

# 2011 Biosolids Biennial Review

## Summary

EPA has published online its 2011 biennial review of information to evaluate potential harm to human health or the environment from use or disposal of sewage sludge, also called biosolids. In 1993, EPA established comprehensive, health-based numeric standards for 10 metals and operational standards for microbial organisms to address different uses and disposal of sewage sludge. EPA reviews sewage sludge regulations every two years to identify additional toxic pollutants and sets regulations for those pollutants if sufficient scientific evidence shows they may harm human health or the environment. At this time, EPA has not identified additional toxic pollutants in biosolids for regulation under Clean Water Act section 405(d)(2)(C).

## Background

The purpose of the biennial reviews EPA conducts is to identify, where possible, additional toxic pollutants and promulgate regulations for those pollutants consistent with the requirements set forth in the Clean Water Act. In fulfilling this commitment for Biennial Review Cycles 2005, 2007, 2009, and 2011, EPA conducted a review of publicly available information. The Agency searched known databases and the published literature to capture available information on occurrence, fate and transport and human health or ecological effects, as well as other relevant information, for pollutants that may occur in U.S. sewage sludge. The available exposure or toxicity data are not sufficient at this time for many of the pollutants for EPA to run current biosolids models and conduct risk assessments. We will continue these investigations subject to availability of resources and overall program priorities.

## *Standards for the Use of Disposal of Sewage Sludge*

Under Clean Water Act section 405(d), EPA establishes numeric limits and management practices that protect public health and the environment from the reasonably anticipated adverse effects of chemical and microbial pollutants in sewage sludge. In 1993, EPA promulgated Standards for the Use or Disposal of Sewage Sludge (found in Code of Federal Regulations (CFR) Title 40 Part 503), resulting in numeric standards for 10 metals and operational standards for microbial organisms. The 1993 rule established requirements for the final use or disposal of sewage sludge when it is: (1) applied to land as a fertilizer or soil amendment; (2) placed in a surface disposal site, including sewage sludge-only landfills; or (3) incinerated.

These requirements apply to publicly and privately owned treatment works that generate or treat domestic sewage sludge and to anyone who uses or disposes of sewage sludge.

## *EPA Reviews of the "Part 503" Standards*

Since promulgation of 40 CFR 503, there have been three subsequent rounds of review: (1) the Agency's decision in 2001 that regulation of dioxin and dioxin-like compounds disposed via incineration or land-filling was not needed for adequate protection of public health and the environment; (2) the Agency's decision in 2003 that regulation of dioxin and dioxin-like compounds in land-applied sewage sludge was not needed for adequate protection of public health and the environment (Federal Register Volume 68, Issue 206, Page 61084); and (3) a review that resulted in the ongoing analysis of nine pollutants and molybdenum. By late 2015, EPA expects to complete evaluation of these 10 pollutants using

available data and the Targeted National Sewage Sludge Survey (TNSSS) results prior to taking action or determining whether to propose regulating any of these pollutants under Clean Water Act section 405(d). See EPA's TNSSS Technical Report on our biosolids website at:

<http://water.epa.gov/scitech/wastetech/biosolids/index.cfm#tnsss>

### **2011 Biennial Review**

In conducting the biennial review for 2011, EPA collected publicly available information on pollutants. The purpose of reviewing information on pollutants, or potential pollutants, is to assess the availability and sufficiency of the data to conduct exposure and hazard assessments. Exposure and hazard assessments, where sufficient data exist, allow the Agency to determine the potential for harm to public health or the environment following use or disposal of biosolids. Some of the information generally needed to conduct exposure and hazard assessment includes the ability to detect and quantify a given pollutant in sewage sludge, concentration data in sewage sludge, fate and transport data for pollutants that may be present in sewage sludge, chemical and physical properties, and toxicity to human and ecological receptors. The Agency assessed whether data for pollutants were sufficient to conduct human health and ecological exposure and hazard assessments.

### **Results of the Literature Search**

The Agency's search of the literature for Biennial Review 2011 identified information for 23 pollutants relevant to human health or ecological assessments. Some pollutants have been reported in previous biennial reviews. EPA revisits previously evaluated pollutants when literature searches of bibliographic databases reveal newer data. Two main criteria were established for selecting a pollutant for an exposure and hazard evaluation if relevant exposure data are available: 1) the pollutant has human health or ecological toxicity values (e.g., studies that are adequate for evaluating hazards following acute or chronic exposure) and (2) the data on pollutant concentrations in U.S. sewage sludge are adequate

(i.e., data are considered adequate when sufficient details are provided regarding sampling, handling, and analysis) based on a suitable analytical methodology for detecting and quantifying pollutant concentrations.

As its first priority, EPA is in the process of evaluating 10 of the chemicals that were previously found in EPA's TNSSS and thus have source concentration data ((i.e., barium, beryllium, manganese, molybdenum, silver, 4-chloroaniline, fluoranthene, pyrene, nitrate, and nitrite). On a longer term basis, EPA will continue evaluating the other 135 chemicals found in the TNSSS, investigating alternative tools for estimating missing data (e.g., environmental properties, human health and ecotoxicity values, and acceptable concentration data in sewage sludge), and performing screening-level deterministic assessments to estimate human health and ecological risk for biosolids land application scenarios.

The Agency will continue to assess the availability of sufficient information for these and other pollutants identified during the biennial review activities pursuant to Clean Water Act section 405(d)(2)(C).

### **Where can I find more information?**

To get more information about EPA's Biosolids Program, please contact Rick Stevens at (202) 566-1135 or email him at [stevens.rick@epa.gov](mailto:stevens.rick@epa.gov). You may also visit EPA's Biosolids website at:

<http://water.epa.gov/scitech/wastetech/biosolids/>