T.; Valentine, D. L. (2008) Disentangling oil weathering at a marine seep using GCxGC: Broad metabolic specificity accompanies subsurface petroleum biodegradation. *Environmental Science and Technology* 42(19)7166-7173 [Not relevant to primary or secondary research questions]

Warner, Tammy E.; Pomeroy, Robert S. (2012) Paths of Influence: The Direct and Indirect Determinants of Marine Managed Area Success. *Coastal Management* 40(3)250-267 [Not relevant to primary or secondary research questions]

Warren, W. J.; Jeter, R. M.; Kimbrough, R. C.; Zak, J. C. (2004) Population patterns and antimicrobial resistance of Aeromonas in urban playa lakes. *Canadian Journal of Microbiology* 50(6)397-404 [Not relevant to primary or secondary research questions]

Watson, Gordon J.; Pini, Jennifer M.; Richir, Jonathan (2018) Chronic exposure to copper and zinc induces DNA damage in the polychaete *Alitta virens* and the implications for future toxicity of coastal sites. *Environmental Pollution* 243: 1498-1508 [Not relevant to primary or secondary research questions]

Wee, S. Y.; Omar, T. F. T.; Aris, A. Z.; Lee, Y. (2016) Surface Water Organophosphorus Pesticides Concentration and Distribution in the Langat River, Selangor, Malaysia. *Exposure and Health* 8(4)497-511 [Not relevant to primary or secondary research questions]

Weerakoon, G. M. P. R.; Jinadasa, K. B. S. N.; Herath, G. B. B.; Mowlood, M. I. M.; Ng, W. J. (2018) Applicability of Constructed Wetlands for Water Quality Improvement in a Tea Estate Catchment: The Pussellawa Case Study. *Water* 10(3)332 [Not relevant to primary or secondary research questions]

Wei, Luyun; Li, Zhiheng; Sun, Jianteng; Zhu, Lizhong (2020) Pollution characteristics and health risk assessment of phthalate esters in agricultural soil and vegetables in the Yangtze River Delta of China. *Science of the Total Environment* 726: 137978 [Not relevant to primary or secondary research questions]

Wen-tao, Ding; Ke-xin, Jin; Peng, Cui; Shi-jun, Sun (2015) Investigation on the Ecological Risk of Water Environment in the Main Stream Region of the Second Songhua River, China. *Proceedings of the International Conference on Chemical, Material and Food Engineering* 22: 123-127 [Not relevant to primary or secondary research questions]

Wesch, C.; Bredimus, K.; Paulus, M.; Klein, R. (2016) Towards the suitable monitoring of ingestion of microplastics by marine biota: A review. *Environmental Pollution* 218: 1200-1208 [Not relevant to primary or secondary research questions]

Wessel, C. C.; Lockridge, G. R.; Battiste, D.; Cebrian, J. (2016) Abundance and characteristics of microplastics in beach sediments: Insights into microplastic accumulation in northern Gulf of Mexico estuaries. *Marine Pollution Bulletin* 109(1)178-183 [Not relevant to primary or secondary research questions]

Wiegel, S.; Aulinger, A.; Brockmeyer, R.; Harms, H.; Löffler, J.; Reincke, H.; Schmidt, R.; Stachel, B.; von Tümpeling, W.; Wanke, A. (2004) Pharmaceuticals in the river Elbe and its tributaries. *Chemosphere* 57(2)107-126 [Not relevant to primary or secondary research questions]

Wiese, F. K.; Ryan, P. C. (2003) The extent of chronic marine oil pollution in southeastern Newfoundland waters assessed through beached bird surveys 1984-1999. *Marine Pollution Bulletin* 46(9)1090-1101 [Not relevant to primary or secondary research questions]

Wilbers, Gert-Jan; Becker, Mathias; Nga, La Thi; Sebesvari, Zita; Renaud, Fabrice G. (2014) Spatial and temporal variability of surface water pollution in the Mekong Delta, Vietnam. *The Science of the Total Environment* 485-486: 653-665 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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Windsor, Fredric M.; Durance, Isabelle; Horton, Alice A.; Thompson, Richard C.; Tyler, Charles R.; Ormerod, Steve J. (2019) A catchment-scale perspective of plastic pollution. *Global Change Biology* 25(4):1207-1221 [Not relevant to primary or secondary research questions]

Witt, V.; Ayris, P. M.; Damby, D. E.; Cimarelli, C.; Kueppers, U.; Dingwell, D. B.; Woerheide, G. (2017) Volcanic ash supports a diverse bacterial community in a marine mesocosm. *Geobiology* 15(3):453-463 [Not relevant to primary or secondary research questions]

Wojtkowska, Małgorzata; Bojanowski, Damian (2018) Influence of Catchment Use on the Degree of River Water Pollution by Forms of Phosphorus. *Rocznik Ochrona Środowiska* 20: 887-904 [Not relevant to primary or secondary research questions]

Won, Eun-Ji; Ra, Kongtae; Kim, Kyung-Tae; Lee, Jae-Seong; Lee, Young-Mi (2014) Three novel superoxide dismutase genes identified in the marine polychaete *Perinereis nuntia* and their differential responses to single and combined metal exposures. *Ecotoxicology and Environmental Safety* 107: 36-45 [Not relevant to primary or secondary research questions]

Won, N. I.; Kim, K. H.; Kang, J. H.; Park, S. R.; Lee, H. J. (2017) Exploring the impacts of anthropogenic disturbance on seawater and sediment microbial communities in Korean coastal waters using metagenomics analysis. *International Journal of Environmental Research and Public Health* 14(2) [Not relevant to primary or secondary research questions]

Wong, A. W. M.; Wong, M. H. (2004) Recent socio-economic changes in relation to environmental quality of the Pearl River delta. *Regional Environmental Change* 4(1):28-38 [Not relevant to primary or secondary research questions]

Woodall, L. C.; Gwinnett, C.; Packer, M.; Thompson, R. C.; Robinson, L. F.; Paterson, G. L. J. (2015) Using a forensic science approach to minimize environmental contamination and to identify microfibres in marine sediments. *Marine Pollution Bulletin* 95(1):40-46 [Not relevant to primary or secondary research questions]

Wooldridge, L. J.; Worden, R. H.; Griffiths, J.; Utley, J. E. P. (2019) Clay-coat diversity in marginal marine sediments. *Sedimentology* 66(3):1118-1138 [Not relevant to primary or secondary research questions]

Wright, Ian A.; Burgin, Shelley (2009) Comparison of Sewage and Coal-Mine Wastes on Stream Macroinvertebrates Within an Otherwise Clean Upland Catchment, Southeastern Australia. *Water Air and Soil Pollution* 204(43922):227-241 [Not relevant to primary or secondary research questions]

Wu, Dai-Ling; Zhang, Min; He, Lu-Xi; Zou, Hai-Yan; Liu, You-Sheng; Li, Bei-Bei; Yang, Yuan-Yuan; Liu, Chongxuan; He, Liang-Ying; Ying, Guang-Guo (2020) Contamination profile of antibiotic resistance genes in ground water in comparison with surface water. *Science of the Total Environment* 715: 136975 [Not relevant to primary or secondary research questions]

Wu, H. C.; Chen, P. C.; Tsay, T. T. (2010) Assessment of nematode community structure as a bioindicator in river monitoring. *Environmental Pollution* 158(5):1741-1747 [Not relevant to primary or secondary research questions]

Wu, Jianhua; Xue, Chenyang; Tian, Rui; Wang, Siting (2017) Lake water quality assessment: a case study of Shahu Lake in the semiarid loess area of northwest China. *Environmental Earth Sciences* 76(5):232 [Not relevant to primary or secondary research questions]

Wu, Jingtao; Margenot, Andrew J.; Wei, Xiao; Fan, Manman; Zhang, Huan; Best, James L.; Wu, Pengbao; Chen, Furong; Gao, Chao (2020) Source apportionment of soil heavy metals in fluvial islands, Anhui section of the lower Yangtze River: comparison of APGS-MLR and PMF. *Journal of Soils and Sediments* 20(9):3380-3393 [Not relevant to primary or secondary research questions]

Wu, Jun; Xu, Zuxin; Li, Huaizheng; Li, Peng; Wang, Mei; Xiong, Lijun; Zhang, Jin (2019) Long-term effect of water diversion and CSOs on the remediation of heavy metals and microbial community in river sediments. *Water Science and Technology: A Journal of the International Association on Water Pollution Research* 79(12):2395-2406 [Not relevant to primary or secondary research questions]

Wu, Q.; Liu, Z.; Chen, Y.; Teng, W.; Liu, X.; Dai, Y. (2020) Status and Countermeasures of Environmental Management of the 'Three Phosphorus' Industry in the Yangtze River Economic Belt. *Research of Environmental Sciences* 33(5):1233-1240 [Not relevant to primary or secondary research questions]

Wu, Suqing; He, Shengbing; Zhou, Weili; Gu, Jianya; Huang, Jungchen; Gao, Lei; Zhang, Xu (2017) Decomposition characteristics of three different kinds of aquatic macrophytes and their potential application as carbon resource in constructed wetland. *Environmental Pollution* 231: 1122-1133 [Not relevant to primary or secondary research questions]

Wu, Y.; He, J.; Hu, Z.; Yang, L.; Zhang, N. (2011) Removal of UV254nm matter and nutrients from a photobioreactor-wetland system. *Journal of Hazardous Materials* 194: 43983 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Wu, Yingjun; Li, Guiying; Yang, Yan; An, Taicheng (2019) Pollution evaluation and health risk assessment of airborne toxic metals in both indoors and outdoors of the Pearl River Delta, China. *Environmental Research* 179: 108793 [Not relevant to primary or secondary research questions]

Xhixha, Merita Kaceli; Shyti, Manjola; Dhoqina, Polikron; Civici, Nikolla; Xhixha, Gerti (2019) Determination of Natural Radioactivity in Beach Sands from the Adriatic Sea Coastline, Albania. 10th Jubilee Conference of the Balkan Physical Union 2075: 130002 [Not relevant to primary or secondary research questions]

Xia, Wulai; Chen, Liang; Deng, Xuwei; Liang, Gaodao; Giesy, John P.; Rao, Qingyang; Wen, Zihao; Wu, Yao; Chen, Jun; Xie, Ping (2019) Spatial and interspecies differences in concentrations of eight trace elements in wild freshwater fishes at different trophic levels from middle and eastern China. *The Science of the Total Environment* 672: 883-892 [Not relevant to primary or secondary research questions]

Xie, E.; Zhao, X.; Li, K.; Zhang, P.; Zhou, X.; Zhao, X. (2020) Microbial community structure in the river sediments from upstream of Guanting Reservoir: Potential impacts of reclaimed water recharge. *Science of the Total Environment* [Not relevant to primary or secondary research questions]

Xie, H.; Chen, J.; Huang, Y.; Zhang, R.; Chen, C. E.; Li, X.; Kadokami, K. (2020) Screening of 484 trace organic contaminants in coastal waters around the Liaodong Peninsula, China: Occurrence, distribution, and ecological risk. *Environmental Pollution* 267 [Not relevant to primary or secondary research questions]

Xie, Y.; Zhang, X.; Yang, J.; Kim, S.; Hong, S.; Giesy, J. P.; Yim, U. H.; Shim, W. J.; Yu, H.; Khim, J. S. (2018) eDNA-based bioassessment of coastal sediments impacted by an oil spill. *Environmental Pollution* 238: 739-748 [Not relevant to primary or secondary research questions]

Xin, X.; Huang, G.; An, C.; Raina-Fulton, R.; Weger, H. (2019) Insights into Long-Term Toxicity of Triclosan to Freshwater Green Algae in Lake Erie. *Environmental Science and Technology* 53(4)2189-2198 [Not relevant to primary or secondary research questions]

Xiong, Xiaoqin; Qiu, Ning; Su, Liangxia; Hou, Miaomiao; Xu, Chunsen; Xiong, Yuxiang; Dong, Xuelin; Song, Zhou; Wang, Jianwei (2020) In Situ Assessment of Donghu Lake China Using Rare Minnow (*Gobiocypris rarus*). *Archives of Environmental Contamination and Toxicology* 79(2)246-257 [Not relevant to primary or secondary research questions]

Xu, Jing; Jin, Guangqiu; Tang, Hongwu; Zhang, Pei; Wang, Shen; Wang, You-Gan; Li, Ling (2018) Assessing temporal variations of Ammonia Nitrogen concentrations and loads in the Huaihe River Basin in relation to policies on pollution source control. *The Science of the Total Environment* 642: 1386-1395 [Not relevant to primary or secondary research questions]

Xu, L.; Wang, T.; Wang, J.; Lu, A. (2017) Occurrence, speciation and transportation of heavy metals in 9 coastal rivers from watershed of Laizhou Bay, China. *Chemosphere* 173: 61-68 [Not relevant to primary or secondary research questions]

Xu, L.; Wang, Z.; Zhao, J.; Lin, M.; Xing, B. (2020) Accumulation of metal-based nanoparticles in marine bivalve mollusks from offshore aquaculture as detected by single particle ICP-MS. *Environmental Pollution* 260 [Not relevant to primary or secondary research questions]

