

# Sullied Sediments

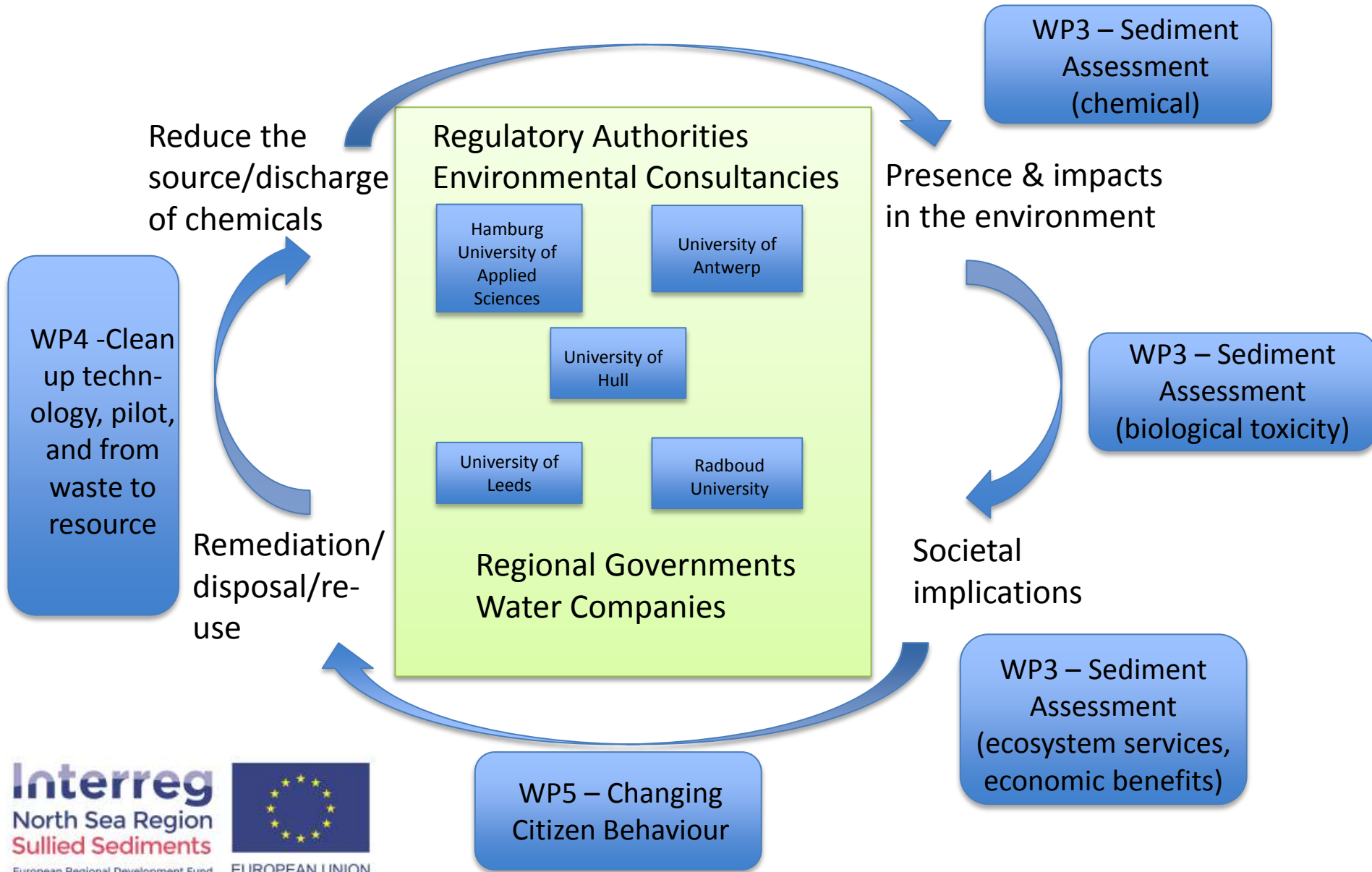
**An overview and update so far...**

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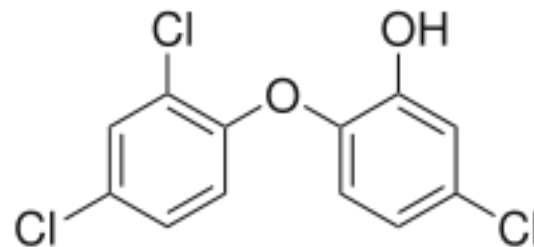


# Sullied sediments: a life cycle of chemicals in the environment



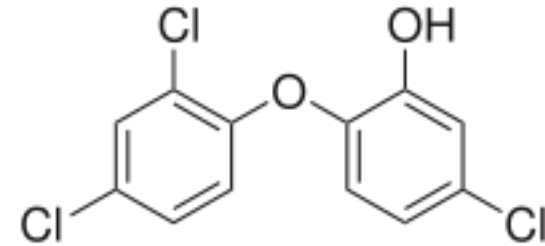
# Chemicals?

