NGI has used a range of in-situ monitoring technology and equipment, developed during previous projects in Norway. This includes sediment traps to evaluate sedimentation, diffusion chambers for the effluence of organic contamination from the sediment surface, and passive sampling in order to measure low concentrations of contamination in the water column and in the pore water in the sediments.

The measuring equipment was deployed in different areas of the River Toce and in the Pallanza Bay, at a depth of 50–120 metres. Contaminated sediments

Stanford University engaged NGI to monitor sediments in Lake Maggiore in Northern Italy. This was part of a larger R&D project that Stanford University has conducted for the power company Eni S.p.A. During the project, NGI has used a range of in-situ monitoring technology and equipment. The results show that natural covering reduces the bioaccessibility of pesticides in the sediments.

Lake Maggiore is a sub-alpine lake that was formed through glacial erosion and is thus
comparable to freshwater fjords. The sediments have been contaminated by pesticides (DDT) from past activities, but the addition of new sediments works as a natural covering.

Potency of sedimentation

The purpose of the field surveys was to assess the potency of the natural sedimentation to reduce the bioaccess of pesticides (DDT) in pore water in the sediments and in the overlying water in Lake Maggiore.

In-situ monitoring technology

NGI har benyttet en rekke in-situ måleteknikker og utstyr utviklet via tidligere prosjekter i Norge. Dette inkluderer sedimentfeller for å evaluere sedimentsedimentasjon, diffusjonskammere for utlekkning av organisk forurensning fra sedimentoverflaten, og passive prøvetakere for å måle lave konsentrasjoner av forurensning i vannsøylen og i porevannet i sedimentene. Måleutstyret ble satt ut på ulike områder nestrøms Toce elven og i Pallanza-bukten, på vanndyb fra 50 – 120 meter. > See video

Result

Material collected in the sediment traps showed concentrations of DDT that were 50 times lower than concentrations found in the uppermost 15 cm of sediments in the Pallanza Bay. Most of the new material was transported from the River Toce during the spring snow melt and larger precipitation episodes in the autumn.

Measurement of concentrations of DDT in vertical profiles of pore water showed that the natural covering that was present prevented the effluence of DDT from the deeper sediments to the uppermost sediments. Natural covering increased the sediments' insulation capacity, thereby reducing the risk of pesticides in the sediments.
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