

STP 1293

Dredging, Remediation, and Containment of Contaminated Sediments

*Kenneth R. Demars, Gregory N. Richardson,
Raymond N. Yong, and Ronald C. Chaney,
editors*

ASTM Publication Code Number (PCN):
04-012930-38



ASTM
1916 Race Street
Philadelphia, PA 19103

Printed in the U.S.A.

Contents

Introduction	ix
Overview	1

SEDIMENT CHARACTERIZATION

Keynote Paper: The Fate of Toxic Pollutants in Contaminated Sediments— R. N. YONG Discussion	13 38
Use of Bathymetry for Sediment Characterization at Indiana Harbor— D. M. PETROVSKI	40
Oxidation of Pyrite in Marine Clays and Zinc Adsorption by Clays— M. OHTSUBO	50
Heavy Metal Concentration in Bay Sediments of Japan— M. FUKUE, Y. KATO, T. NAKAMURA, AND S. YAMASAKI	58

DREDGING TRANSPORT AND HANDLING

Removal of Contaminated Sediments: Equipment and Recent Field Studies— J. B. HERBICH	77
Demonstrations and Commercial Applications of Innovative Sediment Removal Technologies— J.-P. PELLETIER	112
Data Requirements for Advancing Techniques to Predict Dredge-Induced Sediment and Contaminant Releases—A Review— D. E. AVERETT	128
Development of Solidification Technique for Dredged Sediments— S. YAMASAKI, H. YASUI, AND M. FUKUE	136

- Field Demonstrations of Sediment Treatment Technologies by the USEPA's Assessment and Remediation of Contaminated Sediments (ARCS) Program**—S. GARBACIAK, JR. AND J. A. MILLER 145
- Factors Influencing the Development of a Biostimulant for the *In-Situ* Anaerobic Dechlorination of Polychlorinated Biphenyls in Fox River, Wisconsin Sediments**—M. B. HOLLIFIELD, J. K. PARK, W. C. BOYLE, AND P. R. FRITSCHER 155
- New *In-Situ* Procedures for Measuring Trace Metals in Pore Waters**—H. ZHANG, W. DAVISON, AND G. W. GRIME 170
- Mercury-Contaminated Sludge Treatment by Dredging in Minamata Bay**—K. YOSHINAGA 182

CONTAINMENT AND ISOLATION

- State of the Art: CDF Contaminant Pathway Control**—G. N. RICHARDSON, D. M. PETROVSKI, R. C. CHANEY, AND K. R. DEMARS 195
- Abating Coal Tar Seepage into Surface Water Bodies Using Sheet Piles with Sealed Interlocks**—B. I. COLLINGWOOD, M. D. BOSCARDIN, AND R. F. MURDOCK 220
- Modeling Air Emissions from Contaminated Sediment Dredged Materials**—K. T. VALSARAJ, L. J. THIBODEAUX, AND D. D. REIBLE 227
- Soil-Bentonite Design Mix for Slurry Cutoff Walls Used as Containment Barriers**—N. S. RAD, R. C. BACHUS, AND B. D. JACOBSON 239
- Testing of a Cement-Bentonite Mix for a Low-Permeability Plastic Barrier**—J.-H. DESCHÉNES, M. MASSIÉRA, AND J.-P. TOURNIER 252
- Design and Performance Verification of a Soil-Bentonite Slurry Wall for the Hydraulic Isolation of Contaminated Sites**—R. HOLLENWEGER AND L. MARTINENGI 271

MANAGEMENT STRATEGIES

- Strategies for Management of Contaminated Sediments**—M. R. PALERMO AND J. MILLER 289
- Partnering for Environmental Restoration: The Port Hope Harbour Remedial Action Plan (RAP)**—S. M. C. WESTON 297

Critical Analysis of Sediment Quality Criteria and Hazard/Risk Assessment

Tools—R. GALVEZ-CLOUTIER, R. N. YONG, J. CHAN, AND E. BAHOUT
Discussion

306
317

Regulatory Strategies for Remediation of Contaminated Sediments—H. ZAR

319

Indexes

329