

DO FISH, SHELLFISH AND FISH CAUGHT IN LAKES AND STREAMS NEAR CONTAMINATED GLASSWORKS SITES CONSTITUTE A HEALTH RISK?

*Alexandra Karlsson
Linnaeus University
Sweden*

Abstract

In the geographical area "The Kingdom of Crystal", in Småland, 26 former glass work sites have been highly classified as contaminated by metals, emissions from glass manufacturing. Characteristic metals from such activities were arsenic, cadmium and lead. Different exposure pathways could be identified, risking the health of the people living near the glass work sites. Such an exposure pathway could be through consumption of self-caught fish and crayfish.

The aim of this study was to collect samples of self-caught fish and crayfish to analyse the concentration of arsenic, cadmium and lead in fish and crayfish caught in the lakes, identified in previously studies.

In total 8 fish samples and 33 crayfish samples were collected. The analyses revealed that the average crayfish sample contained higher concentrations of arsenic, cadmium and lead, than the average fish sample.

In the study exposure assessments were conducted through deterministic methods and also through Probability Bounds Analysis. The calculations indicated that there was a risk of an exposure of arsenic associated to people eating a large amount of self-caught fish and crayfish. The exposure was strongly dependent on how large the consumption was but also the different limits used for comparison in the risk characterization.

Keywords

Fish, Crayfish, Arsenic, Lead, Cadmium, Contaminated glass work sites, Exposure assessment, Probability Bounds Analysis