

Winter 2022

Wisconsin Agri-Business Association

QUARTERLY NEWS



wiagribusiness.org



BIOSOLIDS and PFAS – NUTRIENTS with a SIDE OF CONCERN

Tony Kollasch, SCS Engineers

If you are paying attention to the news around Wisconsin, you have probably heard about “forever chemicals” that are present in many water systems around the state and the country. Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) are a suite of chemicals that have been used by manufacturers since the 1930’s for their properties related to repelling oil and water, and are used as coatings as surface protectants for all sorts of products, including coated paper and cardboard, carpets, clothing, cleaning products, and cookware. Another common use was in aqueous film forming agents (AFFF), aka firefighting foam until 2001. Many original PFAS compounds were phased out of production in the early 2000’s, but they were replaced with other compounds that are still being evaluated for safety. There has been a lot of focus on the potential impacts to drinking water and surface water.

You are likely wondering why this is important to you. Another outcome of the presence of these compounds in the environment, that has not been in the news headlines, is that they tend to accumulate in organic tissues and materials, including biosolids from wastewater treatment plants. These biosolids have traditionally been used for their nutrient content as fertilizer on local agricultural fields. Wastewater treatment plants have limited options for disposal of these biosolids as all other disposal options such as incineration or landfilling add significant additional operational costs and remove the beneficial reuse of those nutrients. But is landspreading of these materials safe?

Wastewater treatment plants do not create PFAS, and they generally do not have any responsibility for the PFAS coming into their facility for processing, which is a needed service in our modern civilization in populous areas. Treatment plants are increasingly aware of the

potential role they play in the spread of PFAS into different parts of our ecosystem. Many are studying the potential presence of PFAS in their biosolids, and recent results show that PFAS are commonly present.

The Chicago Tribune recently published a review of records and studies completed by the Metropolitan Water Reclamation District (Chicago’s independent, taxpayer-funded sewerage system) which shows that the biosolids from their system are contaminated with the forever chemicals, and that some of the plants grown on fields treated with their biosolids were found to uptake some of the contamination. They found that the portions intended for human food (corn kernels, lettuce, tomatoes) had relatively low concentrations of PFAS, but higher concentrations were found in the corn stalks used for livestock feed as silage. Other studies have shown the potential for some uptake of PFAS compounds into the edible portions of food crops.

Other studies have been summarized by the USEPA Research and Development Office, trying to identify the potential impacts of these compounds in the biosolids. Testing as far back as 2001 indicated the presence of PFAS compounds, with concentrations covering a wide range of values that do not seem to have an increasing trend.

Another recent study by Stockholm University shows that PFAS have been found routinely in rainwater globally at concentrations greater than USEPA drinking water advisory levels, and European and Dutch surface and drinking water standards. It is possible that PFAS are now so prevalent in the atmosphere and the environment that it will be difficult to stop

CONTINUED on Page 15

CONTINUED from Page 14

their spread, even if the chemical is no longer manufactured and produced.

Another study tested retail fertilizer products made from at least 50% biosolids and are commonly sold to the general public. The study included multiple products produced and sourced from Wisconsin, and identified PFAS in all of the tested products. Milorganite is a retail fertilizer made from the biosolids produced by the Milwaukee Metropolitan Sewerage District, and serves 28 communities in the Milwaukee area.

In 2019, Maine passed the first state-level specific regulations on the content of PFAS in biosolids. Maine's Department of Environmental Protection (DEP) requires screening of biosolids for PFAS and blocks land application of biosolids that are not in compliance with screening criteria for two of the most widely known PFAS substances. A task force related to this issue recognized the benefit of reuse of the biosolids and septage, but recommended frequent testing and capping allowable PFAS concentrations in materials used for nutrient recycling. Other states are considering regulating land application of biosolids, including Wisconsin.

If you have had municipal water treatment plant biosolids placed on your fields for nutrient value, you do not need to panic. We have identified that industrial discharges to the wastewater facilities are the most likely significant impacts to the municipal biosolids, and that without industrial discharges, most municipal biosolids land applications likely do not elevate soil PFAS concentrations significantly. You should ask questions of the source treatment plant to find out about their program to test and document PFAS content of their biosolids. Future landspreading activities should be evaluated related to the testing information.

If you have never applied biosolids to your field,

you might think twice about starting. Sometimes free nutrients come with some unintended concerns that you might want to avoid.

Environ. Sci. Technol. 2022, 56, 16, 11172–11179, Publication Date: August 2, 2022, <https://doi.org/10.1021/acs.est.2c02765>.

Madison Metropolitan Sewerage District, FAQ Sheet, "PFAS in Biosolids," December 14, 2020, madsewerPFASinitiative.org.

Milwaukee Journal Sentinel, Schulte, Laura, "Milorganite and a recent study showing it may contain 'forever chemicals,'" June 7, 2021.

Nebra, "PFAS in Biosolids and Residuals," 2022, www.nebiosolids.org.

USEPA Office of Research and Development Webinar, PFAS Treatment in Biosolids – State of the Science, September 23, 2020, Mark Mills.

MAKE YOUR
VISION

A CONCRETE
REALITY

Let our experts help you with:

- Containment System Design and Construction
- Investigation and Remediation
- Emergency Spill Response
- Agricultural Chemical Cleanup Program (ACCP)
- Storm Water Management
- Water and Air Permitting
- Environmental, Health, and Safety Management
- Property Transaction Site Assessments



Contact Tony Kollasch
608-216-7381
tkollasch@scsengineers.com
www.scsengineers.com

SCS ENGINEERS