- *EU Priority and Watch Lists...*
- *Triclosan*
- *Estrogens*
- *Diclofenac*
- *Metalddehyde / slug killer*



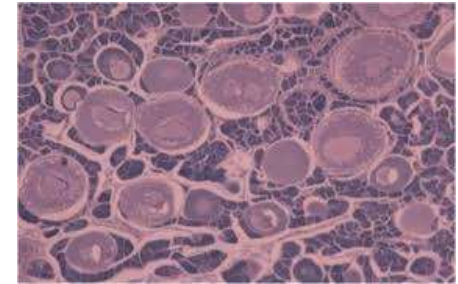
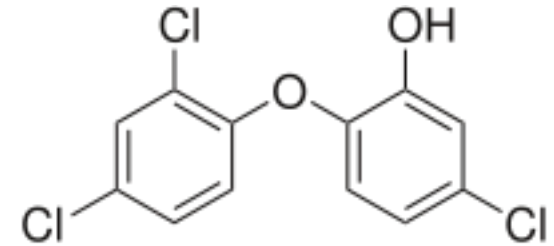
# Where do they end up?

- *Down the sink/loo*
- *Through the sewerage system*
- *Arrive at waste water treatment plants/sewerage works*
- *Straight through and out into the rivers*
- *Alternatively, from our garden to run off*



# So what?

- *Impacts on animals living in the rivers/canals...*
- *Reproductive damage – intersex fish*
- *Slowed behaviour responses/ predator-prey*
- *Population decline of some fish species (already seen in the Great Lakes)*
- *Also, the sediments build up levels of chemicals which may be toxic, and therefore become expensive to dispose of when dredged*





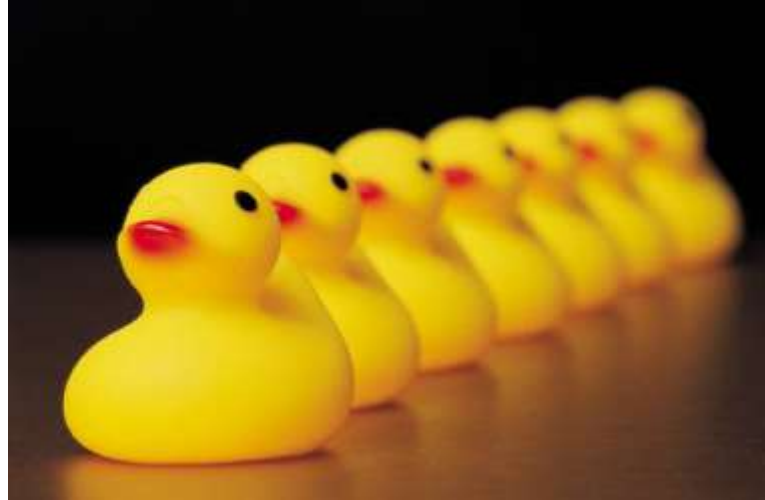
## Project 'results'

- Reduced economic cost of disposal of dredged material (by 10% at pilot sites by decreasing uncertainty in decision making on contaminated sediments).
- Reduced level of selected watch list chemicals in **outflow** from waste water sites piloting spore technology (25% reduction of selected WL chemicals – E2/EE2, diclofenac, BaP, 'and others').
- Reduced level of selected WL chemicals in **inflow** to WW sites in catchments piloting behaviour change activity (20% reduction, dipsticks for -E2/EE2, triclosan, BaP, metaldehyde).

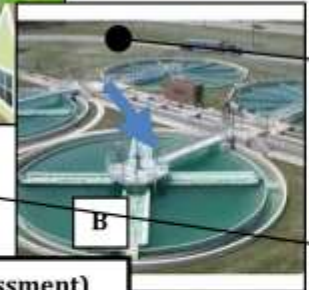


# Project Highlights

- Kick Off Meeting, January 2017
- Sampling across the region - getting ready...

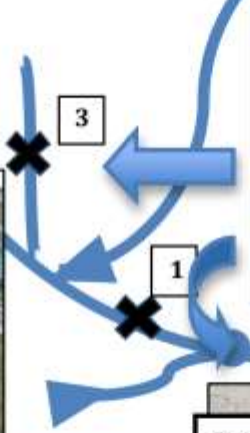


**Work Package 4: (Clean-up):** Pilot spore technology scheme targeting Watch List chemical removal within WWTP. Effluent: Biosolid end of waste assessment identifying removal efficiencies. Target site to be decided, either **(A)** a medium-scale WWTP (i.e. Beverley – see image below or **(B)** a large-scale plant (i.e. Leeds, Knostrop/Esholt). Ideally WP4 and 5 activities focus on the **SAME** site?? DISCUSS



**Work Package 5: (Changing Behaviour)** Working in highly urbanised areas and targeting citizen behaviour in order to reduce specific WL chemicals (triclosan, metaldehyde and benzo(a)pyrene) entry into WWTP. **REQUIRES WWTP INFLUENT** sampling at project **START (6 mo) / END (24 mo)**  
**WE SAID ACTIVITIES WILL BE ACROSS PARTNERSHIP AREA.**

**Work Package 3: (Sediment Assessment)** Water physicochemical and sediment sampling sites to include: **(1)** upstream of WWTP point source; **(2)** downstream of WWTP point sources (effluent impacted); and **(3)** a heavily-modified canal site with known pollution pressures. Suggested sites: River Hull, Lower Aire, Rotherham Canal; Aire and Calder Navigation?? **DISCUSS**



**Possible tidal/salinity influence needs to be fully considered prior to site selection.**

**End-of-waste assessment approach:** Combined WP3 and WP4 delivered data will be used to promote and advise safe future sediment re-use (OVAM-led).



**Humber Catchment: DRAFT** Sampling regime overview – how shall we decide the sampling locations for different WP needs?



# How can you take part?

- *Wait for our media campaign...*
- *Dipsticks, an app and a website all coming soon...*
- *Three demos for you to take part in and ask questions next...*

