Implications of chemical contaminants for aquatic animals in the Canadian arctic: some review comments.

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Abstract: Chemical residue analyses have established beyond doubt that arctic ecosystems are contaminated with low concentrations of several contaminants. The sources of these vary, but for many, the principal source is atmospheric deposition as a result of widespread dispersal by air masses carrying materials from lower latitudes. The principal problem discussed here is how to determine whether there are biological implications associated with the contaminants. For the most part, concentrations are below those found in more temperate regions where similar questions have been asked. Little experimental toxicology has been done with arctic species, and relatively little has been done in environmental toxicology in general to express biological responses in terms of body residues. It is argued that chemical residue studies are not, in themselves, evidence of biological responses. The effects of greatest interest are those at ecological levels, but ecological surveys that might detect biological changes have little power to test for cause-effect linkages between the contaminants and the changes observed. The emerging approach of biomarkers or bioindicators seems to offer the greatest promise for efforts to determine whether arctic contaminants have biological implications.

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