RiverWatch™ Chemical Assessment Program

RiverWatch™ is Sydney Water's environmental monitoring and reporting program, established to support safe swimming in urban waterways.

The chemical assessment program evaluates how chemical contaminants impact river sediment and water quality, to ensure there are no risks to human health. Along with the RiverWatch recreational water quality monitoring program, it helps inform decisions about how proposed swimming sites should operate.

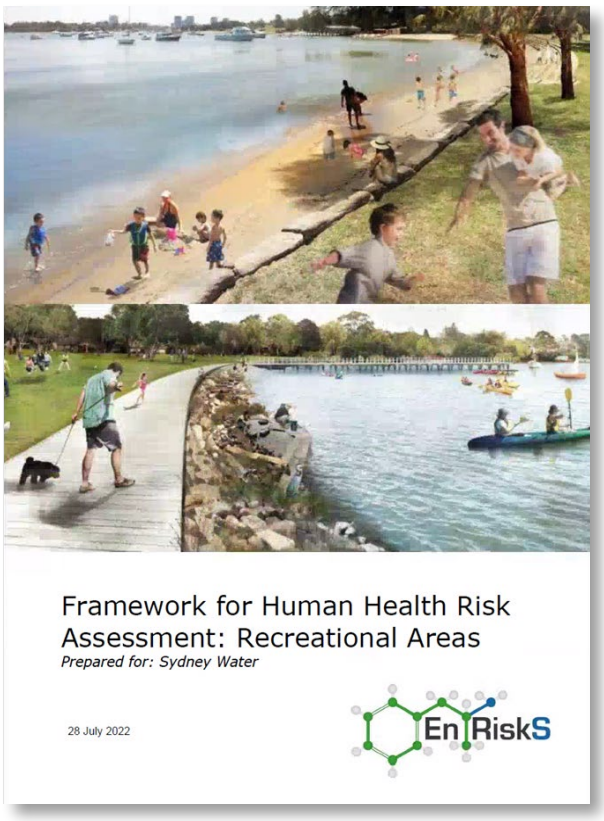
Background

Sediments, specifically those in Sydney Harbour and the Parramatta River, can be impacted by a range of chemical contaminants as a result of historic industrial land uses and poor waste practices along the river foreshore.

Many of the contaminants in sediment are also measurable as suspended substances in the water column. In addition, water quality indicators such as pH and turbidity can affect how these compounds are absorbed by humans.

Sydney Water, University of NSW (UNSW), the NSW Environment Protection Authority (EPA), Department of Planning and Environment (DPE), NSW Health and councils have worked with specialist consultancy Environmental Risk Sciences (EnRiskS) to develop a framework for assessing human health risks associated with opening swim sites on the Parramatta River.

This assessment is implemented when a literature review has identified the potential for contamination.



Framework for assessment

The framework and assessment process is based on enHealth guidance – Guidelines for assessing human health risks from environmental hazards.

The process involves identifying chemical contaminants of concern, understanding toxicity and developing an exposure assessment for recreational water activities. This information helps us to understand any potential risks that may arise from future recreation activities.

What are we looking for?

Previous sediment and water quality monitoring within the river and a review of historic land uses near proposed swimming sites help us identify potential chemical contaminants of concern for recreational water users. These can include heavy metals, dioxins, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), surfactants and pesticides.

Sampling program

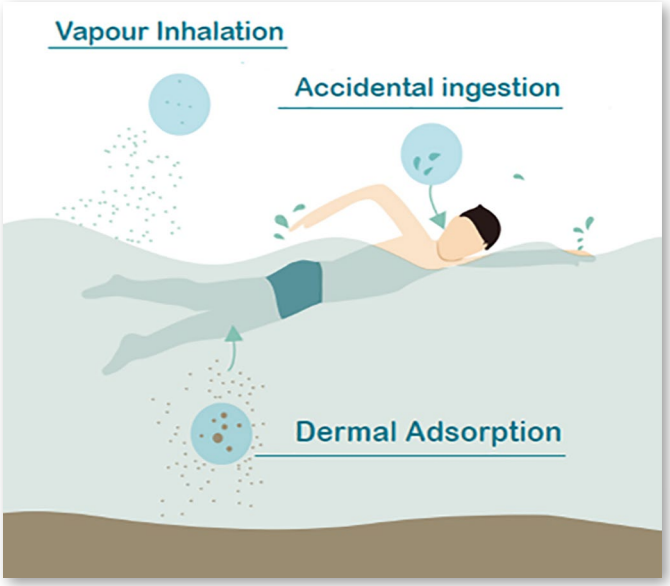
Sediment samples are collected in several locations across each proposed swimming site to account for variations in sediment accumulation and to understand the relationship between sediment size and contaminants. Water samples are collected during a variety of weather conditions to understand how the presence of contaminants is affected by changing conditions.

Screening level assessment

This involves comparing the data gathered with guideline values to determine if the concentrations present are high enough to warrant a more detailed assessment of risk. The guideline values adopted are intended to be conservative and consider exposures by all members of the community.

Exposure assessment

The exposure assessment is a critical and complex area of the risk assessment. It requires decisions to be made about the magnitude, frequency, extent, character and duration of exposure to chemicals. The assessment must also consider the range of exposed populations (e.g. children playing, adults swimming) and potential exposure pathways for each.



Example of the exposure pathways for an adult swimming.

Risk assessment report

The risk assessment report documents whether any risks are present based on the assessments undertaken at the swim site. If any risks are identified, a decision needs to be made on whether these risks can be eliminated through appropriate site design or if the swim site should not open.

Before a swim site can open, the report needs to be reviewed by all relevant agencies to confirm that the final site design and ongoing operation presents no risk to human health. Once completed, the reports will be published online.

Updating the assessment

The framework requires assessments to be reviewed and updated periodically by the swim site manager. This review can also be triggered by physical changes to the environment that could cause movement of sediment in the catchment.

Like more information?

To learn more, visit www.urbanplunge.com.au or email riverwatch@sydneywater.com.au.

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