



Milorganite: Turning Wastewater Into Fertilizer

Milorganite is a slow-release, Class A Exceptional Quality biosolids fertilizer produced by the Milwaukee Metropolitan Sewerage District (MMSD) since 1926, making it one of the oldest recycling efforts in the United States. Developed in response to growing concerns over water quality in the early 20th century, Milorganite was a pioneering solution to reclaim wastewater and protect public health from the impacts of increasing urbanization and industrial discharge. The process uses natural microbial activity to break down organic matter, leaving behind nutrient-rich biosolids. Rather than disposing of this material in landfills, MMSD began heat-drying it to create a pathogen-free, pelletized fertilizer packed with plant-available nitrogen. Nearly a century later, Milorganite remains a prime example of circular water economy in action by turning waste into a valuable resource.



MILWAUKEE, WISCONSIN, USA



WASTEWATER



INDUSTRIAL



CHALLENGES FACED

In the early 1900s, Milwaukee faced growing water pollution from untreated sewage and industrial waste, along with the challenge of managing large volumes of biosolids from wastewater treatment. Landfilling wasn't sustainable, prompting MMSD to seek a solution that protected water quality while recovering resources.

TECHNOLOGIES & SOLUTIONS USED

MMSD treats wastewater at its Jones Island and South Shore facilities through a multi-step process that includes preliminary and primary treatment, anaerobic digestion, and advanced biological treatment. Microbes digest nutrients in the water, and the resulting biosolids are dewatered and heat-dried to produce Milorganite. The process uses methane from digestion and landfill gas to offset energy demand, showcasing a circular approach to wastewater management and resource recovery.

IMPACT & INSIGHTS



Milorganite is a nationally trusted, slow-release nitrogen fertilizer made from recycled biosolids.

Key Highlights:

- Over the past 100 years, more than 10 billion pounds (\approx 4.54 billion kg) of waste have been diverted from landfills.
- Last year >44,000 tons of biosolids were transformed into fertilizer, generating US \$12 million in product sales.
- The slow-release formula minimizes the risk of nutrient leaching or plant burn, even in hot or dry conditions.

LESSONS LEARNED



To strengthen future efforts, the MMSD team would build additional redundancy into the biosolids production process to enhance system resilience. They also advise other utilities to identify multiple markets for their product early on, as relying on a single outlet may create risks. Given the increasingly uncertain regulatory landscape for fertilizer products, it's critical to stay informed and plan accordingly.

“

Rather than disposing of the plentiful, nutrient-rich microbes into landfills, Milwaukee's answer was to produce Milorganite. In 2026, MMSD will celebrate 100 years of Milorganite production and innovation.

”