Sediments and dredged materials

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Sediment contamination is an important environmental issue because of its potential toxic effects on water, biotic resources, and human health.
A large variety of contaminants (heavy metals, organic pollutants, radioactive nuclides) from industrial, urban, and marine activities are associated with sediment particles.

Heavy metals and organic pollutants are often accumulated in sediments over a period of time and thus form secondary reservoirs of contamination. These contaminants can afterwards

- be released to water, thus migrate to other sediments, or be absorbed by biota
- accumulate in aquatic organisms and move up the chain food to fish, marine mammals, eventually humans.

High human pressure on water systems calls for more and more dredging due to:

- maintenance works (depth for shipping and drainage)
- construction works (flood defence, recreation, harbour enlargement)
- supply of construction material (sand, gravels)
- remediation works (hot spots)

These activities can lead to redistribution of contaminants to water, landfills, construction materials, etc.

Several national and international conventions deal with the quality of sediments and dredged materials:

- The Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area: HELCOM recommendation Disposal of dredged spoils.
- The London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Dredged Material assessment Framework.
- The Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR): Revised guidelines for the management of dredged material.
- European Landfill Directive.
- European waste legislation.
- Water Framework Directive 2000/60/EC and its amendments.

Due to implementation of international conventions and EU Directives, the different national authorities have developed specific dredged material guidelines and/or specific legislation on sediments. ALS has developed numerous sediment programs for the assessment of contaminated sediments, which fulfil the most stringent classification of materials.

ALS portfolio of analytical services for sediments contains, but is not limited to, the following compounds/tests:

- Dry matter, loss on ignition
- Density
- Granulometry, particle size distribution
- Sulphur content, total organic carbon (TOC), total carbon (TC)
- Heavy metals (mercury, lead, nickel, zinc, copper, cadmium, etc.)
- Metal speciation (methylmercury, arsenic compounds, selenium compounds)
- Tributyltin (TBT) and other organotin compounds
- Total petroleum hydrocarbons (TPH)
- Radionuclides, including alpha and beta activity
- Per- and poly-fluoroalkyl substances (PFAS)
- Octylphenols, nonylphenols and their ethoxylates
- Chlorophenols
- PCBs, PAH, hexachlorobenzene
- DDT and isomers, lindane, chlorobenzenes
- Polybrominated diphenyl ethers (PBDE)
- Dioxins and furans (PCDD/F)
- Ecotoxicological tests on aquatic organisms (plants and animals)
- Microtox (Vibrio fischeri)

ALS Recomendation

Project specific quotations are strongly recommended for sediment work. These quotations will clearly specify LORs, suites, sample containers and sample volumes and will provide details on delivery logistics. For further details, contact your local ALS representative.




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