

Exposure to Environmental Contaminants in Nunavik: Persistent Organic Pollutants and New Contaminants of Concern

The Inuit of Nunavik are exposed to metals and persistent organic pollutants (POPs) that are carried from southern to northern latitudes by oceanic and atmospheric transport and biomagnified in Arctic food webs. As the Inuit traditional diet comprises large amounts of tissues from marine mammals, fish and terrestrial wild game, the Inuit are more exposed to these contaminants than populations living in southern regions. The traditional suite of legacy POPs comprises polychlorinated dibenzo p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), polychlorinated biphenyls (PCBs) and chlorinated pesticides whereas emerging POPs include perfluorooctanesulfonate (PFOS), halogenated phenolic compounds (HPCs) and brominated flame retardants such as polybrominated diphenyl ethers (PBDEs). Legacy POPs have been found to be neurotoxic, carcinogenic, hepatotoxic and have reproductive, endocrine and immunotoxic effects. Human health effects of emerging POPs are mostly unknown, but animal studies suggest that they may interfere with fatty acid transport and may alter developmental, reproductive and hormonal functions. The objectives of this study, conducted within the framework of the Nunavik Inuit Health Survey 2004, were: 1) to investigate changes in environmental contaminant exposure among the Inuit of Nunavik by updating exposure assessment; and 2) to begin monitoring emerging environmental contaminants.

Since 1992, plasma concentrations of all legacy POPs have declined in the Inuit population. This decreasing trend is probably related to the reduction of POPs in the Arctic environment. PBDE concentrations measured in 2004 were below levels reported in other North American populations, but higher than European and Asian

populations. Young adults aged 18 to 24 were the most exposed group to PBDE-47, the prevalent congener. Consumption of traditional food is not the source of exposure to PBDEs in the Inuit population. Also, PFOS levels observed in 2004 in the Inuit of Nunavik were similar to concentrations measured in southern Canadian and European populations, higher than concentrations in Asian ones but lower than those in US populations. Consumption of marine mammal fat and fish seems to be a source of exposure to PFOS in this population. Other sources of exposure, such as the use of manufactured products containing PFOS, probably account for the concentration measured in the Inuit population.

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STATISTICAL ANALYSES

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