Xu, Tao; Pan, Xuejun (2013) Phytoplankton Investigation and Environmental Assessment for Dredged Area in Daqing Estuary Section of Dianchi lake, China. *Progress in Environmental Protection and Processing of Resource*, Pts 1-4 295-298: 726 [Not relevant to primary or secondary research questions]

Xu, Xiyuan; Wang, Shuai; Gao, Fenglei; Li, Jingxi; Zheng, Li; Sun, Chengjun; He, Changfei; Wang, Zongxing; Qu, Lingyun (2019) Marine microplastic-associated bacterial community succession in response to geography, exposure time, and plastic type in China's coastal seawaters. *Marine Pollution Bulletin* 145: 278-286 [Not relevant to primary or secondary research questions]

Xu, Y.; Sun, X. Y.; Liu, F.; Fan, Y. N.; Jiang, Z. (2018) Simulation of herbicide transportation in Sihe watershed by SWAT model. *Zhongguo Huanjing Kexue/China Environmental Science* 38(10)3959-3966 [Not relevant to primary or secondary research questions]

Xue, Nana; Wang, Liyi; Li, Wenfeng; Wang, Shanshan; Pan, Xiangliang; Zhang, Daoyong (2020) Increased inheritance of structure and function of bacterial communities and pathogen propagation in plastisphere along a river with increasing antibiotics pollution gradient. *Environmental Pollution* 265(PT A)114641 [Not relevant to primary or secondary research questions]

Xue, Nandong; Li, Fasheng; Hou, Hong; Li, Binwen (2008) Occurrence of endocrine-disrupting pesticide residues in wetland sediments from Beijing, China. *Environmental Toxicology and Chemistry* 27(5)1055-1062 [Not relevant to primary or secondary research questions]

Yalcin, M. Gurhan; Cevik, Ozlem; Karaman, M. Erkan (2013) Use of Multivariate Statistics Methods to Determine Grain Size, Heavy Metal Distribution and Origins of Heavy Metals in Mersin Bay (Eastern Mediterranean) Coastal Sediments. *Asian Journal of Chemistry* 25(5)2696-2702 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Yamini, null; Mandelia, Chetan; Sreedharan, Suja (2015) Otorhinolaryngological Manifestations among HIV Positive Children in Coastal Karnataka. *Journal of clinical and diagnostic research: JCDR* 9(3)MC05-08 [Not relevant to primary or secondary research questions]

Yan, Lijuan; Yu, Dan; Hui, Nan; Naanuri, Eve; Viggor, Signe; Gafarov, Arslan; Sokolov, Sergei L.; Heinaru, Ain; Romantschuk, Martin (2018) Distribution of Archaeal Communities along the Coast of the Gulf of Finland and Their Response to Oil Contamination. *Frontiers in Microbiology* 9: 15 [Not relevant to primary or secondary research questions]

Yan, Qing; Min, Jie; Yu, Yonghong; Zhu, Zhiwei; Feng, Guozhong (2017) Microbial community response during the treatment of pharmaceutically active compounds (PhACs) in constructed wetland mesocosms. *Chemosphere* 186: 823-831 [Not relevant to primary or secondary research questions]

Yan, W.; Hamid, N.; Deng, S.; Jia, P. P.; Pei, D. S. (2020) Individual and combined toxicogenetic effects of microplastics and heavy metals (Cd, Pb, and Zn) perturb gut microbiota homeostasis and gonadal development in marine medaka (*Oryzias melastigma*). *Journal of Hazardous Materials* 397: [Not relevant to primary or secondary research questions]

Yan, X.; Zheng, H.; Zhao, X.; Yu, Y.; Zhong, J. (2020) Source identification and health risk assessment of soil heavy metal in the estuary of Northern Liaodong Bay, China. *Huanjing Kexue Xuebao/Acta Scientiae Circumstantiae* 40(8)3028-3039 [Not relevant to primary or secondary research questions]

Yang, G. C. C. (2019) Integrated electrokinetic processes for the remediation of phthalate esters in river sediments: A mini-review. *Science of the Total Environment* 659: 963-972 [Not relevant to primary or secondary research questions]

Yang, H. J.; Chen, S. C.; Hu, C. W.; Chiang, Y. C.; Tsai, C. T.; Lin, P. Y.; Lai, D. J.; Kuo, C. Y. (2017) Estimation of students' exposure to metal concentrations from river-dust episodes during 1994–2012. *Environmental Science and Pollution Research* 24(6)5679-5689 [Not relevant to primary or secondary research questions]

Yang, H.; Lu, G.; Yan, Z.; Liu, J.; Dong, H.; Jiang, R.; Zhou, R.; Zhang, P.; Sun, Y.; Nkoom, M. (2019) Occurrence, spatial-temporal distribution and ecological risks of pharmaceuticals and personal care products response to water diversion across the rivers in Nanjing, China. *Environmental Pollution* 255 [Not relevant to primary or secondary research questions]

Yang, Lanqin; Di, Lin; Sun, Feili; Tian, Wenfei; Huang, Biao; Fan, Gang (2020) Bioaccessibility and health risk assessment of trace metals in soils of greenhouse vegetable production near the industrial areas of the Yangtze River Delta, China. *Environmental Science and Pollution Research International* 27(24)30729-30740 [Not relevant to primary or secondary research questions]

Yang, Liqiang; Tang, Lili; Li, Hongmei; Wang, Long; Zhang, Yongyu (2019) Unique Microbial Communities Inhabiting Underground Seawater in an Intertidal Area Utilized for Industrialized Aquaculture, as Compared with the Coastal Water. *Geomicrobiology Journal* 36(6)483-491 [Not relevant to primary or secondary research questions]

Yang, M.; Qiu, W.; Shen, Y.; Wu, M. (2011) Detection of rotaviruses in river water and sewage water in Shanghai by RT-PCR. 3: 2007-2009 [Not relevant to primary or secondary research questions]

Yang, Ping; Lai, Derrick Y. F.; Jin, Baoshi; Bastviken, David; Tan, Lishan; Tong, Chuan (2017) Dynamics of dissolved nutrients in the aquaculture shrimp ponds of the Min River estuary, China: Concentrations, fluxes and environmental loads. *The Science of the Total Environment* 603-604: 256-267 [Not relevant to primary or secondary research questions]

Yang, Wei; Lang, Yinhai; Li, Guoliang (2014) Cancer risk of polycyclic aromatic hydrocarbons (PAHs) in the soils from Jiaozhou Bay wetland. *Chemosphere* 112: 289-295 [Not relevant to primary or secondary research questions]

Yang, Wei; Lang, Yin-hai; Li, Guo-liang (2014) Concentration, Source, and Carcinogenic Risk of PAHs in the Soils from Jiaozhou Bay Wetland. *Polycyclic Aromatic Compounds* 34(4)439-451 [Not relevant to primary or secondary research questions]

Yang, Ya-Ching; Wang, Hong-Zen; Chang, Shui-Kai (2013) Social Dimensions in the Success of a Marine Protected Area: A Case in a Taiwan Fishing Community. *Coastal Management* 41(2)161-171 [Not relevant to primary or secondary research questions]

Yang, Yuyi; Wang, Weibo (2018) Benzylidimethylodecyl ammonium chloride shifts the proliferation of functional genes and microbial community in natural water from eutrophic lake. *Environmental Pollution* (Barking, Essex: 1987) 236: 355-365 [Not relevant to primary or secondary research questions]

Yani, A.; Amin, M.; Rohman, F.; Suarsini, E.; Putra, W. E. (2020) Profiling indigenous lead-reducing bacteria from tempe lake, South Sulawesi, Indonesia as bioremediation agents. *Biodiversitas* 21(10)4778-4786 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Yankey, Robert Kofi; Anornu, Geophrey Kwame; Appiah-Adjei, Emmanuel Kwame; Osae, Shiloh Kwabena; Ganyaglo, Samuel Yao (2020) Structural equation modeling and GIS application into non-carcinogenic health risk assessment of the phreatic aquifers of the south-western coastal basin-Ghana. *Modeling Earth Systems and Environment* 6(4)2553-2564 [Not relevant to primary or secondary research questions]

Yao, H.; Qian, X.; Gao, H.; Wang, Y.; Xia, B. (2014) Seasonal and spatial variations of heavy metals in two typical Chinese rivers: Concentrations, environmental risks, And possible sources. *International Journal of Environmental Research and Public Health* 11(11)11860-11878 [Not relevant to primary or secondary research questions]

Yao, Hong; Zhang, Tongzhu; Liu, Bo; Lu, Feng; Fang, Shurong; You, Zhen (2016) Analysis of Surface Water Pollution Accidents in China: Characteristics and Lessons for Risk Management. *Environmental Management* 57(4)868-878 [Not relevant to primary or secondary research questions]

Yao, Jianhua; Gao, Qian; Li, Xuemei; Hu, Mingyang; Miao, Mingming; Pan, Bo (2014) Investigating River Pollution Flowing into Dianchi Lake Using a Combination of GC-MS Analysis and Toxicological Tests. *Bulletin of Environmental Contamination and Toxicology* 92(1)67-70 [Not relevant to primary or secondary research questions]

Yao, Yao; Huang, Chun-Li; Wang, Ji-Zhong; Ni, Hong-Gang; Yang, Ze-Yu; Huang, Zhi-Yong; Bao, Lian-Jun; Zeng, Eddy Y. (2017) Significance of Anthropogenic Factors to Freely Dissolved Polycyclic Aromatic Hydrocarbons in Freshwater of China. *Environmental Science & Technology* 51(15)8304-8312 [Not relevant to primary or secondary research questions]

Yap, C. K.; Cheng, W. H.; Karami, A.; Ismail, A. (2016) Health risk assessments of heavy metal exposure via consumption of marine mussels collected from anthropogenic sites. *Science of the Total Environment* 553: 285-296 [Not relevant to primary or secondary research questions]

Yavo Tchere, M. L.; N'Diaye, C.; Bourgeois, D. (2009) Essential indicators of orodental health in Africa. Applicability in Ivory Coast. *Odonto-stomatologie tropicale = Tropical dental journal* 32(127)15-24 [Not relevant to primary or secondary research questions]

Yavo, W.; Kassi, R. R.; Kiki-Barro, P. C.; Bamba, A.; Kplé, T.; Menan, E. I. H.; Ehouo, F.; Koné, M. (2004) Prevalence and predisposing factors for otomycosis treated in a hospital setting in Abidjan Ivory Coast. *Medecine Tropicale* 64(1)39-42 [Not relevant to primary or secondary research questions]

Ye, Z.; Wang, S.; Gao, W.; Nan, S.; Zhu, S.; He, J.; Liu, D. (2018) Inactivation Mechanism and Apoptotic-Like Changes in Aeromonas Hydrophila Induced by Slightly Acidic Electrolyzed Water in Freshwater. *Transactions of the Asabe* 61(1)305-314 [Not relevant to primary or secondary research questions]

Yetti, E.; Thontowi, A.; Yopi (2016) Polycyclic aromatic hydrocarbon degrading bacteria from the Indonesian marine environment. *Biodiversitas* 17(2)857-864 [Not relevant to primary or secondary research questions]

Yi, A. X.; Leung, K. M. Y.; Lam, M. H. W.; Lee, J. S.; Giesy, J. P. (2012) *Review of measured concentrations of triphenyltin compounds in marine ecosystems and meta-analysis of their risks to humans and the environment*. *Chemosphere* 89(9)1015-1025 [Not relevant to primary or secondary research questions]

Yin, J.; Wang, L.; Liu, Q.; Li, S.; Li, J.; Zhang, X. (2020) Metal concentrations in fish from nine lakes of Anhui Province and the health risk assessment. *Environmental Science and Pollution Research* 27(16)20117-20124 [Not relevant to primary or secondary research questions]

Yoon, Jaewoo; Matsuo, Yoshihide; Matsuda, Satoru; Adachi, Kyoko; Kasai, Hiroaki; Yokota, Akira (2007) *Cerasicoccus arenae* gen. nov., sp nov., a carotenoid-producing marine representative of the family Punicaceicoccaceae within the phylum 'Verrucomicrobia'. isolated from marine sand. *International Journal of Systematic and Evolutionary Microbiology* 57: 2067-2072 [Not relevant to primary or secondary research questions]

Yost, L. J.; Barber, T. R.; Gentry, P. R.; Bock, M. J.; Lyndall, J. L.; Capdevielle, M. C.; Slezak, B. P. (2017) Evaluation of triclosan in Minnesota lakes and rivers: Part II - human health risk assessment. *Ecotoxicology and Environmental Safety* 142: 588-596 [Not relevant to primary or secondary research questions]

You, Luhua; Nguyen, Viet Tung; Pal, Amrita; Chen, Huiting; He, Yiliang; Reinhard, Martin; Gin, Karina Yew-Hoong (2015) Investigation of pharmaceuticals, personal care products and endocrine disrupting chemicals in a tropical urban catchment and the influence of environmental factors. *Science of the Total Environment* 536: 955-963 [Not relevant to primary or secondary research questions]

Young, Suzanne; Juhl, Andrew; O'Mullan, Gregory D. (2013) Antibiotic-resistant bacteria in the Hudson River Estuary linked to wet weather sewage contamination. *Journal of Water and Health* 11(2)297-310 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

