For the past twenty-five years Canadas Northern Contaminants Program (NCP) has coordinated research and monitoring on transboundary pollutants in the Canadian North. These pollutants, including mercury, are present at relatively high concentrations in Arctic wildlife that are important food sources for Arctic Indigenous peoples, raising concern for their health and well-being. The primary objectives of the program have therefore been to a) inform and influence the development of policies and regulations that reduce sources of long-range pollutants; and b) provide information to health authorities for the development of public health advice and to Arctic Indigenous people so they can make informed dietary choices. Research and monitoring has addressed questions related to all aspects of contaminant cycling and impacts in northern ecosystems, from long-range sources and transport, to ecosystem and human health risks. Results are routinely published in peer reviewed journals, synthesized and published in comprehensive assessments, and communicated to national and international stakeholders.

Since 2004 the NCP has maintained a contaminant monitoring program that incorporates a variety of abiotic and biotic media that are sampled annually, or in the case of air, continuously, at prescribed locations. A primary objective for the program is to evaluate the effectiveness of international emissions regulations, such as those enshrined in the Minamata Convention. With few exceptions all monitoring is carried out in partnership with Indigenous communities, who in many cases take the lead on all aspects of field sampling. In the case of wildlife monitoring, data from annual sampling carried out since 2004 is augmented by data collected on a periodic basis from the 1990s, and in some cases the 1980s and 1970s. With the adoption of annual monitoring, the statistical power of these timeseries has recently improved to the point where relatively subtle trends are being measured with a reasonable degree of statistical significance.

The influence that global emissions have on mercury levels in wildlife must be assessed in the context of a changing environment. Climate related environmental change in the Arctic can affect all aspects of mercury cycling, including levels in wildlife. It is therefore important that monitoring be complemented by research that provides insights into how environmental processes are being affected by climate change. With the combined knowledge of both research and monitoring, it is possible to draw some conclusions on the relative impact that both changing emissions and a changing climate are having on wildlife exposure and trends.

MO-092

IMPLEMENTATION OF THE ENVIRONMENTAL QUALITY STANDARD (EQSBIOTA) UNDER THE EUROPEAN WATER FRAMEWORK DIRECTIVE IN FRENCH GUIANA FISH

GENTES, Sophie[1]; VIGOUROUX, Regis[2]; COQUERY, Marina[3]; HANQUIEZ, Vincent[4]; ALLARD, Luc[2]; MAURY-BRACHET, Regine[1];
(1) Bordeaux University, Arcachon, France; (2) HYDRECO, Kourou/Guyane, France; (3) IRSTEA-UR MALY, Lyon-Villeurbanne, France; (4) Bordeaux University, Bordeaux, France

sophie.gentes@u-bordeaux.fr

Mercury (Hg) is a toxic metal classified as a dangerous priority substance to be monitored in aquatic ecosystems by the European Water Framework Directive (WFD), due to its characteristics of bioaccumulation and biomagnification in food webs. An Environmental Quality Standard for biota (EQSbiota) has been defined for Hg in order to classify water bodies and was set at 0.02 mg Hg.kg-1 fresh weight. The application of such a standard requires defining one or more species of fish that is able to integrate the mercury contamination of the river in which they live. For this purpose, the WFD emphasizes the importance to choose species with a high trophic level (TL≥3) which corresponds to fish with the highest Hg concentrations (carnivorous and piscivorous species). Even considering an aquatic environment not exposed to direct inputs of Hg, fish with high trophic level are generally above the EQSbiota.

In French Guiana, we are faced with the difficulty of implementing this standard without downgrading all the aquatic ecosystems. Indeed, this region presents a great contamination of mercury due to the lithology of its soils and its history related to goldmining.

The aim of this study was to help designing appropriate monitoring program of Hg in fish for the implementation of EQS biota in this particular context. A database was created based on the mercury concentrations analyzed in fish muscle during 8 research programs carried out by the University of Bordeaux and the HYDRECO laboratory since 1990. Several difficulties have been encountered, particularly due to the difficulty to identify true reference sites and the high biodiversity of the ichtyofauna (416 known species). Two types of water bodies must be differentiated in French Guiana, due to their distinct hydrographic functioning: creeks (80% of the water system, very little studied) and rivers (20% of the water system). The database counts approximately 3000 fishes distributed over 50 creeks and 6000 fishes caught at about 200 stations located on the rivers of French Guiana; it includes also various information for each fish (Hg concentration in muscle, standard length, weight, family, species, trophic level, sample station location, anthropic or natural pressure for each station, etc.). The first results show that fish species in creeks are different from those present in rivers. After statistical and geographical data processing, 6 to 8 bioindicators species were proposed for creeks and 3 for rivers. The identification of reference sites, however, remains a very delicate task, due to the history associated with goldmining: just 7 potential reference sites for creeks and 4 for rivers. Results on Hg contamination of indicator fish species at reference and contaminated sites will be presented and discussed according to anthropogenic pressure. A first evaluation of reference concentrations is proposed.

MO-093

DEVELOPMENT, IMPLEMENTATION, AND CULTURAL IMPACT OF FISH CONSUMPTION ADVISORIES ON NATIVE AMERICAN TRIBES IN THE GREAT LAKES REGION

MOSES, Sara[1]; MCCAMMON-SOLTIS, Ann[1]; KMIECIK, Neil[1];
(1) Great Lakes Indian Fish & Wildlife Commission, Odanah, WI, United States

s.moses@glifwc.org