



# *qldwater* Consortium for Contaminants of Emerging Concern (qCRAC)

The strategic objectives of the Consortium all fit together to make up the mnemonic **SAFETI** for emerging contaminants.



### is for Source Control.

Delineate source vs treatment issues in sewage Recognise need for controls on emerging contaminants from residences as well as industry National policy to reduce contaminant inputs (e.g. why remove PFAS at the STP)



is for **Assessment.** Developing methodology and limits for new contaminants (e.g. PFAS in biosolids) Tracking, surveys and online sensors Assessing contaminant levels in the environment



#### is for Fate & Risks.

Understanding fate and risks of emerging contaminants compared with other substances Better mechanisms for understanding pathways and accumulation

is for **Education & Communications**. Review, collate and circulate information on new contaminants Share consistent information across the sector Tools for communication with customers and communities



### is for Treatment.

Novel mechanisms for removing contaminants Understanding efficacy of various existing treatment technologies



#### is for **Influence**.

National and International influence on policy and decision-making Taking lead on environmental stewardship rather than a reactive approach Building networks with state and national agencies to share information/experience

## **Source Control**

WWTPs are the end of the line for a lot of contaminants that are disposed or flushed from industry, trade waste and domestic sewage. Domestic sources are the most significant input of some classes of contaminants such as the pharmaceuticals and personal care products which include medications and their metabolites, fragrances and anti-microbial agents to name a few. Domestic wastewater is also a prominent source of microfibres from clothing and PFAS from food packaging, clothing and consumer goods. None of these compounds should be discharged to the environment but are both technically difficult and expensive to remove by treatment processes. However, Australian legislation as yet does not recognise the role of manufacturers and importers of these products in contributing to pollution of our wastewater.

## Assessment

At the moment, there is not much information available for many emerging contaminants within the Queensland context. Using PFAS as an example, there are numerous international studies that have examined environmental PFAS contamination in the USA and Europe, but Australia is different, because PFAS has never been manufactured here. Determining the extent and level of COEC presence in the Queensland environment must be a priority to encourage appropriate regulation. The first step is to have standardised reliable and reproducible analytical methods for measurement of COEC in matrices from wastewater to fresh and marine waters, biosolids and soils. For some contaminants like microplastics analysis is a real challenge because of the diversity of materials, particle sizes and shapes which mean that no single analytical technique can provide the answer.

# Fate & Risks

The risk posed by many individual COEC to ecosystems is not completely understood. Media attention (and consequently, regulation) is directed to high-profile COEC, but without consideration of the actual risk to the environment and human health. Risk is conventionally categorised using tools such as the PBT paradigm which use the Persistence, Bioaccumulation and Toxicity of a pollutant (sometimes with the addition of Mobility) in combination to determine the relative risk of a pollutant to the ecosystem. To that we would add Distribution. A pollutant that is found everywhere because it is present in many consumer products may potentially pose a greater risk than a more toxic but rarely used compound.

# **Education & Communications**

Having access to accurate information about emerging contaminants, their distribution and the level of risk that they pose to human and ecosystem health is very important for organisations such as water service providers. Shared information helps to provide a consistent message across the industry and can be used to manage the concerns of all industry stakeholders, from customers and workers to NGOs and regulators.

## Treatment

Advancements in treatment technologies promise opportunities for improving the potential to remove contaminants from treated water before it enters the environment. However, technologies are not always able to remove all contaminants, despite being almost universally energy and resource expensive. The development of novel treatments or technologies that can augment existing treatment processes has the potential to reduce the costs and therefore accessibility of contaminant removal to WSPs leading to improved environmental outcomes.

## Influence

The water sector needs to take a strong position to influence policy at the national and state level to ensure that policy is appropriate, proportionate and practicable. We can do this by forging linkages with government and industry stakeholders and research institutions that are already influential in COEC policy. Through the work of the Consortium we hope to inspire the industry to be leaders in environmental stewardship.

To learn more about the Consortium, or to be involved please contact Ireeves@qldwater.com.au.