PROMOTE: PROtecting water resources from MObile TracE chemicals

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Background

Surface water and groundwater are the two major sources for drinking water in Europe. Their quality may be affected by the release of industrially produced chemicals. If these chemicals or their transformation products are poorly degradable (persistent) and highly polar (mobile), then these chemicals are of specific concern with respect to drinking water quality. We denote such compounds ‘persistent mobile organic chemicals’ (PMOC). For PMOC dilution may be the major mechanism of concentration decrease in water cycles, because they have a high potential to break through natural or technical barriers. This is particularly likely in partially closed water cycles which we encounter in all densely populated regions (Fig. 1). PROMOTE is a recently launched research project under the European Union Joint Programming Initiative “Water Challenges for a Changing World” (Water JPI) that focuses on PMOC.

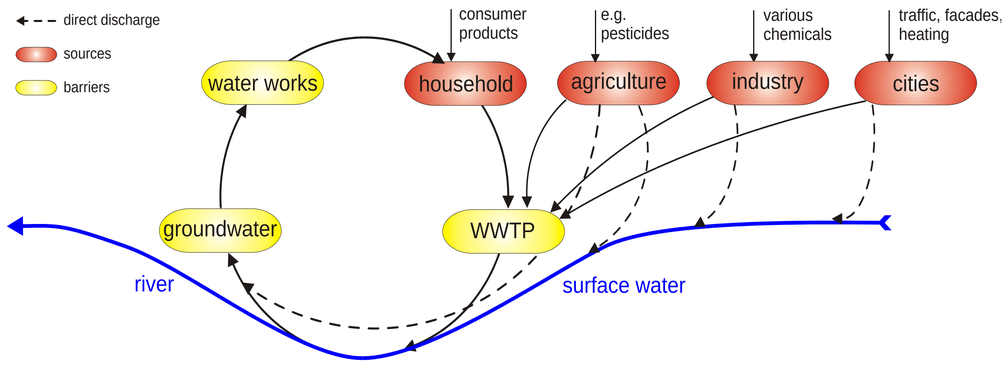

Figure 1. Partially closed water cycle

Hypothesis

There is a polarity gap (Fig. 2) of highly polar organic chemicals (potential PMOC) that are produced and emitted into the environment, but for which current analytical methods are not suitable. Thus, monitoring data are lacking and ultimately protection of human health via regulation may be insufficient.

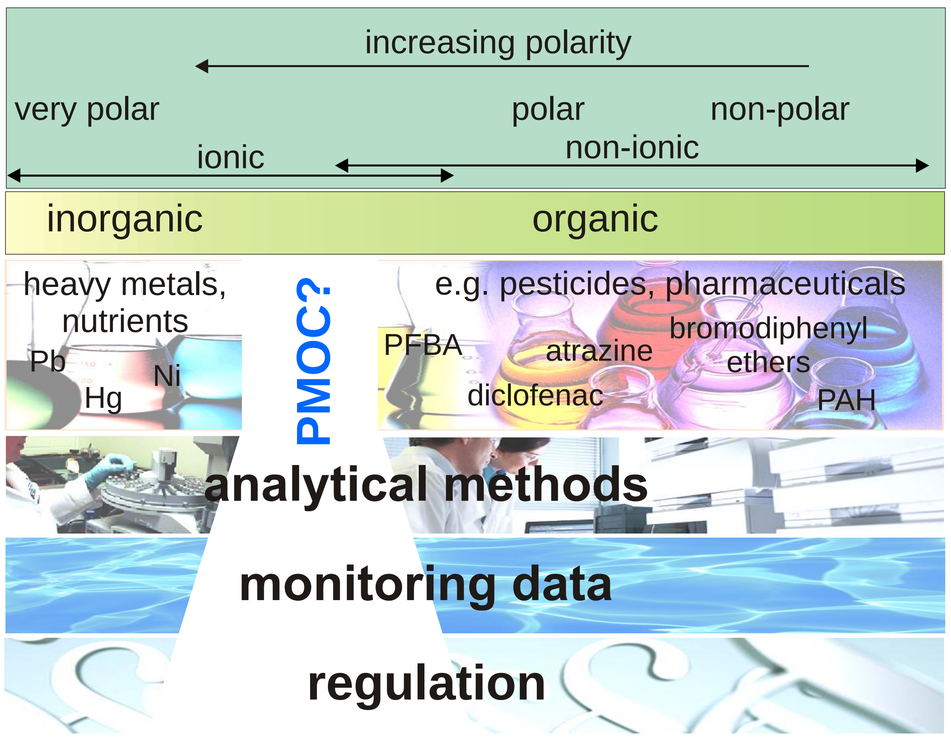

Figure 2. Polarity gap of highly polar organic chemicals

Overarching aim

PROMOTE aims at clarifying the question whether there is a need as well as the potential to improve the protection of drinking water resources by chemicals regulation with respect to PMOC. Therewith, PROMOTE links European chemicals policy (REACH) with water policy (WFD).