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Yu, C. C.; Zhao, W. T.; Gao, X. F.; Cheng, S. G.; Huang, T.; Yin, Y. M.; Zhao, Z. L. (2017) Distribution Characteristics and Health Risk Assessment of Heavy Metals in Surface Water Around Electroplating Factories. *Huanjing Kexue/Environmental Science* 38(3)993-1001 [Not relevant to primary or secondary research questions]

Yu, D.; Shi, J.; Zhang, H.; Wang, Z.; Lu, Y.; Zhang, B.; Pan, Y.; Wang, B.; Sun, P. (2017) Identifying patterns of non-communicable diseases in developed eastern coastal China: A longitudinal study of electronic health records from 12 public hospitals. *BMJ Open* 7(10) [Not relevant to primary or secondary research questions]

Yu, M.; Zheng, R.; Zhang, Y. (2014) The measuring method of hepatic microsomal erod activity in three species of marine fish. *Shengtai Xuebao/ Acta Ecologica Sinica* 34(19)5416-5424 [Not relevant to primary or secondary research questions]

Yu, Qiaogang; Ma, Junwei; Sun, Wanchun; Lin, Hui; Wang, Qiang; Fu, Jianrong (2017) Influences of Nitrification Inhibitor 3,4-Dimethylpyrazole Phosphate on Heavy Metals and Inorganic Nitrogen Transformation in the Rice Field Surface Water. *Water Air and Soil Pollution* 228(4)162 [Not relevant to primary or secondary research questions]

Yu, S. L.; Shi, W. X.; Lu, Y.; Yang, J. X. (2011) Characterization and anti-fouling performance of nano-Al 2O 3/PVDF membrane for Songhua River raw water filtration. *Water Science and Technology* 64(9)1892-1897 [Not relevant to primary or secondary research questions]

Yu, Y. J.; Yang, Y. (2013) The pollution characteristics and the crowd exposure risk assessment of shallow groundwater in an area of the Songhua river basin based on the GIS. *Zhongguo Huanjing Kexue/China Environmental Science* 33(8)1487-1494 [Not relevant to primary or secondary research questions]

Yu, Z.; Zhu, X.; Jiang, Y.; Luo, P.; Hu, C. (2014) Bioremediation and fodder potentials of two *Sargassum* spp. in coastal waters of Shenzhen, South China. *Marine Pollution Bulletin* 85(2)797-802 [Not relevant to primary or secondary research questions]

Yuan, Fasong; Miyamoto, Seiichi (2008) Characteristics of oxygen-18 and deuterium composition in waters from the Pecos River in American Southwest. *Chemical Geology* 255(43862)220-230 [Not relevant to primary or secondary research questions]

Yuce, G.; Pinarbasi, A.; Ozcelik, S.; Ugurluoglu, D. (2006) Soil and water pollution derived from anthropogenic activities in the Porsuk River Basin, Turkey. *Environmental Geology* 49(3)359-375 [Not relevant to primary or secondary research questions]

Yulistyorini, Anie; Puspasari, Arum Kumala; Mujiyono; Sari, Astri Anindya (2019) Removal of BOD and TSS of Student Dormitory Greywater using Vertical Sub-Surface Flow Constructed Wetland of Ipomoea Aquatica. International Conference on Condensed Matters and Advanced Materials (ic2mam 2018) 515: 12056 [Not relevant to primary or secondary research questions]

Yunfei, T. (2019) Summary of research on sediment pollution and environmental dredging technology in rivers and lakes. 943-948 [Not relevant to primary or secondary research questions]

Yusta-García, R.; Orta-Martínez, M.; Mayor, P.; González-Crespo, C.; Rosell-Melé, A. (2017) Water contamination from oil extraction activities in Northern Peruvian Amazonian rivers. *Environmental Pollution* 225: 370-380 [Not relevant to primary or secondary research questions]

Zaccarelli-Magalhães, J.; Amato Santoro, M.; de Abreu, G. R.; Lopes Ricci, E.; Rinaldi Fukushima, A.; Berti Kirsten, T.; Faria Waziry, P. A.; de Souza Spinosa, H. (2020) Exposure of dams to fluoxetine during lactation disturbs maternal behavior but had no effect on the offspring behavior. *Behavioural Brain Research* 377 [Not relevant to primary or secondary research questions]

Zafarzadeh, A.; Bay, A.; Fakhri, Y.; Keramati, H.; Hosseini Pouya, R. (2018) Heavy metal (Pb, Cu, Zn, and Cd) concentrations in the water and muscle of common carp (*Cyprinus carpio*) fish and associated non-carcinogenic risk assessment: Alagol wetland in the Golestan, Iran. *Toxin Reviews* 37(2)154-160 [Not relevant to primary or secondary research questions]

Zaleska-Radziwill, Monika; Lebkowska, Maria; Affek, Katarzyna; Zarzecznia, Agnieszka (2011) Environmental Risk Assessment of Selected Pharmaceuticals Present in Surface Waters in Relation to Animals. *Archives of Environmental Protection* 37(3)31-42 [Not relevant to primary or secondary research questions]

Zamalloa, C.; De Vrieze, J.; Boon, N.; Verstraete, W. (2012) Anaerobic digestibility of marine microalgae *Phaeodactylum tricornutum* in a lab-scale anaerobic membrane bioreactor. *Applied Microbiology and Biotechnology* 93(2)859-869 [Not relevant to primary or secondary research questions]

Zarfel, Gernot; Lipp, Michaela; Guertl, Elena; Folli, Bettina; Baumert, Rita; Kittinger, Clemens (2017) Troubled water under the bridge: Screening of River Mur water reveals dominance of CTX-M harboring *Escherichia coli* and for the first time an environmental VIM-1 producer in Austria. *Science of the Total Environment* 593: 399-405 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd



Zeldis, John R.; Depree, Craig; Gongol, Catherine; South, Paul M.; Marriner, Andrew; Schiel, David R. (2020) Trophic Indicators of Ecological Resilience in a Tidal Lagoon Estuary Following Wastewater Diversion and Earthquake Disturbance. *Estuaries and Coasts* 43(2)223-239 [Not relevant to primary or secondary research questions]

Zeng, D.; Peng, B.; Zhang, K.; Fang, X.; Tan, C.; Kuang, X.; Wu, B.; Tu, X. (2017) Characteristics and assessment of heavy metal contamination in bed sediments from inlet areas of the Lishui River to Dongting Lake. *Huanjing Kexue Xuebao/Acta Scientiae Circumstantiae* 37(9)3480-3488 [Not relevant to primary or secondary research questions]

Zeng, J.; Han, G.; Wu, Q.; Tang, Y. (2019) Heavy metals in suspended particulate matter of the Zhujiang River, southwest China: Contents, sources, and health risks. *International Journal of Environmental Research and Public Health* 16(10) [Not relevant to primary or secondary research questions]

Zeng, Jie; Han, Guilin; Yang, Kunhua (2020) Assessment and sources of heavy metals in suspended particulate matter in a tropical catchment, northeast Thailand. *Journal of Cleaner Production* 265: 121898 [Not relevant to primary or secondary research questions]

Zeng, Xiaoxia; Liu, Yunguo; You, Shaohong; Zeng, Guangming; Tan, Xiaofei; Hu, Xinjiang; Hu, Xi; Huang, Lei; Li, Fei (2015) Spatial distribution, health risk assessment and statistical source identification of the trace elements in surface water from the Xiangjiang River, China. *Environmental Science and Pollution Research International* 22(12)9400-9412 [Not relevant to primary or secondary research questions]

Zenoff, V. F.; Heredia, J.; Ferrero, M.; Síñeriz, F.; Farías, M. E. (2006) Diverse UV-B resistance of culturable bacterial community from high-altitude wetland water. *Current Microbiology* 52(5)359-362 [Not relevant to primary or secondary research questions]

Zhang, C. M.; Du, C.; Xu, H.; Miao, Y. H.; Cheng, Y. Y.; Tang, H.; Zhou, J. H.; Wang, X. C. (2015) Occurrence of tetracycline-resistant fecal coliforms and their resistance genes in an urban river impacted by municipal wastewater treatment plant discharges. *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering* 50(7)744-749 [Not relevant to primary or secondary research questions]

Zhang, Dongqing; Zhang, Weilan; Liang, Yanna (2019) Bacterial community in a freshwater pond responding to the presence of perfluorooctanoic acid (PFOA). *Environmental Technology* [Not relevant to primary or secondary research questions]

Zhang, Fang; Zhang, Hao; Yuan, Ying; Liu, Dun; Zhu, Chenyu; Zheng, Di; Li, Guanghe; Wei, Yuquan; Sun, Dan (2020) Different response of bacterial community to the changes of nutrients and pollutants in sediments from an urban river network. *Frontiers of Environmental Science & Engineering* 14(2)28 [Not relevant to primary or secondary research questions]

Zhang, Guodong; Liu, Xiaohui; Lu, Shaoyong; Zhang, Jinpeng; Wang, Weiliang (2020) Occurrence of typical antibiotics in Nansi Lake's inflowing rivers and antibiotic source contribution to Nansi Lake based on principal component analysis-multiple linear regression model. *Chemosphere* 242: 125269 [Not relevant to primary or secondary research questions]

Zhang, H. G.; Hong, J. M. (2006) Functions of plants of constructed wetlands. *Wetland Science* 4(2)146-154 [Not relevant to primary or secondary research questions]

Zhang, J. Q.; Hu, T. P.; Xing, X. L.; Zheng, H.; Zhang, L.; Zhan, C. L.; Liu, H. X.; Xiao, W. S.; Qi, S. H. (2017) Distribution, sources and risk assessment of the PAHs in the surface sediments and water from the daye lake. *Huanjing Kexue/Environmental Science* 38(1)170-179 [Not relevant to primary or secondary research questions]

Zhang, K.; Su, F.; Liu, X.; Song, Z.; Feng, X. (2017) Heavy metal concentrations in water and soil along the Hun River, Liaoning, China. *Bulletin of Environmental Contamination and Toxicology* 99(3)391-398 [Not relevant to primary or secondary research questions]

Zhang, Kai; He, Ding; Cui, Xingqian; Fan, Daidu; Xiao, Shangbin; Sun, Yongge (2019) Impact of Anthropogenic Organic Matter on the Distribution Patterns of Sediment Microbial Community from the Yangtze River, China. *Geomicrobiology Journal* 36(10)881-893 [Not relevant to primary or secondary research questions]

Zhang, Kun; Zhao, Yanbin; Fent, Karl (2020) Cardiovascular drugs and lipid regulating agents in surface waters at global scale: Occurrence, ecotoxicity and risk assessment. *Science of the Total Environment* 729: 138770 [Not relevant to primary or secondary research questions]

Zhang, L.; Qi, S. H.; Qu, C. K.; Liu, H. X.; Chen, W. W.; Li, F.; Hu, T.; Huang, H. F. (2014) Distribution, source and health risk assessment of heavy metals in the water of Jiulong River, Fujian. *Zhongguo Huanjing Kexue/China Environmental Science* 34(8)2133-2139 [Not relevant to primary or secondary research questions]



Zhang, L.; Wang, Y.; Tan, F.; Yang, Y.; Wu, X.; Wang, W.; Liu, D. (2020) Tidal variability of polycyclic aromatic hydrocarbons and organophosphate esters in the coastal seawater of Dalian, China. *Science of the Total Environment* 708 [Not relevant to primary or secondary research questions]

Zhang, Lai Jun; Li, Yao; Chen, Pan; Li, Xiao Mei; Chen, Yong Gan; Hang, Yu Yu; Gong, Wei Jie (2017) A study of genotoxicity and oxidative stress induced by mercuric chloride in the marine polychaete *Perinereis aibuhitensis*. *Environmental Toxicology and Pharmacology* 56: 361-365 [Not relevant to primary or secondary research questions]

Zhang, Lei (2016) Water Quality Assessment and Pollution Characteristics Analysis for Lower Reaches in Liao River. 2016 2nd International Conference on Environmental Pollution and Public Health (epph 2016) 8: 131-138 [Not relevant to primary or secondary research questions]

Zhang, Pengyan; Lee, Jay; Kang, Guohua; Li, Yanyan; Yang, Dan; Pang, Bo; Zhang, Yu (2018) Disparity of nitrate and nitrite in vivo in cancer villages as compared to other areas in Huai River Basin, China. *Science of the Total Environment* 612: 966-974 [Not relevant to primary or secondary research questions]

Zhang, R.; Pei, J.; Zhang, R.; Wang, S.; Zeng, W.; Huang, D.; Wang, Y.; Zhang, Y.; Wang, Y.; Yu, K. (2018) Occurrence and distribution of antibiotics in mariculture farms, estuaries and the coast of the Beibu Gulf, China: Bioconcentration and diet safety of seafood. *Ecotoxicology and Environmental Safety* 154: 27-35 [Not relevant to primary or secondary research questions]

Zhang, Si-Yu; Tsementzi, Despina; Hatt, Janet K.; Bivins, Aaron; Khelurkar, Nikunj; Brown, Joe; Tripathi, Sachchida Nand; Konstantinidis, Konstantinos T. (2019) Intensive allochthonous inputs along the Ganges River and their effect on microbial community composition and dynamics. *Environmental Microbiology* 21(1)182-196 [Not relevant to primary or secondary research questions]

