

Overview

The Comprehensive Sewage Sludge Regulations under Section 405(d) of the Clean Water Act (CWA) require the U.S. Environmental Protection Agency (USEPA) to determine the chemical and biological properties that may constitute an environmental hazard in sludge disposal. In response to the Act, the Office of Water plans to establish allowable concentrations of certain toxic pollutants for four major sludge use and disposal options:

- Landfill
- Land Application, Distribution, and Marketing
- Incineration
- Ocean Dumping

The Office of Water Regulations and Standards has identified the following areas of research needed to support the regulations: sampling and sample preservation procedures, validated methods for monitoring, and strategies for monitoring and field assessment. The analytical methods are needed to determine the concentrations of toxic chemicals and biological agents in sludges, to assess the effectiveness of treatment processes, and to assist in the qualitative and quantitative risk assessments.

This symposium was sponsored by the Environmental Monitoring and Support Laboratory—Cincinnati (EMSL-Cincinnati) and the Environmental Criteria and Assessment Office—Cincinnati (ECAO-Cincinnati) in cooperation with the Water Engineering Research Laboratory—Cincinnati (WERL-Cincinnati) to determine the state of the art in sampling and analytical methods for sludges and other solids. USEPA program office and regional representatives described the status of the regulations and the analytical needs related to characterization and regulation of sludge, sediment, and waste streams. Technical papers addressed quality assurance, sampling, organic and inorganic chemical methods, aquatic biological, microbiological, and virological methods and risk assessment.

We believe that the objectives of the symposium were achieved. State-of-the-art methods and practices for sampling, analysis, and risk assessment and quality assurance practices were presented for the matrix types of interest. As a result of the presentations, it is clear that only limited data are available on analytical methods for metals, inorganic and organic chemicals, and biological agents in municipal sludges and other solids. Standardized and validated methods are needed for application to these matrices.

In addition to the methods, too little work has been done to standardize procedures for sampling and preservation of sludges. Current techniques and holding times must be reviewed and evaluated, particularly those for organic analytes in biologically active systems. Although a wide range of synthetic, water related quality control (QC) and performance evaluation (PE) samples and reference materials are available to spike sludges for measurement of precision and recovery, only a limited number of industrial and municipal sludges and other solids are available. A range of "environmentally contaminated" sludges is needed to research the problems of extraction and analyses from complex samples and to determine the practicality of producing stable sludge samples containing volatile organics and microorganisms.

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