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Integrated Management System for Prevention and Reduction of Pollution of Waterbodies at Contaminated Industrial Megasites

Problem definition

The first thing to deal with in developing management approaches for megasites is to identify and communicate with responsible local/regional authorities, concerning the extent of the problem, the plans for site development, and possibilities and limits of financing remediation and re-development. Based on the site history, the extent of the contamination problem can be estimated by authorities and site-users. This first step in the Integrated Management System (IMS) is meant to assist in making a brief inventory, and to decide whether the site can be classified as a megasite for which it is useful to develop an integrated management approach. If this can be the case, further detailed questions will be answered in additional sections of the IMS. The requirement to make a site risk management plan is an important issue in order to comply with the EU Water Framework Directive and Groundwater Directive. A final evaluation will be made in the last step summarizing the results and evaluating them with regard to complexity, timeframe, costs, and the regulatory requirement to make a site management plan (see: *Starting IMS -> Decision on IMS*).

The initial screening of the scale of the problem should be performed by consulting the responsible authorities and the problem owners. Depending on the specific site, other stakeholders can be involved if necessary (for detailed description of the formation and organization of stakeholder groups see *Starting IMS -> Organizing stakeholders*). For a first delineation of the problem, the situation is to be described briefly in regard to:

- Site history,
- Soil conditions,
- Groundwater systems,
- Contaminants (sources and extent),
- Pathways,
- Receptors (groundwater resources, surface water systems, current and future planned land-use in the region),
- Stakeholders (site owners, land-users, regulators and other authorities, site-managers).

The description should be exclusively based on available information, which can be obtained from local authorities, site owners and users (industry), existing maps, etc. Major stakeholders involved at the site management may contribute to the problem definition by supplying additional information, based on their function and background. A visit by environmental experts to give a look at the site and provide a brief environmental assessment report is recommended.

At this stage the necessary timeframe and the rough costs needed for the solution of the problem should be estimated as good as possible in addition to the brief description of the situation. The goal of this step is to initiate the preparation of a management approach for the site, and to create a base for further action. An important aspect is to make stakeholders aware of the extent and complexity of the problem, for which a simple standard remediation approach will not be feasible.

Output:

The output of this step is the identification of the site or region, as a potential megasite for which the Integrated Management approach is needed. This identification is based on a brief description of the site and can be made using a checklist of existing information, containing existing maps and contamination profiles, expert estimates for area's lacking contaminant data and a first list of the involved stakeholders (regulators, site-owners, site managers) related to the megasite or region. Later in (see: *Starting IMS -> Decision on IMS*) a final check will be done before going further in detailed risk assessment and management scenario development. It is important to emphasize the complexity level for the mentioned

data.

Information	The megasite
Megasite area Impact area	
Land use (maps)	
Documents from involved stakeholders and other institutions	
Historical timeframe (use/production)	
Range of substances produced/used/present in soil and groundwater	
Potential sources (existing landfills, etc.)	
Potential receptors (residential areas, protected areas, rivers, etc.)	
Predominant stakeholders	

To find a checklist of existing information, with results for Port of Rotterdam, Bitterfeld or Tarnowskie Góry refer to the example pathline.

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