Zhang, Y. F.; Chen, S. Y.; Qu, M. J.; Adeleye, A. O.; Di, Y. N. (2017) Utilization of isolated marine mussel cells as an in vitro model to assess xenobiotics induced genotoxicity. *Toxicology in vitro*: an international journal published in association with BIBRA 44: 219-229 [Not relevant to primary or secondary research questions]

Zhang, Y.; Lu, Y.; Wang, P.; Shi, Y. (2018) Biomagnification of Hexabromocyclododecane (HBCD) in a coastal ecosystem near a large producer in China: Human exposure implication through food web transfer. *Science of the Total Environment* 624: 1213-1220 [Not relevant to primary or secondary research questions]

Zhang, Yuan; Shi, Guo-Liang; Guo, Chang-Sheng; Xu, Jian; Tian, Ying-Ze; Feng, Yin-Chang; Wang, Yu-Qiu (2012) Seasonal variations of concentrations, profiles and possible sources of polycyclic aromatic hydrocarbons in sediments from Taihu Lake, China. *Journal of Soils and Sediments* 12(6)933-941 [Not relevant to primary or secondary research questions]

Zhang, Z.; Juying, L.; Mamat, Z. (2016) Sources identification and pollution evaluation of heavy metals in the surface sediments of Bortala River, Northwest China. *Ecotoxicology and Environmental Safety* 126: 94-101 [Not relevant to primary or secondary research questions]

Zhang, Zhaoxue; Zhang, Nan; Li, Haipu; Lu, Yi; Yang, Zhaoguang (2020) Potential health risk assessment for inhabitants posed by heavy metals in rice in Zijiang River basin, Hunan Province, China. *Environmental Science and Pollution Research International* 27(19)24013-24024 [Not relevant to primary or secondary research questions]

Zhao, H. Y. (2006) Review of wetland science in the Songnen Plain in recent 10 years. *Wetland Science* 4(3)233-240 [Not relevant to primary or secondary research questions]

Zhao, Huaxian; Yan, Bing; Mo, Xueyan; Li, Pu; Li, Baoqin; Li, Quanwen; Li, Nan; Mo, Shuming; Ou, Qian; Shen, Peihong; Wu, Bo; Jiang, Chengjian (2019) Prevalence and proliferation of antibiotic resistance genes in the subtropical mangrove wetland ecosystem of South China Sea. *MicrobiologyOpen* 8(11)e871 [Not relevant to primary or secondary research questions]

Zhao, Jian; Fu, Guo; Lei, Kun; Li, Yanwu (2011) Multivariate analysis of surface water quality in the Three Gorges area of China and implications for water management. *Journal of Environmental Sciences (China)* 23(9)1460-1471 [Not relevant to primary or secondary research questions]

Zhao, Jun; Zhao, Xin; Chao, Lei; Zhang, Wei; You, Tao; Zhang, Jie (2014) Diversity change of microbial communities responding to zinc and arsenic pollution in a river of northeastern China. *Journal of Zhejiang University. Science. B* 15(7)670-680 [Not relevant to primary or secondary research questions]

Zhao, Meng M.; Chen, Yi-ping; Xue, Lin-gui; Fan, Tao T. (2020) Three kinds of ammonia oxidizing microorganisms play an important role in ammonia nitrogen self-purification in the Yellow River. *Chemosphere* 243: 125405 [Not relevant to primary or secondary research questions]

Zhao, P.; Lu, W.; Hong, Y.; Chen, J.; Dong, S.; Huang, Q. (2021) Long-term wet precipitation of PM2.5 disturbed the gut microbiome and inhibited the growth of marine medaka *Oryzias melastigma*. *Science of the Total Environment* 755 [Not relevant to primary or secondary research questions]

Technical Report for Narrative Review in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards

Ecos Environmental Consulting Pty Ltd

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Zhao, X.; Yang, J.; Zhang, X.; Wang, L.; Ma, F. (2017) Evaluation of bioaugmentation using multiple life cycle assessment approaches: A case study of constructed wetland. *Bioresource Technology* 244: 407-415 [Not relevant to primary or secondary research questions]

Zhaoyong, Z.; Xiaodong, Y.; Shengtian, Y. (2018) Heavy metal pollution assessment, source identification, and health risk evaluation in Aibi Lake of northwest China. *Environmental Monitoring and Assessment* 190(2) [Not relevant to primary or secondary research questions]

Zheng, Q. M.; Liu, X. L.; Guo, J. S.; Zhong, Y. M.; Han, C. Y. (2019) Analysis of heavy metal concentrations in marine economic shellfish from eastern guangdong province and its health risk. *Journal of Agricultural Resources and Environment* 36(1)105-114 [Not relevant to primary or secondary research questions]

Zheng, Senlin; Chen, Bin; Qiu, Xiaoyan; Lin, Kangli; Yu, Xingguang (2013) Three novel cytochrome P450 genes identified in the marine polychaete *Perinereis nuntia* and their transcriptional response to xenobiotics. *Aquatic Toxicology* 134: 44866 [Not relevant to primary or secondary research questions]

Zheng, Weiwei; Wang, Xia; Tian, Dajun; Jiang, Songhui; Andersen, Melvin E.; He, Gengsheng; Crabbe, M. James C.; Zheng, Yuxin; Zhong, Yang; Qu, Weidong (2013) Water pollutant fingerprinting tracks recent industrial transfer from coastal to inland China: A case study. *Scientific Reports* 3: 1031 [Not relevant to primary or secondary research questions]

Zheng, Y.; Lu, G. H.; Shao, P. W.; Piao, H. T.; Gai, N.; Rao, Z.; Zhao, Q. S.; Yang, Y. L. (2020) Source Tracking and Risk Assessment of Pharmaceutical and Personal Care Products in Surface Waters of Qingdao, China, with Emphasis on Influence of Animal Farming in Rural Areas. *Archives of Environmental Contamination and Toxicology* 78(4)579-588 [Not relevant to primary or secondary research questions]

Zhenzhen, Wang; Dongling, Chen; Lantao, Li; Shilei, Sun (2007) Evaluation and Analysis on Current Water Environment Quality and Water Pollution Trend for Shandong Section of the Yellow River.[Not relevant to primary or secondary research questions]

Zhong, W.; Zhang, Y.; Wu, Z.; Yang, R.; Chen, X.; Yang, J.; Zhu, L. (2018) Health risk assessment of heavy metals in freshwater fish in the central and eastern North China. *Ecotoxicology and Environmental Safety* 157: 343-349 [Not relevant to primary or secondary research questions]

Zhou, L.; Wu, H. L.; Xu, H. L.; Shen, X. X.; Chai, M. W.; Li, R. L. (2020) Bird ecological health assessment of mangrove wetland in Guangdong-Hong Kong-Macao Greater Bay Area: A case study of Shenzhen Bay. *Zhongguo Huanjing Kexue/China Environmental Science* 40(6)2604-2614 [Not relevant to primary or secondary research questions]

Zhou, X.; Peng, F.; Luo, Z.; Li, Y.; Li, H.; Yang, Z. (2020) Assessment of water contamination and health risk of endocrine disrupting chemicals in outdoor and indoor swimming pools. *Science of the Total Environment* 704 [Not relevant to primary or secondary research questions]

Zhou, Xinyi; Yang, Zhaoguang; Luo, Zhoufei; Li, Haipu; Chen, Guoyao (2019) Endocrine disrupting chemicals in wild freshwater fishes: Species, tissues, sizes and human health risks. *Environmental Pollution* (Barking, Essex: 1987) 244: 462-468 [Not relevant to primary or secondary research questions]

Zhou, Xuefei; Sang, Wenjing; Liu, Shushen; Zhang, Yalei; Ge, Hulin (2010) Modeling and prediction for the acute toxicity of pesticide mixtures to the freshwater luminescent bacterium *Vibrio qinghaiensis* sp.-Q67. *Journal of Environmental Sciences (China)* 22(3)433-440 [Not relevant to primary or secondary research questions]

Zhou, Yan; Wang, Fenghe; Wan, Jinzhong; He, Jian; Li, Qun; Chen, Qiang; Gao, Jay; Lin, Yusuo; Zhang, Shengtian (2017) Ecotoxicological bioassays of sediment leachates in a river bed flanked by decommissioned pesticide plants in Nantong City, East China. *Environmental Science and Pollution Research* 24(9)8541-8550 [Not relevant to primary or secondary research questions]

Zhou, Z. C.; Zheng, J.; Wei, Y. Y.; Chen, T.; Dahlgren, R. A.; Shang, X.; Chen, H. (2017) Antibiotic resistance genes in an urban river as impacted by bacterial community and physicochemical parameters. *Environmental Science and Pollution Research* 24(30)23753-23762 [Not relevant to primary or secondary research questions]

Zhu, Xiao-Hua; Kaneko, Arata; Wu, Qingsong; Zhang, Chunzheng; Taniguchi, Naokazu; Gohda, Noriaki (2013) Mapping Tidal Current Structures in Zhitouyang Bay, China, Using Coastal Acoustic Tomography. *IEEE Journal of Oceanic Engineering* 38(2)285-296 [Not relevant to primary or secondary research questions]

Zhu, Xiaoshan; Zhou, Jin; Cai, Zhonghua (2011) TiO₂ Nanoparticles in the Marine Environment: Impact on the Toxicity of Tributyltin to Abalone (*Haliotis diversicolor supertexta*) Embryos. *Environmental Science & Technology* 45(8)3753-3758 [Not relevant to primary or secondary research questions]



Zhu, Y. G.; Zhao, Y.; Li, B.; Huang, C. L.; Zhang, S. Y.; Yu, S.; Chen, Y. S.; Zhang, T.; Gillings, M. R.; Su, J. Q. (2017) Continental-scale pollution of estuaries with antibiotic resistance genes. *Nature Microbiology* 2 [Not relevant to primary or secondary research questions]

Zhuo, M.; Ma, S.; Li, G.; Yu, Y.; An, T. (2019) Chlorinated paraffins in the indoor and outdoor atmospheric particles from the Pearl River Delta: Characteristics, sources, and human exposure risks. *Science of the Total Environment* 650: 1041-1049 [Not relevant to primary or secondary research questions]

Zielinski, O.; Busch, J. A.; Cembella, A. D.; Daly, K. L.; Engelbrektsson, J.; Hannides, A. K.; Schmidt, H. (2009) Detecting marine hazardous substances and organisms: sensors for pollutants, toxins, and pathogens. *Ocean Science* 5(3)329-349 [Not relevant to primary or secondary research questions]

Zis, T.; Ronningen, V.; Scrosati, R. (2004) Minor improvement for intertidal seaweeds and invertebrates after acid mine drainage diversion at Britannia Beach, Pacific Canada. *Marine Pollution Bulletin* 48(44176)1040-1047 [Not relevant to primary or secondary research questions]

Živković, N.; Takić, L.; Djordjević, L.; Djordjević, A.; Mladenović-Ranisavljević, I.; Golubović, T.; Božilov, A. (2019) Concentrations of heavy metal cations and a health risk assessment of sediments and river surface water: A case study from a serbian mine. *Polish Journal of Environmental Studies* 28(3)2009-2020 [Not relevant to primary or secondary research questions]

Zobrist, Juerg; Sima, Mihaela; Dogaru, Diana; Senila, Marin; Yang, Hong; Popescu, Claudia; Roman, Cecilia; Bela, Abraham; Frei, Linda; Dold, Bernhard; Balteanu, Dan (2009) Environmental and socioeconomic assessment of impacts by mining activities-a case study in the Certej River catchment, Western Carpathians, Romania. *Environmental Science and Pollution Research* 16: 14-26 [Not relevant to primary or secondary research questions]

Zouch, H.; Karray, F.; Armougom, F.; Chifflet, S.; Hirschler-Réa, A.; Kharrat, H.; Kamoun, L.; Hania, W. B.; Ollivier, B.; Sayadi, S.; Quéméneur, M. (2017) Microbial diversity in sulfate-reducing marine sediment enrichment cultures associated with anaerobic biotransformation of coastal stockpiled phosphogypsum (Sfax, Tunisia). *Frontiers in Microbiology* 8(AUG) [Not relevant to primary or secondary research questions]

Zoumpopoulou, Georgia; Tzouvanou, Alexandra; Mavrogonatou, Eleni; Alexandraki, Voula; Georgalaki, Marina; Anastasiou, Rania; Papadelli, Marina; Manolopoulou, Eugenia; Kazou, Maria; Kletsas, Dimitris; Papadimitriou, Konstantinos; Tsakalidou, Effie (2018) Probiotic Features of Lactic Acid Bacteria Isolated from a Diverse Pool of Traditional Greek Dairy Products Regarding Specific Strain-Host Interactions. *Probiotics and Antimicrobial Proteins* 10(2)313-322 [Not relevant to primary or secondary research questions]

8.2.2.3. Screened on title: duplicates

Allerby, Katarina; Sameby, Birgitta; Brain, Cecilia; Joas, Erik; Quinlan, Patrick; Sjostrom, Nils; Burns, Tom; Waern, Margda (2015) Stigma and Burden Among Relatives of Persons With Schizophrenia: Results From the Swedish COAST Study. *Psychiatric Services* 66(10)1020-1026 [Duplicate]

