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-- A Work Group Report --**

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Methylmercury in Marine Ecosystems: From Sources to Seafood Consumers

-- A Work Group Report --

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Running Title: Methylmercury in Marine Ecosystems

Key Words: bioaccumulation, human health, mercury biomonitoring, mercury exposure, methylmercury

Abbreviations and Definitions:

DGT Diffusive Gel Time-series

MeHg methylmercury

Abstract

Introduction

Theme 1: Biogeochemical Cycling of Mercury in Marine Ecosystems

Research Questions

Monitoring Needs

Theme 2: Methylmercury Trophic Transfer in Marine Food Webs

Research Questions

Monitoring Needs

Theme 3: Human Exposure to Mercury in Fish and Shellfish

Research Questions

Monitoring Needs

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Abstract

Mercury and other contaminants in coastal and open ocean ecosystems are an issue of great concern globally and in the United States, where consumption of marine fish and shellfish is a major route of human exposure to methylmercury (MeHg). A recent NIEHS-SBRP workshop, *Fate and Bioavailability of Mercury in Aquatic Ecosystems and Effects on Human Exposure*, convened by the Dartmouth Toxic Metals Research Program on November 15-16, 2006 in Durham NH, brought together human health experts, marine scientists and ecotoxicologists to encourage cross-disciplinary discussion between ecosystem and human health scientists and to articulate research and monitoring priorities to better understand how marine food webs have become contaminated with MeHg. While human health effects of mercury contamination were a major theme of the workshop, effects on marine biota were also explored. The work group focused on three major topics: (1) the biogeochemical cycling of mercury in marine ecosystems, (2) the trophic transfer and bioaccumulation of methylmercury in marine food webs, and (3) human exposure to mercury from marine fish and shellfish consumption. The group concluded that current understanding of mercury in marine ecosystems across a range of habitats, chemical conditions, and ocean basins is severely data-limited. An integrated research and monitoring program is needed to link the processes and mechanisms of MeHg production, bioaccumulation, and transfer with MeHg exposure in humans.