



# District Biosolids Program

Madison Metropolitan  
Sewerage District

## IMPORTANT FACTS

- The District’s biosolids are carefully treated and regulated by the Wisconsin Department of Natural Resources (WDNR) and the U.S. Environmental Protection Agency (USEPA).
- Biosolids contain essential nutrients for plant growth and soil fertility.
- Land application of biosolids is the most cost-effective environmentally responsible way to handle biosolids.
- The use of biosolids allows farmers and landowners to reduce their use of commercial fertilizers.
- The District’s biosolids are regularly tested to ensure their quality and safety.

## What are biosolids?

Biosolids are the solid portion of wastewater that receives treatment at wastewater treatment plants. Biosolids are carefully treated, analyzed for their nutrient content and contaminants like heavy metals and pathogens, and regulated by the WDNR and USEPA.

Biosolids contain nitrogen and other micro- and macronutrients and are a source of organic matter that can be returned to the soil for use in crop production. Biosolids improve soil structure and water-holding capacity that stores carbon and protects against flooding. Through the treatment processes, they are refined into a safe, stable and valuable source of plant nutrients. Biosolids are utilized as a fertilizer and soil amendment.

Biosolids can come in various forms, such as liquid or a slurry, or drier material like a cake, composted materials, or dried pellets. The District’s biosolids program primarily produces on a liquid product, Metrogro, for farm field application. The District also creates a small amount of a drier cake product and has partnered with area farmers to create compost.

## Biosolids: Reuse and disposal options

During the treatment of municipal wastewater, solids must be removed to return the treated water portion to the environment. There are three ways to reuse or dispose of these solids: landfill, incinerate, or land ally. Landfilling and

incineration are less desirable and significantly more expensive than land application.

The best way to handle biosolids is to reuse them, as they are a valuable resource. Biosolids contain essential nutrients for plant growth and soil fertility, such as nitrogen, phosphorous and organic matter, and micronutrients, including copper, iron, molybdenum, and zinc. This combination of nutrients, micronutrients and organic matter provides fertilization and improves the soil’s overall health.

Additionally, the use of biosolids allows farmers and landowners to reduce their reliance on commercial fertilizers, whose components are mined from rocks (and are currently experiencing a global shortage) and is considered a non-renewable resource and relies on fossil fuels to extract and create.

In all, the beneficial reuse of biosolids has fewer environmental impacts than other disposal methods and commercial fertilizer use.

## Biosolids and sewage sludge

“Sewage sludge” refers to the solids that settle out in the wastewater treatment process, which contain pathogens and are unsafe for use if untreated. Biosolids are produced by treating sewage sludge to meet standards that allow it to be applied to the land as a fertilizer for crop production.

The treatment process and land application are strictly

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regulated and monitored under a state permit. Biosolids have undergone biological, physical, and chemical treatments to reduce pathogens. The term “biosolids” refers to the final product from sewage sludge treatment, which is different from raw sewage sludge and industrial sludge that may contain environmental pollutants.

## District Metrogro program: Protecting the environment and human health

The District’s Metrogro program features Class B biosolids. Class B biosolids are treated to a point where they are safe to use as a fertilizer or soil amendment, but with site restrictions. Our Class B biosolids are injected below the ground’s surface so it is readily available for growing plants and not available to run off and cause harm to waterways. The District is also investigating other biosolids options.

District biosolids are applied only on sites that have received prior authorization from the WDNR through a permitting process, and biosolids applications are regulated by both the WDNR and USEPA. Sites are subject to regulations that account for soil type; slope; maximum biosolid loading; setbacks from existing structures, waterways, wells; seasonal restrictions; and more. All these factors are considered to protect water quality, the environment and human health.

**District biosolids are applied only on sites that have authorized through a permitting process, and applications are regulated by both the WDNR and USEPA. Sites are subject to regulations that account for a variety of factors to protect water quality, the environment and human health.**

Biosolids regulations place a strong emphasis on nutrient management, particularly as it relates to nitrogen. Metrogro applications are based on meeting the nitrogen requirement of the crop grown. This ensures no over-application of nutrients and reduces the risk of environmental harm through surface runoff or groundwater infiltration.

## Common concerns and how we address them

### Pathogens

Sewage sludge contains pathogens, which makes it unsuitable for land application without treatment.

Therefore, to prepare our biosolids for land application, the District utilizes a comprehensive treatment program that includes anaerobic and aerobic digestion and thermal and chemical processes. Our biosolids are regularly tested to ensure quality and safety.

### Metals content

Based on the nature of the municipal wastewater stream, biosolids contain trace metals content. Background levels of these same metals are also present in natural soils; some are essential for metabolic processes in plants and animals. The EPA has defined concentration limits on these metals within biosolids, which the Wisconsin DNR has adopted. These limits are set to a point that can be detected through analysis, but they are significantly below thresholds that could pose hazards to the most at-risk populations.

The District regularly measures the metals content of its biosolids, and these results fall within or well below the USEPA and WDNR standards.

### Odor

Most substances used as fertilizers and soil amendments, including commercial fertilizers and manure, have an associated odor. Biosolids are no different, but the District’s sub-soil injection method of Metrogro application helps to minimize odors.

The District is responsive to odor complaints associated with biosolids land applications during the hauling season and takes corrective action as needed.

### Nutrient runoff

Nutrient runoff is a concern shared by the public, the agricultural community and many stakeholders, including the District, which leads and invests in Yahara WINS, a 20-year initiative to reduce the amount of phosphorus in local freshwater resources as a way to improve regional water quality and meet permit requirements. Learn more at [yaharawins.org](http://yaharawins.org).

Biosolids have a very low risk of nutrient runoff because their primary nutrients, nitrogen and phosphorus, bind to organic material in the biosolids, which means they are not easily dissolved in water. In fact, the nutrients are mainly accessed by the natural microbial processes in the soil. As a result, the biosolids remain in place on the field and have a significantly lower risk of runoff than commercial fertilizers.

In addition, when applying biosolids to the land, setbacks are required from sensitive areas, such as surface water, wells and homes. These setbacks are clearly defined in Wisconsin Administrative Code and are designed to reduce the risk of movement of biosolids from the application site.