

3.5 Persistent Organic Pollutants and Human Health

Summary

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Persistent organic pollutants (POPs) are presently being targeted globally for environmental regulation because of their characteristics of accumulation, persistence, toxicity and potential for long-range movement. The classic examples of POPs are PCBs and DDTs. However, brominated diphenyl ethers (BDEs), perfluorinated acids (PFAs) and halogenated phenolic compounds (HPCs) are emerging as the next generation of pollutants, particularly in the Arctic ecosystem. BDEs, which are used as flame-retardants in various commercial products, have recently been shown to occur in both environmental and biotic media in the Arctic. PFAs have been widely used as cosmetics, fire fighting foams, and water and grease repellent coatings for fabrics and food packaging. These compounds mainly perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) have been detected in biota in the Arctic. HPCs comprise hydroxylated metabolites of PCBs, chlorophenols and other compounds that have been detected in blood samples from Inuit adults and neonates from Nunavik. Our project focuses on health effects possibly resulting from exposure to these compounds and other POPs in the Arctic, including methylmercury. Results from our project will be useful to assess the health impacts on residents in coastal communities of Hudson Bay that may result from an increase in POPs exposure, a possible consequence of climate change. Information on effects of climate change on the physical environment (project 3.1 and 3.2) will be used to predict changes in food availability in the communities and results on changes in contaminant concentrations in fish and wildlife (project 3.4) will be used to assess the risk of traditional food consumption. We will integrate dietary data collected in communities in Manitoba, Quebec and Nunavut in the past few years and use the new information on food availability and safety to predict changes in diet composition of the populations in Hudson Bay. Using our existing databases on nutrient composition and contaminant concentrations and new data from project 3.4, we will calculate the subsequent changes in nutrient and contaminant intakes. Health status is being assessed by analysing existing secondary data from past surveys and new data from recent and ongoing surveys, including biomarkers of effects, and health care databases. The relationship between the environmental determinants and health status will be investigated. We will collaborate with members of project 3.6 to communicate our results and to develop programs and services to meet changing health needs.

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Publications

Articles Published in Refereed Publications

Stamler, C.J., Basu, N., and Man Chan, H. , 2005, Biochemical Markers of Neurotoxicity in Wildlife and Human Populations: Considerations for Method Development, J Toxicol Environ Health A. vol. 68 , 1413-1429, Published

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