

2013 and 2015 Biosolids Biennial Reviews

Summary

Biosolids are nutrient-rich organic materials that are the product of treated domestic sewage sludge from a wastewater treatment facility. The Clean Water Act (CWA) requires EPA to review federal biosolids (sewage sludge) standards every two years to identify additional toxic pollutants that occur in biosolids and set regulations for those pollutants if sufficient scientific evidence shows they may harm human health or the environment. To meet this requirement, EPA has published online the 2013 and 2015 Biosolids Biennial Reviews. Based on the results of the reviews, EPA has not identified additional toxic pollutants in biosolids for regulation.

Background

In 1993, EPA promulgated Standards for the Use or Disposal of Sewage Sludge (found in Code of Federal Regulations (CFR) Title 40 Part 503), which resulted in numeric standards for 10 metals and operational standards for microbial organisms.

Additionally, the CWA requires EPA to review existing sewage sludge standards at least every two years (i.e., biennial review). The purpose of such reviews is to identify additional toxic pollutants, and promulgate regulations, if needed, for those pollutants consistent with the requirements set forth in the CWA.

In fulfilling the commitment for completing Biennial Reviews 2005-2015, EPA searched publicly available published literature to capture available information on occurrence, fate and transport, and human health or ecological effects for pollutants that may occur in U.S. biosolids to assess the availability and sufficiency of the data for conducting risk assessments.

To inform the risk assessments of pollutants in biosolids, EPA typically uses models that require the following information:

- 1) Human health and ecological toxicity values (e.g., studies that are adequate for evaluating hazards following acute or chronic exposure);
- 2) Adequate data on pollutant concentrations in U.S. biosolids based on a suitable analytical methodology for detecting and quantifying pollutant concentrations (data are considered adequate when sufficient details are provided regarding sampling, handling, and analysis); and
- 3) Fate and transport data for these pollutants. The Agency assesses whether data for pollutants are sufficient to conduct human health and ecological risk assessments, and revisits previously identified pollutants when literature searches of bibliographic databases reveal newer data.

Results of the 2013 and 2015 Reviews

The Agency searched the literature from August 2011 through December 2015, comprising the 2013 and 2015 Biennial Reviews.

2013

For the 2013 Biennial Review, 77 new articles were identified as providing relevant information for pollutants that may occur in U.S. biosolids. Review of these articles identified 35 new chemicals and six new microbial pollutants in biosolids. Thirteen of the newly identified chemicals are perfluoroalkyl substances (PFAS). No new human health toxicity data were identified in either the 35 new chemicals or for chemicals identified in previous biennial

reviews. However, EPA is currently aware of new information for PFAS and assessment of these chemicals is ongoing. Ecological toxicity values were found for one chemical (triclosan) identified in a previous biennial review. New physical-chemical properties (log K_{ow} and half-life) were identified for 22 chemicals; 18 new chemicals identified in the 2013 Biennial Review and four chemicals previously identified in biosolids. New bioaccumulation factors were identified for 5 previously identified chemicals.

2015

For the 2015 Biennial Review, 46 new articles were identified as providing relevant information for pollutants that may occur in U.S. biosolids. Review of these articles identified 29 new chemicals in biosolids. Human health toxicity values were found for eight new chemicals (2,3,5-trichlorophenol and seven nitrosamines) and one chemical (carbamazepine) identified in a previous biennial review. Ecological toxicity values were found for one chemical newly identified in biosolids (decamethylcyclopentasiloxane), but not for other chemicals previously found in biosolids. New physical-chemical properties were identified for 11 chemicals, and new bioaccumulation factors for aquatic organisms were identified for one chemical.

Conclusions

The available data for many of the chemicals and microbial pollutants identified are not sufficient at this time to evaluate risk using current biosolids modeling tools. EPA will continue to evaluate available toxicological information for PFAS identified in 2013. The EPA's Office of Pesticide Programs plans to complete a draft risk assessment for triclosan in late 2018. The Federal Drug Administration and EPA have been closely collaborating on scientific and regulatory issues related to triclosan to ensure government-wide consistency in the regulation of this chemical.

At this time, EPA has not identified any additional toxic pollutants for potential regulation during the 2013 and 2015 biennial review process. 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 view the biennial review summaries and get more information about EPA's Biosolids Program, visit EPA's Biosolids website at: <https://epa.gov/biosolids>.