Allsopp, N.; Gaika, L.; Knight, R.; Monakisi, C.; Hoffman, M. T. (2007) The impact of heavy grazing on an ephemeral river system in the succulent karoo, South Africa. *Journal of Arid Environments* 71(1)82-96 [Duplicate]

Ambasht, R. S.; Srivastava, N. K. (1994) Restoration strategies for the degrading Rihand River and reservoir ecosystems in India. *Global wetlands* 483-492 [Duplicate]

Austin, A.; Munteanu, N. (1984) Evaluation of changes in a large oligotrophic wilderness park lake exposed to mine tailing effluent for 14 years: The phytoplankton. *Environmental Pollution. Series A, Ecological and Biological* 33(1)39-62 [Duplicate]

Balsalobre, L. C., Dropa, M., Matté, G. R., and Matté, M. H. (2009) Molecular detection of enterotoxins in environmental strains of *Aeromonas hydrophila* and *Aeromonas jandaei*. *Journal of Water and Health* 74(4)685-691 [Duplicate]

Bao, Yanping; Jin, Xiaohu; Guo, Chuling; Lu, Guining; Dang, Zhi (2020) Sulfate-reducing bacterial community shifts in response to acid mine drainage in the sediment of the Hengshi watershed, South China. *Environmental Science and Pollution Research* 28(2021)2822-2834 [Duplicate]

Behbahaninia, A. (2007) Physico-chemical characteristics and pollution levels of heavy metals in Jajrood River, East of Tehran, Iran. 142-145 [Duplicate]

Berg, K. A., Lyra, C., Niemi, R. M., Heens, B., Hoppu, K., Erkoma, K., et al. (2011) Virulence genes of *Aeromonas* isolates, bacterial endotoxins and cyanobacterial toxins from recreational water samples associated with human health symptoms. *Journal of Water and Health* 9(4)670-679 [Duplicate]



Bhadra, Bhaskar; Nanda, Ashis Kumar; Chakraborty, Ranadhir (2007) Fluctuation in recoverable nickel and zinc resistant copiotrophic bacteria explained by the varying zinc ion content of Torsa River in different months. *Archives of Microbiology* 188(3)215-224 [Duplicate]

Birmingham, M. E.; Lee, L. A.; Ndayimirije, N.; Nkurikiye, S.; Hersh, B. S.; Wells, J. G.; Deming, M. S. (1997) Epidemic cholera in Burundi: Patterns of transmission in the Great Rift Valley Lake region. *Lancet* 349(9057)981-985 [Duplicate]

Bishop, C. A.; Mahony, N. A.; Struger, J.; Ng, P.; Pettit, K. E. (1999) Anuran development, density and diversity in relation to agricultural activity in the Holland River watershed, Ontario, Canada (1990-1992). *Environmental Monitoring and Assessment* 57(1)21-43 [Duplicate]

Björklund, K., Bondelind, M., Karlsson, A., Karlsson, D., and Sokolova, E. (2018) Hydrodynamic modelling of the influence of stormwater and combined sewer overflows on receiving water quality: Benzo(a)pyrene and copper risks to recreational water. *Journal of Environmental Management* 207: 32-42 [Duplicate]

Bonotto, Daniel Marcos (2010) The physical and chemical characterization of some ground and surface waters in São Paulo state, Brazil. *Water Quality: Physical, Chemical and Biological Characteristics* 14977 [Duplicate]

Bowen, A. B.; Kile, J. C.; Otto, C.; Kazerouni, N.; Austin, C.; Blount, B. C.; Wong, H. N.; Beach, M. J.; Fry, A. M. (2007) Outbreaks of short-incubation ocular and respiratory illness following exposure to indoor swimming pools. *Environmental Health Perspectives* 115(2)267-271 [Duplicate]

Boyett, T.; Davy, L.; Weathers, L.; Campbell, R.; Van Durme, D.; Roetzheim, R. G. (2002) Sun protection of children at the beach. *Journal of the American Board of Family Practice* 15(2)112-117 [Duplicate]

Brownell, M. J.; Harwood, V. J.; Kurz, R. C.; McQuaig, S. M.; Lukasik, J.; Scott, T. M. (2007) Confirmation of putative stormwater impact on water quality at a Florida beach by microbial source tracking methods and structure of indicator organism populations. *Water Research* 41(16)3747-3757 [Duplicate]

Buatois, L. A.; Mángano, M. G.; Carr, T. R. (1999) Sedimentology and ichnology of paleozoic estuarine and shoreface reservoirs, morrow sandstone, lower Pennsylvanian of southwest Kansas, USA. *Current Research in Earth Sciences* 243(1)12785 [Duplicate]

de Man, H., Heederik, D. D. J., Leenen, E. J. T. M., de Roda Husman, A. M., Spithoven, J. J. G., and van Knapen, F. (2014) Human exposure to endotoxins and fecal indicators originating from water features. *Water Research* 51: 198-205 [Duplicate]

Dedeh, Amina; Ciutat, Aurelie; Tran, Damien; Bourdineaud, Jean-Paul (2014) DNA Alterations Triggered by Environmentally Relevant Polymetallic Concentrations in Marine Clams *Ruditapes philippinarum* and Polychaete Worms *Hediste diversicolor*. *Archives of Environmental Contamination and Toxicology* 67(4)651-658 [Duplicate]

Dragun, Zrinka; Kapetanović, Damir; Raspor, Biserka; Teskeredžić, Emin (2011) Water quality of medium size watercourse under baseflow conditions: the case study of river Sutla in Croatia. *Ambio* 40(4)391-407 [Duplicate]

Gallen, C.; Heffernan, A. L.; Kaserzon, S.; Dogruer, G.; Samanipour, S.; Gomez-Ramos, M. J.; Mueller, J. F. (2019) Integrated chemical exposure assessment of coastal green turtle foraging grounds on the Great Barrier Reef. *The Science of the Total Environment* 657: 401-409 [Duplicate]

Gonzalez-Plaza, Juan J.; Simatovic, Ana; Milakovic, Milena; Bielen, Ana; Wichmann, Fabienne; Udikovic-Kolic, Nikolina (2018) Functional Repertoire of Antibiotic Resistance Genes in Antibiotic Manufacturing Effluents and Receiving Freshwater Sediments. *Frontiers in Microbiology* 8: 2678 [Duplicate]

Lévesque, B., Gervais, M. C., Chevalier, P., Gauvin, D., Anassour-Laouan-Sidi, E., Gingras, S., et al. (2016) Exposure to cyanobacteria: Acute health effects associated with endotoxins. *Public Health* 134: 98-101 [Duplicate]

Nachite, D.; Dominguez, N. Del Estal; El M'rini, A.; Anfuso, G. (2020) Environmental Sensitivity Index maps in a high maritime transit area: The Moroccan coast of the Gibraltar Strait study case. *Journal of African Earth Sciences* 163: 103750 [Duplicate]

Rutjes, Saskia A.; van den Berg, Harold H. J. L.; Lodder, Willernijn J.; Husman, Ana Maria de Roda (2006) Real-time detection of noroviruses in surface water by use of a broadly reactive nucleic acid sequence-based amplification assay. *Applied and Environmental Microbiology* 72(8)5349-5358 [Duplicate]

Shreedhar, Sowmya; Devasya, Rekha Punchapady; Naregundi, Karunakara; Young, Chiu-Chung; Bhagwath, Arun Ananthapadmanabha (2014) Phosphate solubilizing uranium tolerant bacteria associated with monazite sand of a natural background radiation site in South-West coast of India. *Annals of Microbiology* 64(4)1683-1689 [Duplicate]

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Yap, C. K.; Cheng, W. H.; Karami, A.; Ismail, A. (2016) Health risk assessments of heavy metal exposure via consumption of marine mussels collected from anthropogenic sites. *Science of the Total Environment* 553: 285-296 [Duplicate]

Yavo Tchere, M. L.; N'Diaye, C.; Bourgeois, D. (2009) Essential indicators of orodental health in Africa. Applicability in Ivory Coast. *Odonto-stomatologie tropicale = Tropical dental journal* 32(127)15-24 [Duplicate]

Yavo, W.; Kassi, R. R.; Kiki-Barro, P. C.; Bamba, A.; Kplé, T.; Menan, E. I. H.; Ehouo, F.; Koné, M. (2004) Prevalence and predisposing factors for otomycosis treated in a hospital setting in Abidjan Ivory Coast. *Medecine Tropicale* 64(1)39-42 [Duplicate]

Yetti, E.; Thontowi, A.; Yopi (2016) Polycyclic aromatic hydrocarbon degrading bacteria from the Indonesian marine environment. *Biodiversitas* 17(2)857-864 [Duplicate]

Yi, A. X.; Leung, K. M. Y.; Lam, M. H. W.; Lee, J. S.; Giesy, J. P. (2012) Review of measured concentrations of triphenyltin compounds in marine ecosystems and meta-analysis of their risks to humans and the environment. *Chemosphere* 89(9)1015-1025 [Duplicate]

Yin, J.; Wang, L.; Liu, Q.; Li, S.; Li, J.; Zhang, X. (2020) Metal concentrations in fish from nine lakes of Anhui Province and the health risk assessment. *Environmental Science and Pollution Research* 27(16)20117-20124 [Duplicate]

Yost, L. J.; Barber, T. R.; Gentry, P. R.; Bock, M. J.; Lyndall, J. L.; Capdeville, M. C.; Slezak, B. P. (2017) Evaluation of triclosan in Minnesota lakes and rivers: Part II - human health risk assessment. *Ecotoxicology and Environmental Safety* 142: 588-596 [Duplicate]

You, Luhua; Nguyen, Viet Tung; Pal, Amrita; Chen, Huiting; He, Yiliang; Reinhard, Martin; Gin, Karina Yew-Hoong (2015) Investigation of pharmaceuticals, personal care products and endocrine disrupting chemicals in a tropical urban catchment and the influence of environmental factors. *Science of the Total Environment* 536: 955-963 [Duplicate]

Young, Suzanne; Juhl, Andrew; O'Mullan, Gregory D. (2013) Antibiotic-resistant bacteria in the Hudson River Estuary linked to wet weather sewage contamination. *Journal of Water and Health* 11(2)297-310 [Duplicate]

Yu, C. C.; Zhao, W. T.; Gao, X. F.; Cheng, S. G.; Huang, T.; Yin, Y. M.; Zhao, Z. L. (2017) Distribution Characteristics and Health Risk Assessment of Heavy Metals in Surface Water Around Electroplating Factories. *Huanjing Kexue/Environmental Science* 38(3)993-1001 [Duplicate]

Yu, D.; Shi, J.; Zhang, H.; Wang, Z.; Lu, Y.; Zhang, B.; Pan, Y.; Wang, B.; Sun, P. (2017) Identifying patterns of non-communicable diseases in developed eastern coastal China: A longitudinal study of electronic health records from 12 public hospitals. *BMJ Open* 7(10) [Duplicate]

Yu, M.; Zheng, R.; Zhang, Y. (2014) The measuring method of hepatic microsomal erod activity in three species of marine fish. *Shengtai Xuebao/ Acta Ecologica Sinica* 34(19)5416-5424 [Duplicate]

Yu, Qiaogang; Ma, Junwei; Sun, Wanchun; Lin, Hui; Wang, Qiang; Fu, Jianrong (2017) Influences of Nitritation Inhibitor 3,4-Dimethylpyrazole Phosphate on Heavy Metals and Inorganic Nitrogen Transformation in the Rice Field Surface Water. *Water Air and Soil Pollution* 228(4)162 [Duplicate]

Yu, S. L.; Shi, W. X.; Lu, Y.; Yang, J. X. (2011) Characterization and anti-fouling performance of nano-Al 2O 3/PVDF membrane for Songhua River raw water filtration. *Water Science and Technology* 64(9)1892-1897 [Duplicate]

Yu, Y. J.; Yang, Y. (2013) The pollution characteristics and the crowd exposure risk assessment of shallow groundwater in an area of the Songhua river basin based on the GIS. *Zhongguo Huanjing Kexue/China Environmental Science* 33(8)1487-1494 [Duplicate]

Yu, Z.; Zhu, X.; Jiang, Y.; Luo, P.; Hu, C. (2014) Bioremediation and fodder potentials of two *Sargassum* spp. in coastal waters of Shenzhen, South China. *Marine Pollution Bulletin* 85(2)797-802 [Duplicate]

Yuan, Fasong; Miyamoto, Seiichi (2008) Characteristics of oxygen-18 and deuterium composition in waters from the Pecos River in American Southwest. *Chemical Geology* 255(43862)220-230 [Duplicate]

Yuce, G.; Pinarbasi, A.; Ozcelik, S.; Ugurluoglu, D. (2006) Soil and water pollution derived from anthropogenic activities in the Porsuk River Basin, Turkey. *Environmental Geology* 49(3)359-375 [Duplicate]

Yunfei, T. (2019) Summary of research on sediment pollution and environmental dredging technology in rivers and lakes. 943-948 [Duplicate]

Yusta-García, R.; Orta-Martínez, M.; Mayor, P.; González-Crespo, C.; Rosell-Melé, A. (2017) Water contamination from oil extraction activities in Northern Peruvian Amazonian rivers. *Environmental Pollution* 225: 370-380 [Duplicate]

