

# AMP7 ENVIRONMENTAL INVESTIGATIONS

## Chemical investigations programme phase 3 - Water quality data collection

Many rivers and lakes across Europe do not meet water quality targets set by the European Union under the Water Framework Directive (WFD) which requires all surface waters to be of 'good' ecological status by 2027.

The WFD sets environmental quality standards (EQSs) in surface waters for nutrients such as nitrogen and phosphorus as well as many trace chemicals. The chemicals come from many sources and some end up in water recycling centres (WRCs), the treated effluent from which is discharged into freshwater and marine environments.

Through UK Water Industry Research, UK water and sewerage companies are working with the Environment

Agency (EA) and other regulators to design and deliver a national programme of waste water investigations, the Chemical Investigations Programme (CIP).

CIP Phase 1 (CIP1, 2010-2015) enabled certain chemicals to be dismissed as low concern and others to be subject to further investigation within Phase 2 (CIP2, 2015-2020). CIP3 (2020-2025) will build on previous data collected in the first two phases, including more targeted investigations into the presence of chemicals in particular environments, eg, groundwater and transitional and coastal waters.

### Long-term trend monitoring

This investigation will determine the extent of longer term changes in chemical concentrations in waste water. Sampling will be conducted from 2020 to 2025 and include influent and treated effluent at five large WRCs, eg, Avonmouth (Bristol) and Saltford (Bath). Several of the five sites have been monitored in CIP1 or CIP2 providing an even longer term analysis following CIP3.

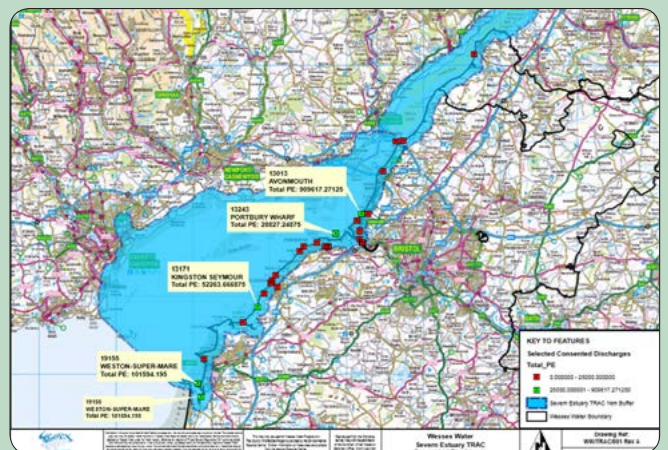
Chemicals to be monitored include mercury, fluoranthene (a by-product of burning fossil fuels) and hexabromocyclododecane (HBCDD, a brominated flame retardant).



### Discharges to TraC waters

Transitional and coastal (TRaC) waters are sensitive ecosystems and can be home to important species such as mussels, eels and fish. The EA has identified six high-risk estuaries in the UK which require chemicals monitoring, including the Severn estuary on the northern coast of our region.

The aim of the TRaC investigation is to evaluate the concentration of trace chemicals in estuarine discharges from WRCs, as well as assessing the different loads and associated risks to EQS compliance within the estuaries. The investigation focuses on the largest WRCs which discharge into the Severn estuary: Avonmouth, Kingston Seymour, Weston-super-Mare and Portbury Wharf.



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### Groundwater monitoring

Effluent from some small WRCs discharges direct to ground, through grass plots, reed beds or soakaways. This investigation aims to build a baseline dataset to better understand the behaviour and persistence of trace chemicals in groundwaters that receive treated effluent from WRCs. Groundwater samples will be taken from boreholes and natural springs, both upgradient and downgradient of the WRC effluent discharge point.

These groundwater studies will be carried out at Tilshead, Dundry and Hindon WRCs. The chemicals to be tested for are from an extensive EA list and include:

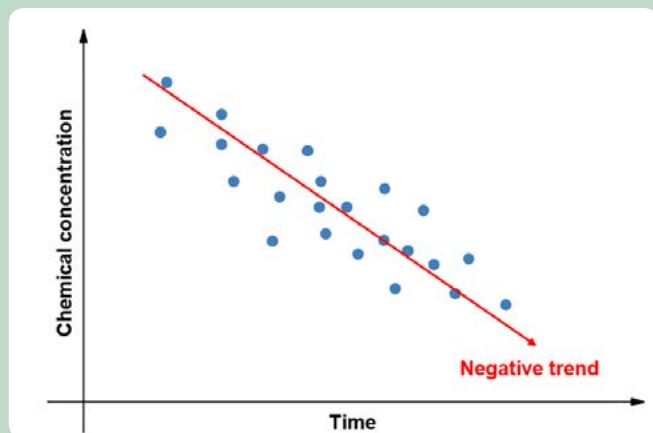
- HBCDD (brominated flame retardant)
- glyphosate (herbicide)
- clopidol (veterinary medicine).



### Monitoring die-away of TBT, DEHP and triclosan

CIP1 and CIP2 indicated decreasing levels of tributyltin (TBT), dioctyl phthalate (DEHP), and triclosan in treated effluent at several WRCs. TBT is found in textiles and wood preservatives, DEHP is used in vinyl-type plastics to make them soft and pliable, and triclosan is an antibacterial and antifungal agent used in soap and skin care products.

This investigation will monitor the concentration of these three chemicals to provide evidence of continued decrease in concentration so that compliance with targets can be achieved without the need for significant investment in new processes at WRCs. Monitoring will be carried out at four WRCs: Royal Wootton Bassett, Frome, Glastonbury and Wells.



### New and emerging substances

Following further guidance from the EA and the European Chemicals Agency, an extensive list of new and emerging chemicals which pose a potential risk to soils, groundwater and surface water has been identified.

More than 35 new and emerging substances will be monitored during CIP3 at three large WRCs: Saltford (trend monitoring site), Avonmouth (TRaC monitoring site) and Bowerhill (trend monitoring site).

Untreated raw sewage, treated effluent and river samples will be analysed. The concentration of the new chemicals can be determined as well as their contribution to the EQS in the receiving watercourse.

