

A6: Understanding the major sources, pathways and waterway health impacts of chemicals of concern in waterways to inform risk assessments and management interventions

Objective(s)

To keep a watching brief on emerging chemicals of concern globally that pose a potential threat to aquatic ecosystems in the Melbourne Water region and to gather information about the presence of priority chemicals in waterways, likely impacts on environmental values and management options.

Why this research is important

Every year new chemicals appear in the market for a broad range of products ranging from pharmaceuticals, personal care products, disinfection by-products, pesticides, persistent organic chemicals, industrial chemicals and degradation products of all these substances. While many of these new products have little impact on the environment, there are many that may impact human or ecological health and may be poorly regulated i.e. new products can emerge in the environment with inadequate information to determine waterway health risk. In addition, not all chemicals can be measured in the environment. Therefore, decisions are needed to determine which chemicals should be given greatest attention for developing techniques for detecting and measuring their concentrations in the environment based on known chemical properties and emerging studies.

Contribution to Melbourne Water research priorities

HWS Performance Objective: RPO-23 The potential impacts of emerging contaminants of concern such as microplastics, pesticides and pharmaceuticals, and toxic chemicals are better understood and mechanisms to respond collaboratively developed.

Approach

We will conduct scans of emerging contaminants of concern in international literature, attend key conferences, and collaborate with relevant agencies to update priority lists of 'known' and 'emerging' chemicals of concern for management. Our partnership

with the National Measurement Institute will continue to develop analytical methods for detection of new chemicals of interest, and we will explore options to enable quantitative passive sampling of chemicals of concern that typically occur intermittently or in low concentrations. Ongoing PhD projects will focus on the risk of emerging contaminants of concern to key environmental values.

Key outputs

- Inform Melbourne Water on priority chemicals of 'known' and 'emerging' concern
- Quantitative measurements of contaminants to better inform risk assessments
- Quantitative data on contaminants of concern for inclusion in Melbourne Water's contaminants framework and possible regional toxicant reporting 'dashboard'

Expected benefits

- Prioritisation of 'emerging' chemicals of concern to be the focus of future investigations of their presence and ecological impacts across the region
- Informs Melbourne Water's Contaminants Framework that supports General Environmental Duty obligations
- To provide specific information on 'known' chemicals of concern to help prioritisation of pollution management Performance Objectives in the next HWS

For more information, contact Prof. Vin Pettigrove, Vincent.Pettigrove@rmit.edu.au, or at Melbourne Water: Slobanka.Stojkovic@melbournewater.com.au or Rhys.Coleman@melbournewater.com.au