MERCURY IN NORTHERN QUÉBEC: ROLE OF THE MERCURY AGREEMENT AND STATUS OF RESEARCH AND MONITORING

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ABSTRACT. In order to determine the nature and extent of the problem caused by the presence of mercury in the environment of the James Bay territory a Mercury Agreement was signed in 1986 jointly by the Crees, the Government of Québec and Hydro-Québec. The objectives were to minimize potential hazards to human health arising from the presence of mercury in the environment, to alleviate negative impacts on the Crees, their way of life and their harvesting activities and to provide for remedial measures. Monitoring of mercury concentrations in fish show that, 15 years after impounding of La Grande-2 reservoir, the concentrations remain higher in reservoirs than in natural lakes but they are now decreasing in both predatory (Northern pike) and non-predatory (Whitefish) fishes. Monitoring of the mercury exposure among the Crees showed that concentrations in hair have decreased and are now stabilized, for most of the population, to concentrations that do not present a health risk. This decrease may be attributed to a reduction in fish consumption and/or a possible switch of the diet towards non-piscivorous fish, less contaminated by mercury.

1. Introduction

Environmental and health concerns about mercury appeared among Northern Québec Cree communities in the early 1970's, following contamination of fish due to effluents from a kraft mill containing a chlor-alkali plant (Berkes et al.; 1972). Subsequent surveys revealed elevated exposure to methylmercury in Cree communities throughout Northwestern Québec (Santé et Bien-être Social Canada, 1979). This exposure was attributed mainly to the consumption of fish from inland waters, often remote from localized sources. Approximately one half of the adult population over the age of 35 underwent neurological assessments, as well as a cohort of 300 children exposed in utero (Mckeown-Eyssen and Ruedy, 1983a, 1983b, Mckeown-Eyssen, Ruedy and Neims 1983). Measures were taken to limit the subsistence fishery and subsequent fish consumption has remained well below levels recorded in the early 1970's (Weinstein and Penn, 1987).

These concerns were revived in some communities affected by the hydroelectric development of the La Grande Complex, which has created large reservoirs by empoundment of approximately 11 500 square kilometers of land. In order to determine the nature and extent of the problem caused by the presence of mercury in the environment of the James Bay territory, with particular reference to the La Grande Hydroelectric Complex (Figure 1), a Mercury Agreement was signed in 1986 jointly by the Crees, the Government of Québec and Hydro-Québec (C.Q. H.-Q., 1986). The implementation of this Agreement is under the responsibility of

Fig. 1. Location of Study Areas in Northern Québec