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Zaccarelli-Magalhães, J.; Amato Santoro, M.; de Abreu, G. R.; Lopes Ricci, E.; Rinaldi Fukushima, A.; Berti Kirsten, T.; Faria Waziry, P. A.; de Souza Spinosa, H. (2020) Exposure of dams to fluoxetine during lactation disturbs maternal behavior but had no effect on the offspring behavior. *Behavioural Brain Research* 377 [Duplicate]

Zafarzadeh, A.; Bay, A.; Fakhri, Y.; Keramati, H.; Hosseini Pouya, R. (2018) Heavy metal (Pb, Cu, Zn, and Cd) concentrations in the water and muscle of common carp (*Cyprinus carpio*) fish and associated non-carcinogenic risk assessment: Alagol wetland in the Golestan, Iran. *Toxin Reviews* 37(2)154-160 [Duplicate]

Zaleska-Radziwill, Monika; Lebkowska, Maria; Affek, Katarzyna; Zarzeczna, Agnieszka (2011) Environmental Risk Assessment of Selected Pharmaceuticals Present in Surface Waters in Relation to Animals. *Archives of Environmental Protection* 37(3)31-42 [Duplicate]

Zarfel, Gernot; Lipp, Michaela; Guertl, Elena; Folli, Bettina; Baumert, Rita; Kittinger, Clemens (2017) Troubled water under the bridge: Screening of River Mur water reveals dominance of CTX-M harboring *Escherichia coli* and for the first time an environmental VIM-1 producer in Austria. *Science of the Total Environment* 593: 399-405 [Duplicate]

Zeng, D.; Peng, B.; Zhang, K.; Fang, X.; Tan, C.; Kuang, X.; Wu, B.; Tu, X. (2017) Characteristics and assessment of heavy metal contamination in bed sediments from inlet areas of the Lishui River to Dongting Lake. *Huanjing Kexue Xuebao/Acta Scientiae Circumstantiae* 37(9)3480-3488 [Duplicate]

Zeng, J.; Han, G.; Wu, Q.; Tang, Y. (2019) *Heavy metals in suspended particulate matter of the Zhujiang River, southwest China: Contents, sources, and health risks*. *International Journal of Environmental Research and Public Health* 16(10) [Duplicate]

Zeng, Xiaoxia; Liu, Yunguo; You, Shaohong; Zeng, Guangming; Tan, Xiaofei; Hu, Xinjiang; Hu, Xi; Huang, Lei; Li, Fei (2015) Spatial distribution, health risk assessment and statistical source identification of the trace elements in surface water from the Xiangjiang River, China. *Environmental Science and Pollution Research International* 22(12)9400-9412 [Duplicate]

Zenoff, V. F.; Heredia, J.; Ferrero, M.; Síñeriz, F.; Farías, M. E. (2006) Diverse UV-B resistance of culturable bacterial community from high-altitude wetland water. *Current Microbiology* 52(5)359-362 [Duplicate]

Zhang, C. M.; Du, C.; Xu, H.; Miao, Y. H.; Cheng, Y. Y.; Tang, H.; Zhou, J. H.; Wang, X. C. (2015) Occurrence of tetracycline-resistant fecal coliforms and their resistance genes in an urban river impacted by municipal wastewater treatment plant discharges. *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering* 50(7)744-749 [Duplicate]

Zhang, C., Tian, F., Zhang, M., Zhang, Z., Bai, M., Guo, G., et al. (2019) Endotoxin contamination, a potentially important inflammation factor in water and wastewater: A review. *Science of The Total Environment* 681: 365-378 [Duplicate]

Zhang, Fang; Zhang, Hao; Yuan, Ying; Liu, Dun; Zhu, Chenyu; Zheng, Di; Li, Guanghe; Wei, Yuquan; Sun, Dan (2020) Different response of bacterial community to the changes of nutrients and pollutants in sediments from an urban river network. *Frontiers of Environmental Science & Engineering* 14(2)28 [Duplicate]

Zhang, Guodong; Liu, Xiaohui; Lu, Shaoyong; Zhang, Jinpeng; Wang, Weiliang (2020) Occurrence of typical antibiotics in Nansi Lake's inflowing rivers and antibiotic source contribution to Nansi Lake based on principal component analysis-multiple linear regression model. *Chemosphere* 242: 125269 [Duplicate]

Zhang, H. G.; Hong, J. M. (2006) Functions of plants of constructed wetlands. *Wetland Science* 4(2)146-154 [Duplicate]

Zhang, J. Q.; Hu, T. P.; Xing, X. L.; Zheng, H.; Zhang, L.; Zhan, C. L.; Liu, H. X.; Xiao, W. S.; Qi, S. H. (2017) Distribution, sources and risk assessment of the PAHs in the surface sediments and water from the daye lake. *Huanjing Kexue/Environmental Science* 38(1)170-179 [Duplicate]

Zhang, K.; Su, F.; Liu, X.; Song, Z.; Feng, X. (2017) Heavy metal concentrations in water and soil along the Hun River, Liaoning, China. *Bulletin of Environmental Contamination and Toxicology* 99(3)391-398 [Duplicate]

Zhang, Kai; He, Ding; Cui, Xingqian; Fan, Daidu; Xiao, Shangbin; Sun, Yongge (2019) Impact of Anthropogenic Organic Matter on the Distribution Patterns of Sediment Microbial Community from the Yangtze River, China. *Geomicrobiology Journal* 36(10)881-893 [Duplicate]

Zhang, Kun; Zhao, Yanbin; Fent, Karl (2020) Cardiovascular drugs and lipid regulating agents in surface waters at global scale: Occurrence, ecotoxicity and risk assessment. *Science of the Total Environment* 729: 138770 [Duplicate]



Zhang, L.; Qi, S. H.; Qu, C. K.; Liu, H. X.; Chen, W. W.; Li, F.; Hu, T.; Huang, H. F. (2014) Distribution, source and health risk assessment of heavy metals in the water of Jiulong River, Fujian. *Zhongguo Huanjing Kexue/China Environmental Science* 34(8)2133-2139 [Duplicate]

Zhang, L.; Wang, Y.; Tan, F.; Yang, Y.; Wu, X.; Wang, W.; Liu, D. (2020) Tidal variability of polycyclic aromatic hydrocarbons and organophosphate esters in the coastal seawater of Dalian, China. *Science of the Total Environment* 708 [Duplicate]

Zhang, Lai Jun; Li, Yao; Chen, Pan; Li, Xiao Mei; Chen, Yong Gan; Hang, Yu Yu; Gong, Wei Jie (2017) A study of genotoxicity and oxidative stress induced by mercuric chloride in the marine polychaete *Perinereis aibuhitensis*. *Environmental Toxicology and Pharmacology* 56: 361-365 [Duplicate]

Zhang, Pengyan; Lee, Jay; Kang, Guohua; Li, Yanyan; Yang, Dan; Pang, Bo; Zhang, Yu (2018) Disparity of nitrate and nitrite in vivo in cancer villages as compared to other areas in Huai River Basin, China. *Science of the Total Environment* 612: 966-974 [Duplicate]

Zhang, R.; Pei, J.; Zhang, R.; Wang, S.; Zeng, W.; Huang, D.; Wang, Y.; Zhang, Y.; Wang, Y.; Yu, K. (2018) Occurrence and distribution of antibiotics in mariculture farms, estuaries and the coast of the Beibu Gulf, China: Bioconcentration and diet safety of seafood. *Ecotoxicology and Environmental Safety* 154: 27-35 [Duplicate]

Zhang, Y. F.; Chen, S. Y.; Qu, M. J.; Adeleye, A. O.; Di, Y. N. (2017) Utilization of isolated marine mussel cells as an in vitro model to assess xenobiotics induced genotoxicity. *Toxicology in vitro: an international journal published in association with BIBRA* 44: 219-229 [Duplicate]

Zhang, Y.; Lu, Y.; Wang, P.; Shi, Y. (2018) Biomagnification of Hexabromocyclododecane (HBCD) in a coastal ecosystem near a large producer in China: Human exposure implication through food web transfer. *Science of the Total Environment* 624: 1213-1220 [Duplicate]

Zhang, Yuan; Shi, Guo-Liang; Guo, Chang-Sheng; Xu, Jian; Tian, Ying-Ze; Feng, Yin-Chang; Wang, Yu-Qiu (2012) Seasonal variations of concentrations, profiles and possible sources of polycyclic aromatic hydrocarbons in sediments from Taihu Lake, China. *Journal of Soils and Sediments* 12(6)933-941 [Duplicate]

Zhang, Z.; Juying, L.; Mamat, Z. (2016) Sources identification and pollution evaluation of heavy metals in the surface sediments of Bortala River, Northwest China. *Ecotoxicology and Environmental Safety* 126: 94-101 [Duplicate]

Zhang, Zhaoxue; Zhang, Nan; Li, Haipu; Lu, Yi; Yang, Zhaoguang (2020) Potential health risk assessment for inhabitants posed by heavy metals in rice in Zijiang River basin, Hunan Province, China. *Environmental Science and Pollution Research International* 27(19)24013-24024 [Duplicate]

Zhao, H. Y. (2006) Review of wetland science in the Songnen Plain in recent 10 years. *Wetland Science* 4(3)233-240 [Duplicate]

Zhao, Huaxian; Yan, Bing; Mo, Xueyan; Li, Pu; Li, Baoqin; Li, Quanwen; Li, Nan; Mo, Shuming; Ou, Qian; Shen, Peihong; Wu, Bo; Jiang, Chengjian (2019) Prevalence and proliferation of antibiotic resistance genes in the subtropical mangrove wetland ecosystem of South China Sea. *MicrobiologyOpen* 8(11)e871 [Duplicate]

Zhao, Jian; Fu, Guo; Lei, Kun; Li, Yanwu (2011) Multivariate analysis of surface water quality in the Three Gorges area of China and implications for water management. *Journal of Environmental Sciences (China)* 23(9)1460-1471 [Duplicate]

Zhao, Jun; Zhao, Xin; Chao, Lei; Zhang, Wei; You, Tao; Zhang, Jie (2014) Diversity change of microbial communities responding to zinc and arsenic pollution in a river of northeastern China. *Journal of Zhejiang University. Science. B* 15(7)670-680 [Duplicate]

Zhao, Meng M.; Chen, Yi-ping; Xue, Lin-gui; Fan, Tao T. (2020) Three kinds of ammonia oxidizing microorganisms play an important role in ammonia nitrogen self-purification in the Yellow River. *Chemosphere* 243: 125405 [Duplicate]

Zhao, X.; Yang, J.; Zhang, X.; Wang, L.; Ma, F. (2017) Evaluation of bioaugmentation using multiple life cycle assessment approaches: A case study of constructed wetland. *Bioresource Technology* 244: 407-415 [Duplicate]

Zhaoyong, Z.; Xiaodong, Y.; Shengtian, Y. (2018) Heavy metal pollution assessment, source identification, and health risk evaluation in Aibi Lake of northwest China. *Environmental Monitoring and Assessment* 190(2) [Duplicate]

Zheng, Chaoya; Liu, Jianchao; Ren, Jinghua; Shen, Jie; Fan, Jian; Xi, Ruiyu; Chen, Wei; Chen, Qing (2019) Occurrence, Distribution and Ecological Risk of Bisphenol Analogues in the Surface Water from a Water Diversion Project in Nanjing, China. *International Journal of Environmental Research and Public Health* 16(18)3296 [Duplicate]

Zheng, Q. M.; Liu, X. L.; Guo, J. S.; Zhong, Y. M.; Han, C. Y. (2019) Analysis of heavy metal concentrations in marine economic shellfish from eastern Guangdong province and its health risk. *Journal of Agricultural Resources and Environment* 36(1)105-114 [Duplicate]

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Zheng, Weiwei; Wang, Xia; Tian, Dajun; Jiang, Songhui; Andersen, Melvin E.; He, Gengsheng; Crabbe, M. James C.; Zheng, Yuxin; Zhong, Yang; Qu, Weidong (2013) Water pollutant fingerprinting tracks recent industrial transfer from coastal to inland China: A case study. *Scientific Reports* 3: 1031 [Duplicate]

Zheng, Y.; Lu, G. H.; Shao, P. W.; Piao, H. T.; Gai, N.; Rao, Z.; Zhao, Q. S.; Yang, Y. L. (2020) Source Tracking and Risk Assessment of Pharmaceutical and Personal Care Products in Surface Waters of Qingdao, China, with Emphasis on Influence of Animal Farming in Rural Areas. *Archives of Environmental Contamination and Toxicology* 78(4)579-588 [Duplicate]

Zhong, W.; Zhang, Y.; Wu, Z.; Yang, R.; Chen, X.; Yang, J.; Zhu, L. (2018) Health risk assessment of heavy metals in freshwater fish in the central and eastern North China. *Ecotoxicology and Environmental Safety* 157: 343-349 [Duplicate]

Zhou, L.; Wu, H. L.; Xu, H. L.; Shen, X. X.; Chai, M. W.; Li, R. L. (2020) Bird ecological health assessment of mangrove wetland in Guangdong-Hong Kong-Macao Greater Bay Area: A case study of Shenzhen Bay. *Zhongguo Huanjing Kexue/China Environmental Science* 40(6)2604-2614 [Duplicate]

