United States Environmental Protection Agency

United States Geological Survey

Proceedings and Summary Report

Workshop on the Fate, Transport, and Transformation of Mercury in Aquatic and Terrestrial Environments

Everglades cover photo courtesy of C. Gilmour, The Academy of Natural Sciences Estuarine Research Center.

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Proceedings and Summary Report

Workshop on the Fate, Transport, and Transformation of Mercury in Aquatic and Terrestrial Environments

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Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

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NOTICE

This document was compiled from presentations and open discussion at a U.S. Environmental Protection Agency (USEPA) Workshop on the Fate, Transport, and Transformation of Mercury in Aquatic and Terrestrial Environments held in West Palm Beach, Florida. The agenda and speaker/poster abstracts are presented in the appendices. Information presented herein does not necessarily represent the views of USEPA, nor is it specifically tied to reference materials. In many cases, the information presented is the opinion of the speaker, generated by his or her background and operations experience.

FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threaten human health and the environment. The focus of the Laboratory's research program is on methods, and their cost-effectiveness, for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by developing and promoting technologies that protect and improve the environment; advancing scientific and engineering information to support regulatory and policy decisions; and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
National Risk Management Research Laboratory

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ACRONYMS

ACME	Aquatic Cycling of Mercury in the Everglades
AMD	Acid Mine Drainage
ATSDR	Agency for Toxic Substances and Disease Registry
AVS	Acid-volatile sulfide
BAF	Bioaccumulation Factor
CEC	Commission for Environmental Cooperation
CEM	Continuous Emissions Monitoring
CRS	Carson River System
CV-AFS	Cold-Vapor Atomic Fluorescence Spectrometry
CWA	Clean Water Act
DGM	Dissolved Gaseous Mercury
DEP	Department of Environmental Protection
D-MCM	Dynamic Mercury Cycling Model
DOC	Dissolved Organic Carbon
E-MCM	Everglades Mercury Cycling Model
Eh	Redox potential
EMAP	Environmental Monitoring and Assessment Program
ELA	Experimental Lakes Area
ENRP	Everglades Nutrient Removal Project
USEPA	United States Environmental Protection Agency
EPG	Electric Power Generation
EPRI	Electric Power Research Institute
FDA	Food and Drug Administration
GEM	Gaseous Elemental Mercury
GIS	Geographic Information System
ICP	Inductively Coupled Plasma
LFG	Landfill Gas
LIF	Laser Induced Fluorescence
LIS	Long Island Sound
MARB	Mobile-Alabama River Basin
MAWLTS	Mercury in Adirondack Wetlands Lakes and Terrestrial Systems
MCL	Maximum Contaminant Level
MDE	Mercury Depletion Events
MDN	Mercury Deposition Network
MeHg	Methylmercury (monomethylmercury)
METAALICUS	Mercury Experiment To Assess Atmospheric Loading In Canada and the United States
NADP	National Atmospheric Deposition Program

NARAP	North American Regional Action Plan
NAWQA	National Water Quality Assessment
NCER	National Center For Environmental Research
NRMRL	National Risk Management Research Laboratory
NWF	National Wildlife Federation
OC	Organic Carbon
ORD	Office of Research and Development (USEPA)
ORNL	Oak Ridge National Laboratory
PBT	Persistent, bioaccumulative and toxic [chemicals]
POC	Particulate Organic Carbon
RARE	Regional Applied Research Effort
RELMAP	Regional Lagrangian Model of Air Pollution
RGM	Reactive Gaseous Mercury
SBMM	Sulphur Bank Mercury Mine
SFWMD	South Florida Water Management District
SoFAMMS	South Florida Atmospheric Mercury Monitoring Study
SRB	Sulfate-Reducing Bacteria
STA	Stormwater Treatment Area
STAR	Science to Achieve Results [Program]
SUVA	Specific Ultra-Violet Absorbance
THg	Total Mercury
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TP	Total Particulates
TRV	Toxicity Reference Value
USGS	United States Geological Survey
WASP5	Water Quality Analysis Simulation Program
WCA	Water Conservation Area (Everglades)
WCS	Watershed Characterization System
WTF	Waste Treatment Facility
XAFS	X-Ray Absorption Fine Structure
XRD	X-Ray Diffraction

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