United States Environmental Protection Agency

Office of Water
EPA-822-F-18-004
June 2019

2016-2017 Biosolids Biennial Review

Summary

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. The biennial review process is intended to fulfil the CWA requirement to identify additional pollutants that occur in biosolids.

Background

During the 2016-2017 biennial review process, the EPA collected and reviewed publicly available information on occurrence, fate and transport in the environment, and human health and ecological effects for pollutants that (1) have been identified in the Targeted National Sewage Sludge Survey (TNSSS; U.S. EPA, 2009), or in the open literature as having been found in biosolids; and (2) have not been previously regulated or evaluated (e.g., as potentially causing harm to humans or the environment) in biosolids.

Results of the 2016-2017 Biennial Review

Thirty-two new journal articles were identified as providing relevant data for chemical pollutants that may occur in U.S. biosolids. Review of these articles identified 28 new chemicals in biosolids: seven polybrominated diphenyl ethers (PBDEs); nine parabens and metabolites; five brominated flame retardants (BFRs); three other flame retardants; two perfluoroalkyl substances (PFASs); and two triclosan transformation products. These articles also identified new data for 31 chemicals previously identified in biosolids. Concentration data in biosolids were found for all 28 new chemicals and for two chemicals identified in a previous biennial review (diclofenac and tonalide). Human health toxicity values were found for three of the new chemicals (benzoic acid; 2,4-dichlorophenol; and hexabromobenzene) and two previously identified chemicals, perfluorooctanoate (PFOA) and perfluorooctanesulfonate (PFOS). ECOTOXicology knowledgebase (ECOTOX; U.S. EPA, 2018d) records were found for 17 of the newly identified chemicals and 26 of the previously identified chemicals. Physical-chemical properties were identified for 22 of the new chemicals and 20 of the chemicals previously identified in biosolids; and bioconcentration or bioaccumulation factors were identified for 23 of the new chemicals (11 in terrestrial systems and 13 in aquatic; there was one chemical with both) and 24 of the previously identified chemicals.

In addition, six articles were identified as providing relevant data for microbial pollutants that may occur in biosolids. Review of these articles identified no new microbial pollutants in biosolids. Data were found for seven previously identified microbial pollutants: Cryptosporidium spp., Giardia spp., antibiotic resistance genes (ARGs)/antibiotic resistant bacteria (AR bacteria), Salmonella, Escherichia coli, human norovirus, and human adenovirus.

Addressing the uncertainty around potential risk for pollutants identified in biosolids is the top priority for the EPA's Biosolids Program. The EPA has made significant progress in developing the tools needed to assess potential risk and the Agency intends to analyze the data gleaned from the 2016-2017 biennial review process to determine whether it is

sufficient to be used for pollutant risk assessment screening and if needed, refined risk assessments.

Where can I find more information?

To view biennial reviews and get more information about the EPA's Biosolids Program, visit the EPA's Biosolids website at: www.epa.gov/biosolids.