Zhou, Xinyi; Yang, Zhaoguang; Luo, Zhoufei; Li, Haipu; Chen, Guoyao (2019) Endocrine disrupting chemicals in wild freshwater fishes: Species, tissues, sizes and human health risks. *Environmental Pollution* (Barking, Essex: 1987) 244: 462-468 [Duplicate]

Zhou, Xuefei; Sang, Wenjing; Liu, Shushen; Zhang, Yalei; Ge, Huilin (2010) Modeling and prediction for the acute toxicity of pesticide mixtures to the freshwater luminescent bacterium *Vibrio qinghaiensis* sp.-Q67. *Journal of Environmental Sciences (China)* 22(3)433-440 [Duplicate]

Zhou, Z. C.; Zheng, J.; Wei, Y. Y.; Chen, T.; Dahlgren, R. A.; Shang, X.; Chen, H. (2017) Antibiotic resistance genes in an urban river as impacted by bacterial community and physicochemical parameters. *Environmental Science and Pollution Research* 24(30)23753-23762 [Duplicate]

Zhu, Xiaoshan; Zhou, Jin; Cai, Zhonghua (2011) TiO₂ Nanoparticles in the Marine Environment: Impact on the Toxicity of Tributyltin to Abalone (*Haliotis diversicolor supertexta*) Embryos. *Environmental Science & Technology* 45(8)3753-3758 [Duplicate]

Zhu, Y. G.; Zhao, Y.; Li, B.; Huang, C. L.; Zhang, S. Y.; Yu, S.; Chen, Y. S.; Zhang, T.; Gillings, M. R.; Su, J. Q. (2017) Continental-scale pollution of estuaries with antibiotic resistance genes. *Nature Microbiology* 2 [Duplicate]

Zhuo, M.; Ma, S.; Li, G.; Yu, Y.; An, T. (2019) Chlorinated paraffins in the indoor and outdoor atmospheric particles from the Pearl River Delta: Characteristics, sources, and human exposure risks. *Science of the Total Environment* 650: 1041-1049 [Duplicate]

Zielinski, O.; Busch, J. A.; Cembella, A. D.; Daly, K. L.; Engelbrektsson, J.; Hannides, A. K.; Schmidt, H. (2009) Detecting marine hazardous substances and organisms: sensors for pollutants, toxins, and pathogens. *Ocean Science* 5(3)329-349 [Duplicate]

Zis, T.; Ronningen, V.; Scrosati, R. (2004) Minor improvement for intertidal seaweeds and invertebrates after acid mine drainage diversion at Britannia Beach, Pacific Canada. *Marine Pollution Bulletin* 48(44176)1040-1047 [Duplicate]

Zobrist, Juerg; Sima, Mihaela; Dogaru, Diana; Senila, Marin; Yang, Hong; Popescu, Claudia; Roman, Cecilia; Bela, Abraham; Frei, Linda; Dold, Bernhard; Balteanu, Dan (2009) Environmental and socioeconomic assessment of impacts by mining activities-a case study in the Certej River catchment, Western Carpathians, Romania. *Environmental Science and Pollution Research* 16: 14-26 [Duplicate]

Zouch, H.; Karray, F.; Armougom, F.; Chifflet, S.; Hirschler-Réa, A.; Kharrat, H.; Kamoun, L.; Hania, W. B.; Ollivier, B.; Sayadi, S.; Quéméneur, M. (2017) Microbial diversity in sulfate-reducing marine sediment enrichment cultures associated with anaerobic biotransformation of coastal stockpiled phosphogypsum (Sfax, Tunisia). *Frontiers in Microbiology* 8(AUG) [Duplicate]

Zoumpopoulou, Georgia; Tzouvanou, Alexandra; Mavrogonatou, Eleni; Alexandraki, Voula; Georgalaki, Marina; Anastasiou, Rania; Papadelli, Marina; Manolopoulou, Eugenia; Kazou, Maria; Kletsas, Dimitris; Papadimitriou, Konstantinos; Tsakalidou, Effie (2018) Probiotic Features of Lactic Acid Bacteria Isolated from a Diverse Pool of Traditional Greek Dairy Products Regarding Specific Strain-Host Interactions. *Probiotics and Antimicrobial Proteins* 10(2)313-322 [Duplicate]



9 References

AGREE Next Steps Consortium (2017) The AGREE II Instrument [Electronic version]., [online] <http://www.agreetrust.org>.

Brouwers, M. C., Kerkvliet, K., Spithoff, K., and AGREE Next Steps Consortium (2016) The AGREE Reporting Checklist: a tool to improve reporting of clinical practice guidelines. *BMJ*, i1152.

Mann, C. J. (2003) Observational research methods. Research design II: cohort, cross sectional, and case-control studies. *Emergency Medicine Journal*, 20(1), 54–60.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., and The PRISMA Group (2009) Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), e1000097.

Morgan, R. L., Whaley, P., Thayer, K. A., and Schünemann, H. J. (2018) Identifying the PECO: A framework for formulating good questions to explore the association of environmental and other exposures with health outcomes. *Environment International*, 121, 1027–1031.

NHMRC (2008) Guidelines for managing risks in recreational water. National Health and Medical Research Council (Australia), Canberra, A.C.T., National Health and Medical Research Council. [online] http://www.nhmrc.gov.au/publications/synopses/_files/eh38.pdf (Accessed October 18, 2012).

O'Connor, N. A. (2022) Evidence Evaluation Report for Narrative Reviews in support of NHMRC Recreational Water Quality Guidelines: Chemical Hazards. Ecos Environmental Consulting, June 2022.

O'Connor, N. A. (2020) Research Protocols for Narrative Review in support of the NHMRC Recreational Water Quality Guidelines: Chemical Hazards. Ecos Environmental Consulting, September 2020.

OHAT (2019) Handbook for Conducting a Literature-Based Health Assessment Using OHAT Approach for Systematic Review and Evidence Integration, Office of Health Assessment and Translation (OHAT), US Department of Health and Human Services. [online] <https://ntp.niehs.nih.gov/go/ohathandbook>.

OHAT (2015) Risk of Bias Tool. Office of Health Assessment and Translation (OHAT), U.S. Department of Health and Human Services. [online] <https://ntp.niehs.nih.gov/whatwestudy/assessments/noncancer/riskbias/index.html> (Accessed June 19, 2020).

Oxford CTVH (2020) CASP - Critical Appraisal Skills Programme. Oxford Centre for Triple Value Healthcare Ltd. [online] <https://casp-uk.net/> (Accessed June 13, 2020).



Appendix 1 - Definitions of Uses and Users of Recreational Water

Recreational water:

Included: Any natural or artificial water bodies without a chemical disinfectant residual that might be used for recreating including coastal, estuarine and freshwater environments. Includes public, private, commercial and non-commercial recreational water sites. Includes unique unregulated sites such as wave pools, ocean- or river-fed swimming pools, artificial lagoons and water ski parks.

Excluded: Aquatic facilities using chemical disinfection including swimming pools, spas, splash parks, ornamental water sites.

Recreational water use:

Included: Any designated or undesignated activity relating to sport, pleasure and relaxation that involves whole body contact or incidental exposure (through any exposure route) to recreational water (e.g. swimming, diving, boating, fishing)

Excluded: Consuming the catch from fishing or foodstuffs collected from recreational water or its surroundings. Therapeutic uses of waters (e.g. hydrotherapy pools). Occupational exposure.

Recreational water users:

Recreators or users of recreational water bodies including:

- the general public including all relevant life stages, ages and states of health other than persons that are explicitly advised to avoid such activities (e.g. for specific medical conditions)
- tourists
- specialist sporting users (e.g. athletes, anglers, kayakers, divers, surfers)
- any groups that may have high exposures to recreational water.

Target audience of the Guidelines:

The Guidelines are intended for end users that will implement the Guidelines (government agencies, local councils, private recreational water managers); however, it is anticipated that there will also be significant public interest. It is anticipated that tailored guidance (e.g. plain English fact sheets or summaries) will be developed for specific groups where necessary.



Appendix 2 – Existing recreational water quality guidelines/reports supplied by the Committee

Institution	Existing recreational water guidelines /reports suggested by the Committee	Review
NHMRC	NHMRC (2008) Guidelines for managing risks in recreational water. National Health and Medical Research Council (Australia), Canberra, A.C.T., National Health and Medical Research Council. [online] http://www.nhmrc.gov.au/publications/synopses/_files/eh38.pdf (Accessed October 18, 2012).	Considered in literature evaluation
Ministry of Environment, New Zealand	MoE (2003). New Zealand guidelines 2003 https://www.mfe.govt.nz/publications/fresh-water/microbiological-water-quality-guidelines-marine-and-freshwater-0	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
	MoE (2018). Regional information for setting draft targets for swimmable lakes and rivers A report on work underway to improve water quality in terms of effects on human health https://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/Regional%20information%20for%20setting%20draft%20targets%20for%20swimmable%20lakes%20and%20rivers-final.pdf	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
Office of Environment & Heritage, NSW	OEH NSW (2011). Protocol for assessment and management of microbial risks in recreational waters. Office of Environment & Heritage, NSW, Sydney. Provides a simple template for sanitary inspections	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
EPA Victoria	EPA Victoria (2019) Quantitative Microbial Risk Assessment (QMRA) for assessing risks to recreational users in Port Phillip Bay. Technical report, EPA Victoria. Pending publication related to QMRA study in Port Phillip Bay, Victoria Provides a simplified adaptation of sanitary inspection template from OEH NSW 2011 Provides key assumptions for a QMRA model (volume of ingestion, dose-response models, probability of getting ill when infected, etc.) Results will also be published in peer-reviewed articles (journals TBC)	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
US EPA	U.S. EPA (2005). The EMPACT Beaches Project: results from a study on microbiological monitoring in recreational waters. National Exposure Research Laboratory, Office of Research and Development, United States Environmental Protection Agency, Cincinnati, Ohio. USEPA (2012). <i>Recreational Water Quality Criteria</i> . U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA 820-F-12-058 Available at: https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf U.S. EPA (2010). Quantitative Microbial Risk Assessment to Estimate Illness in Fresh water Impacted by Agricultural Animal Sources of Fecal Contamination. EPA 822-R-10-005. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/health/creation/upload/P4-QMRA508.pdf US EPA (2010). Comparison and Evaluation of Epidemiological Study Designs of Health Effects Associated with Recreational Water Use. US EPA (2014). Microbial Risk Assessment (MRA) Tools, Methods and Approaches for Water Media. US EPA Office of Water, Washington DC. US EPA (2016). 2016 Coliphage Experts Workshop: Discussion Topics and Findings No. EPA 823-F-16-001. Washington D.C.	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
Department of Health, State of Hawaii, USA	Hawaii DoH (2014) Water Quality Standards, Hawaii Administrative Rules (HAR), Chapter 11-54, State of Hawaii, Department of Health, [online] https://health.hawaii.gov/cwb/clean-water-branch-home-page/water-quality-standards/ . Also Hawaii Beach report available at:	Excluded in screening phase due to lack of relevance to chemical

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Institution	Existing recreational water guidelines /reports suggested by the Committee	Review
	<p>http://www.beachapedia.org/State_of_the_Beach/State_Reports/HI/Water_Quality#Identifying_Sources_of_Contamination_in_Nawiliwili_Bay_and_Hanalei_Bay.</p>	hazards and current narrative review
WHO	<p>WHO, 2003. Guidelines for Safe Recreational-water Environments, Coastal and Fresh-waters, vol. 1. World Health Organization, Geneva.</p> <p>WHO, 2016. Quantitative Microbial Risk Assessment: Application for Water Safety Management. World Health Organization, Geneva.</p> <p>https://www.who.int/water_sanitation_health/publications/srwe1/en/</p>	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
enHealth, 2012.	<p>enHealth (2012) Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards, [online] https://www1.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-publicat-environ.htm. Environmental Health Standing Committee (enHealth) is a standing committee of the Australian Health Protection Principal Committee (AHPPC).</p>	Excluded in screening phase due to lack of relevance to chemical hazards and current narrative review
NRMMC 2006	<p>NRMMC, EPHC, and AHMC (2006) Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1), Canberra, Australia, Natural Resource Management Ministerial Council. Environment Protection and Heritage Council Australian Health Ministers' Conference. [online] https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-water-recycling.</p>	Considered in literature evaluation
Health Canada 2012	<p>Health Canada (2012) Guidelines for Canadian recreational water quality. Third Edition, Ottawa, Health Canada. [online] https://central.bac-lac.gc.ca/...item?id=H129-15-2012-eng&op=pdf&app=Library (Accessed December 17, 2020).</p> <p>Provides good information on indicators and gaps in knowledge. Good descriptions of science-based evidence to develop guidelines.</p>	Considered in literature evaluation



Appendix 3 – Keywords (search terms)

The initial list of keywords (sorted alphabetically) approved by the Committee is set out below. The keywords were used to search for publications based upon the PECO elements and research questions – these were used across all databases for consistency.

