

Ecological Risk Assessment for Lake Maggiore: experience gained from a participatory approach

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Introduction: The poster reports the experience gained from an Italian case study, an historical DDT and Hg industrial contamination in a river-lake system. The lake and the river were extensively studied in collaboration with public agencies and research institutes.

Methods and results: Investigation design and data interpretation were based on a tiered approach, verifying at each step if further investigations were necessary to evaluate potential effects for the aquatic ecosystems. The design took into account also the current European legislative framework for the protection of surface waterbodies. Ecological Risk Assessment (ERA) was the decision-making tool proposed to support environmental management.

The work was done under the review of a Technical Board, established with the participation of several experts from academia, public environmental agencies, research institutes and industry, with the final aim of developing a shared approach and evaluating site specific Ecological Risks.

Risks to aquatic invertebrates were evaluated using multiple lines of evidence:

- comparison of site-specific sediment data to benchmarks derived from literature research to assess cause-effect relationships;
- comparison of invertebrate tissue concentrations to effects thresholds;
- community structure assessment; and
- sediment bioassays.

Risks to fishes were evaluated considering:

- comparison of fish tissue concentrations to effects thresholds; and
- comparison of water concentrations to benchmarks.

Finally, risks to wildlife (mammals and piscivorous birds) were evaluated considering

- comparison of dietary exposure to effects thresholds; and
- evaluation of site-specific data.

Moreover, a Human Health Risk Assessment was undertaken considering exposure from fish tissue concentrations.

A participatory approach involving environmental and health authorities, public and private research institutes and industrial managers was applied in the decision process; this approach was fundamental for the overall process, since it has facilitated scientific discussion, communication and decision-making process bridging the gap between stakeholders. The participatory experiences gained in this case-study could represent an example also for other Italian contaminated sites.