

Report: Biosolids Biennial Report No.9 (Reporting Period 2020-2021)

On December 23, 2022, the U.S. Environmental Protection Agency (EPA) published Biosolids Biennial Report No.9 (Reporting Period 2020-2021). The report assists EPA in fulfilling the Clean Water Act Section requirement to identify additional toxic pollutants that may occur in sewage sludge.

For Biosolids Biennial Report No.9, EPA reviewed publicly available peer-reviewed literature for pollutants in biosolids from January 1, 2020, to December 31, 2021. As a result of the literature search, EPA identified 13 new chemicals in biosolids: three per- and polyfluoroalkyl substances (PFAS)(Perfluorohexadecanoic acid, 2-(N-Ethylperfluorooctanesulfonamido)acetic acid, and 2-(N-Methylperfluorooctanesulfonamido)acetic acid)); nine drugs (alpha-Solanine, Berberine, Doxepin, Fentanyl, Hydromorphone, Hydroxychloroquine, Levorphanol, Losartan, and Methadone); and one element (Bromide). The review also identified concentration data for 33 chemicals previously found in biosolids. In addition, EPA found human health toxicity values for four of the new chemicals and 134 previously identified chemicals, ecological toxicity data for five newly identified chemicals and 273 previously identified chemicals, and uptake and transfer data for 13 new chemicals and 279 previously identified chemicals.

What are biosolids?

Biosolids are a product of the wastewater treatment process. During wastewater treatment the liquids are separated from the solids. Those solids may then be treated physically and chemically to produce a semisolid product known as biosolids. The terms “biosolids” and “sewage sludge” are often used interchangeably by the public; however, biosolids typically means sewage sludge treated to meet the requirements in Title 40 of the Code of Federal Regulations (CFR) part 503 and intended to be applied to land as a soil amendment or fertilizer. Sewage sludge can be disposed of by incineration or landfilling or beneficially reused by applying to land.

What does this report mean for communities?

Section 405 of the Clean Water Act (CWA) requires the EPA to:

- 1) identify those toxic pollutants which, on the basis of available information on their toxicity, persistence, concentration, mobility, or potential for exposure, may be present in sewage sludge in concentrations which may adversely affect public health or the environment, and propose regulations specifying acceptable management practices for sewage sludge containing each such toxic pollutant and establishing numerical limitations for each such pollutant, and;
- 2) from time to time, but not less often than every 2 years, review the regulations for the purpose of identifying additional toxic pollutants.

The regulation, “The Standards for the Use or Disposal of Sewage Sludge,” was published on February 19, 1993, in 40 CFR part 503 (often referred to as “Part 503”), fulfilling the first CWA requirement. The biennial review process is intended to help fulfill the second CWA requirement by identifying additional pollutants that occur in biosolids and compiling data that may be used to assess risk. With Biennial Report No.9 EPA has identified 13 new chemicals found in biosolids and obtained additional data for hundreds more previously identified chemicals. With these report findings, EPA is one step closer to understanding whether these chemicals found in biosolids pose a risk to public health or the environment.

What pollutants have been found in biosolids?

In 2021, EPA published an article describing the curation process to produce the list of the chemicals found in biosolids (available here: <https://doi.org/10.1038/s41597-022-01267-9>). The list is based on chemicals found in biosolids from eight biennial review reports and three national sewage sludge surveys. The list is publicly hosted on the EPA CompTox Chemicals Dashboard in the “Biosolids List.” The Biosolids List allows EPA to take advantage of the functionality of the Dashboard and its integrated data, make the list readily available to the public, and connect chemicals found in biosolids with data that are needed for risk assessment. With the publication of Biosolids Biennial Report No.9, a total of 739 chemicals have been identified in biosolids at least once. About 250 of these are dioxins, furans, and PCBs. The list is available here: <https://comptox.epa.gov/dashboard/chemical-lists/BIOSOLIDS2022>.

What are EPA’s next steps?

A biennial report alone does not result in adding regulated pollutants in sewage sludge under 40 CFR part 503. The biennial review assists in meeting the CWA requirement to identify additional pollutants in biosolids and compiles data that may be used to assess risk. Pollutants found in biosolids must then be assessed for risk to human health and the environment. In early 2023, EPA is holding a Science Advisory Board (SAB) meeting to review a three-step process to assess the risk of pollutants in biosolids. After review of SAB comments and implementation of necessary corrections to the tools or the documentation, EPA can begin to prioritize and screen chemicals that have been found in biosolids for ecological and human health risks.

Where can I find more information?

To view *Biennial Report No. 9 (Reporting Period 2020-2021)* as well as previous biosolids biennial reports, visit EPA’s website at: <https://www.epa.gov/biosolids/biennial-reviews-sewage-sludge-standards>.

To view the current Code of Federal Regulations (CFR) for biosolids, *Standards for the Use or Disposal of Sewage Sludge* (40 CFR Part 503), visit EPA’s website at: <https://www.epa.gov/biosolids/biosolids-laws-and-regulations>.

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