For the review, keywords were sorted into categories, search strings and search strategies for searching the selected databases (see Section 2.4)

Key search terms

aboriginal, acid mine drainage, adverse effects, aerosols, allergic reaction/s, ambient water quality, analysis, anglers, angling, antibiotics, antimicrobial resistance, athletes, aural, bather acquired, bathing, bathing beaches, beach/es, benzene, bioaccumulative, boating, body-boarding, body-surfing, BTEX, canoeing, case control study, chemicals, children, classification, coast, coastal, cohort study, colour, contaminant, control, cross-sectional study, dam, dermal, dermal irritation, dermatologic, diagnostic test study, diarrhea, diarrhoea, disability adjusted life year, disease, divers, diving, domestic animals, dose-response, effluent, elderly, endocrine, endocrine disruptors, estuaries, ethylene, exposure, eye irritation, fever, fishing, fishing canoe, fishing kayak, fishing riverbank, fishing shoreline, fishing wading, flu-like, freshwaters, fuel, gastroenteritis, gastrointestinal, hay fever-like, headache, health, health effects, health outcome/s, heavy metals, hepatotoxicity, hydrocarbons, illness, illness/es, immunocompromised, indicator, indigenous, induction of asthma, industrial discharges, ingestion, inhalation, inhalation-related symptoms, inorganic, jet skiing, jet-skiing, jurisdiction, kayakers, kayaking, kiteboarding, kitesurfing, lake, legislation, livestock, marine, methylated, methylated metals, microplastics, mine discharge, nanomaterials, nanoparticles, nausea, neurologic/al, neurotoxicity, non-point source pollution, nonylphenols, ocular, oil and grease, oral, organic, outbreaks, outfall, paddling, parasailing, pentathlon, perfluorinated, persistent, pesticides, PFAS, pharmaceuticals, pneumonia-like symptoms, point source pollution, potentiation, pregnant women, prevention, primary contact recreation, pruritis, qualitative research, quantitative risk assessment, randomised controlled trial, recreation, recreational, recreational exposure, recreational guidelines, recreational water quality, risk, river, rowing, runoff, sail boarding, sailing, saline waters, sand, scuba, sea kayaking, secondary contact recreation, sewage, sewage discharge, sewer overflows, shortness of breath exposure, skin irritation, skin rash/es, snorkelling, source tracking, source vulnerability, spearfishing, spills, standards, stormwater, sunbathing (no contact), sunscreen, surfactants, surfers, surfing, swimmer acquired, swimming, symptoms, synergism, systematic review, toluene, Torres Strait Islander, tourists, toxic, trace metals, triathlon, turbidity, vomiting, wading, wakeboarding, wastewater, water contamination, water parks, water pollution, water quality, water skiing, water sports, wave-boarding, whitewater canoeing, wildlife, wind surfing, wind-surfing, xylene, zinc oxide

Variations on terms that may appear with hyphens were also considered (e.g. nanoparticle versus nano-particle).



Appendix 4 - CASP (Critical Appraisal Skills Programme) Combined query table

Q.	Choose appropriate query category for paper										Paper for appraisal and reference:							
	Systematic review		Qualitative research		Case control study		Cohort study		Diagnostic test Study		Randomised Controlled Trial		Cross-sectional study (mix of case-control and cohort)*		Quantitative research*		insert name of paper here	
Section A1: Are the results of the trial valid?															Yes	Can't Tell	No	Comments
1		Did the review address a clearly focused question?	Was there a clear statement of the aims of the research?	Did the study address a clearly focused issue?	Did the study address a clearly focused issue?	Was there a clear question for the study to address?	Did the study address a clearly focused issue?	Did the study address a clearly focused issue?	Did the study address a clearly focused issue?	Did the study address a clearly focused issue?	Was the cohort recruited in an acceptable way?	Was the assignment of patients to treatments randomised?	Was the cohort recruited in an acceptable way?	Is a quantitative methodology appropriate?				
2		Did the authors look for the right type of papers?	Is a qualitative methodology appropriate?	Did the authors use an appropriate method to answer their question?	Was the cohort recruited in an acceptable way?	Was there a comparison with an appropriate reference standard?	Was the assignment of patients to treatments randomised?	Was the cohort recruited in an acceptable way?	Is a quantitative methodology appropriate?									
3											Were all of the patients who entered the trial properly accounted for at its conclusion?							
Section A2: Is it worth continuing?															Yes	Can't Tell	No	Comments
3		Do you think all the important, relevant studies were included?	Was the research design appropriate to address the aims of the research?	Were the cases recruited in an acceptable way?	Was the exposure accurately measured to minimise bias?	Did all patients get the diagnostic test and reference standard?		Was the exposure accurately measured to minimise bias?	Was the research design appropriate to address the aims of the research?									
4		Did the review's authors do enough to assess quality of the included studies?	Was the recruitment strategy appropriate to the aims of the research?	Were the controls selected in an acceptable way?	Was the outcome accurately measured to minimise bias?	Could the results of the test have been influenced by the results of the reference standard?	Were patients, health workers and study personnel 'blind' to treatment?	Were the controls selected in an acceptable way?	Was the recruitment strategy appropriate to the aims of the research?									
5		If the results of the review have been combined, was it reasonable to do so?	Was the data collected in a way that addressed the research issue?	Was the exposure accurately measured to minimise bias?	(a) Have the authors identified all important confounding factors?	Is the disease status of the tested population clearly described?	Were the groups similar at the start of the trial	Was the exposure accurately measured to minimise bias?	Was the data collected in a way that addressed the research issue?									
5					(b) Have they taken account of the confounding factors in the design and/or analysis?													
6		Has the relationship between researcher and participants been adequately considered?	(a) Aside from the experimental intervention, were the groups treated equally?	(a) Was the follow up of subjects complete enough?	Were the methods for performing the test described in sufficient detail?	Aside from the experimental intervention, were the groups treated equally?			Were objective outcomes been predetermined?									
6			(b) Have the authors taken account of the potential confounding factors in the design and/or in their analysis?	(b) Was the follow up of subjects long enough?				Have the authors taken account of the potential confounding factors in the design and/or in their analysis?										

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Choose appropriate query category for paper										Paper for appraisal and reference:				
Q.	Systematic review		Qualitative research	Case control study	Cohort study	Diagnostic test Study	Randomised Controlled Trial	Cross-sectional study (mix of case-control and cohort)*	Quantitative research*	insert name of paper here				
											Yes	Can't Tell	No	Comments
Section B: What are the results?														
6		What are the overall results of the review?												
7		How precise are the results?	Have ethical issues been taken into consideration?	How large was the treatment effect?	What are the results of this study?	What are the results?	How large was the treatment effect?	What are the results of this study?	What are the results of this study?					
8			Was the data analysis sufficiently rigorous?	How precise was the estimate of the treatment effect?	How precise are the results?	How sure are we about the results? Consequences and cost of alternatives performed?	How precise was the estimate of the treatment effect?	How precise are the results?	How precise are the results?					
9			Is there a clear statement of findings?	Do you believe the results?	Do you believe the results?			Do you believe the results?						
Section C: Will the results help locally?														
8		Can the results be applied to the local population?												
9		Were all important outcomes considered?				Can the results be applied to your patients/the population of interest?	Can the results be applied to the local population, or in your context?	Can the results be applied to the local population, or in your context?						
10		Are the benefits worth the harms and costs?	How valuable is the research?	Can the results be applied to the local population?	Can the results be applied to the local population?	Can the test be applied to your patient or population of interest?	Were all clinically important outcomes considered?	Were all clinically important outcomes considered?	Can the results be applied to the local population?					
11				Do the results of this study fit with other available evidence?	Do the results of this study fit with other available evidence?	Were all outcomes important to the individual or population considered?	Are the benefits worth the harms and costs?	Do the results of this study fit with other available evidence?	Do the results of this study fit with other available evidence?					
12					What are the implications of this study for practice?	What would be the impact of using this test on your patients/population?								

Source: Oxford CTVH (2020), * Questions derived by reviewer for this narrative review based on the CASP approach.

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Hints for queries

Compiled from CASP - Critical Appraisal Skills Programme (Oxford CTVH 2020).

Q.	Paper for appraisal and reference:	Hints
Section A1: Are the results valid?		
1	Was there a clear statement of the aims of the research?	Consider <ul style="list-style-type: none">•what was the goal of the research•why it was thought important•its relevance
2	Is the methodology appropriate?	Consider <ul style="list-style-type: none">•If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants•Is qualitative research the right methodology for addressing the research goal
Section A2: Is it worth continuing?		
3	Was the research design appropriate to address the aims of the research?	Consider <ul style="list-style-type: none">•if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)•Has a validated risk assessment framework been used? Note framework used and describe any concerns.
4	Was the chosen hypothetical population or subpopulation appropriate for addressing the study research aims?	Consider <ul style="list-style-type: none">•If the researcher has explained how the participants were selected•If they explained why the participants selected were the most appropriate to provide access to the type of knowledge sought by the study•If there are any discussions around recruitment (e.g. why some people chose not to take part)
5	Was the data collected in a way that addressed the research issue?	Consider <ul style="list-style-type: none">•If the setting for the data collection was justified•If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)•If the researcher has justified the methods chosen•If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)•If methods were modified during the study. If so, has the researcher explained how and why•If the form of data is clear (e.g. tape recordings, video material, notes etc.)•If the researcher has discussed saturation of data
6	Has the relationship between researcher and participants been adequately considered?	Consider <ul style="list-style-type: none">•If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location•How the researcher responded to events during the study and whether they considered the implications of any changes in the research design
Section B : What are the results?		
7	Have ethical issues been taken into consideration?	Consider <ul style="list-style-type: none">•If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained•If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the

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Q.	Paper for appraisal and reference:	Hints
		<p>effects of the study on the participants during and after the study)</p> <ul style="list-style-type: none"> • If approval has been sought from the ethics committee
8	Was the data analysis sufficiently rigorous?	<p>Consider</p> <ul style="list-style-type: none"> • If there is an in-depth description of the analysis process • If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data • Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process • If sufficient data are presented to support the findings • To what extent contradictory data are taken into account • Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation • Are there any concerns about the characterisation of: <ul style="list-style-type: none"> ◦ Hazards ◦ Exposure ◦ Risk <p>Consider any factors that form part of the assessment (modelling, dose response, mode of action etc.) and whether these were applied/considered effectively and according to industry standards.</p>
Section C: Will the results help locally?		
10	How valuable is the research?	<p>Consider</p> <ul style="list-style-type: none"> • If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature) • If they identify new areas where research is necessary • If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used
Overall risk of bias rating		<ul style="list-style-type: none"> • Consider how reliable the findings of the study are using your assessment above and make a judgement on the overall quality of the study based on risk of bias and uncertainties (as below). Provide justification.



Appendix 5 - Declaration of interests

The Authors of this Review have the following declared interests:

Interest Details	Summary
Dr Nick O'Connor	
Consultant in science and engineering to the Australian water industry. Recent major clients are listed below.	As principal consultant at Ecos Environmental Consulting, I am involved in many consulting projects for clients in the public and private sectors. However, the majority of my clients are regional and metropolitan water corporations for whom I provide consultancy advice in the areas of water-related human health and ecological risk assessment.
Consultant to Melbourne Water	I provide consultancy advice in the areas of water-related human health and ecological risk assessment.
Consultant to VicWater (Victorian Water Industry Association)	I provide consultancy advice about chemicals of concern in recycled water.
Member of Scientific Services Consultancy Panel for South East Water	I provide consultancy advice in the areas of water-related human health and ecological risk assessment.
Consultant to Victorian Department of Environment, Land, Water and Planning, Victorian Department of Health and Human Services and Victorian Environment Protection Authority.	I recently undertook a project in conjunction with Atura Pty Ltd and Water Futures Pty Ltd to develop the 2020 version of the Victorian Recycled Water Guidelines.
Dr Yufei Wang	
Researcher in chemical and environmental engineering, with a focus on industry-based water research. Recent projects summarised below:	As a researcher at Royal Melbourne Institute of Technology University, I am involved in several water research projects, performing analysis and providing consultancy advice to our industrial partners.
Photolysis of emerging contaminants, R&D project for Melbourne Water	I perform research activities and report findings assessing the environmental impact on the attenuation of chemicals of concern and provide consultancy advice on their associated risks in recycled water.
Validation framework review and drinking water supply system performance assessment, R&D project for Water Source Australia	I provide consultancy advice about assessment of disinfection performance of a Point of Entry drinking water supply system.
Publication of journal articles	I report findings of my research on behaviour and risk assessment of chemicals of concern in recycled water
Ms Tracy Clark	
Consultant in science and engineering to the Australian water industry. Recent major clients are listed below.	As consultant at Ecos Environmental Consulting, I am involved in many consulting projects for clients in the public and private sectors. My role requires that I support the Principal Consultant at Ecos in undertaking projects. The majority of Ecos's clients are regional and metropolitan water corporations for whom we provide consultancy advice in the areas of water-related human health and ecological risk assessment.
Consultant to Melbourne Water	I support the Principal Consultant at Ecos in providing consultancy advice in the areas of water-related human health (microbiological) and ecological risk assessment.
Consultant to VicWater (Victorian Water Industry Association)	I support the Principal Consultant at Ecos in providing consultancy advice about chemicals of concern in recycled water.