Work plan

The work plan including all work packages (WP) and their interactions is depicted in Fig. 3.

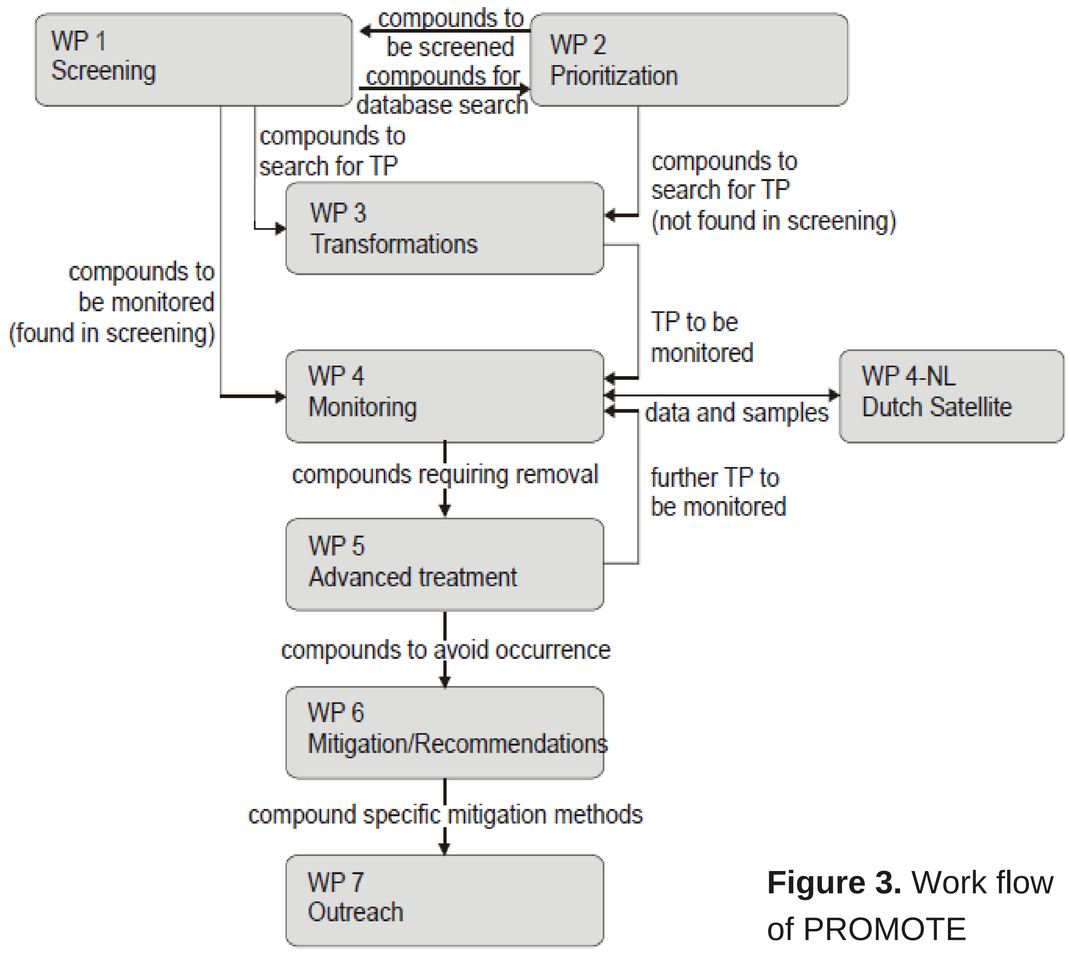

Figure 3. Work flow of PROMOTE

What do we want to PROMOTE?

- Analytical methods to detect and to quantify PMOC (WP1)
- Tools to identify PMOC from data submitted in the REACH process (WP2)
- Understanding of transformation processes leading to PMOC (WP3)
- Knowledge on environmental occurrence and sources of PMOC (WP4)
- Advanced techniques for the removal of PMOC from drinking water (WP5)
- Knowledge on potential health effects of PMOC
- Drinking water quality
- Link between chemicals policy and water policy

Acknowledgments

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