

Hotspots with sediment contamination

Intensive historical evaluation and sampling campaigns to validate potential hotspots related to risk activities

June 2021







Waterways and industrial activities







Diffuse versus point source





How can we identify hotspots with sediment pollution?



Step 1: Identifying potential hotspots

Step 1: Identifying potential hotspots

Prioritising locations: assignment of a score

Prioritising streamsegments

- Number of potential hotspot sites per score near the stream
- Number of registered wastewater discharge points of industries belonging to the 15 industrial sectors

Step 2: validation : historical evaluation and sampling campaigns

Do we find sediment pollution in the stream (sediments and banks) near these sites?

Pilot study:

- Focus on non-navigable waterways
- Stepwise appoach:
 - Check info on site:
 - soil studies, permits, compounds of interest, discharges points,...
 - Check info on stream:
 - Contact stream manager, aereal pictures, discharges permit,...
 - Site visit to check practical aspects (accesibility etc)
 - Sampling and analysis

Results desktop studies

- 356 streams segments
- linked to 1257 parcels (approx 306 sites)

Results sampling campaign

© Arcadis 2020

Results sampling campaign

Per compound class

50 100% 45 90% 40 80% Number of segments 35 70% 30 60% 25 50% 20 40% 30% 15 20% 10 10% 5 0% Cleaning and barrel reconditioning paper and cardboardractoriaes tamelies and leather industry Petrochemical industry electrical equipment industry Cathootenical industry Wood Preservation power plants cremical industry shipyards metallurgy

number of sampled segments
sampled segments > trigger value

number of segments > trigger value

Results sampling campaign

Per industrial activity

ARCADIS

Results sampling campaign

Per industrial activity

- Causal relation not straightforward
 - Multiple streamsegments along 1 potential hotspot
 - And multiple hotspots a long 1 streamsegment
- Sampling upstream and downstream of potential hotspot:
 - not always possible
 - concentration gradient not always obvious
- Triggervalue not available for all compounds analysed

Results desktudy and sampling

Visualisation in GIS

Layer of potential hotspot sites:

Priority of the potential hotspot site Deskstudy performed? Triggered sampling?

Layer for streamsegments:

Priority of the segment Sampling performed? Trigger Value exceeded?

Conclusion and way forward

Conclusion

- Identifying potential hotspots of sediment contamination based on risk-activities is possible
 - High priority segments more often contain concentrations > 5 X Trigger Value then lower piority segments
 - Diffuse vs hotspot: not easy to distinguish
 - Causality not straightforward
 - Desktopstudy very important for efficient data collection
- Prioritising based on score system: identifying top priorities for policy makers
- Geographical database:
 - data can be integrated in existing monitoring networks
 - data easily shared
 - easily combined with other data layers

Way forward

- Sampling will continue until 2022
- More detailed data analyses
- Policy recommendations

ARCADIS

Dorien Gorteman Karen Van geert

Jan Dewilde Katrien van de Wiele Goedele Vanacer

Arcadis. Improving quality of life.

© Arcadis 2020