



Cornell Waste Management Institute

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Home Garden Use of Milorganite®

What is Milorganite?

Milorganite is sold as a fertilizer product manufactured from treated sewage sludge (also known as “biosolids”) from wastewater treatment plants from the Milwaukee Metropolitan Sewerage District. It is marketed for turf, ornamentals, shrubs, and the home garden. Sewage sludges are a semi-solid residue of organic matter generated as a byproduct of wastewater treatment. Much of the nitrogen, phosphorus and organic matter in the wastewater ends up in the sewage sludge, providing fertilizer value. However many of the contaminants and pathogens that enter the wastewater treatment plants from homes, businesses and industry also end up in the sludges.

How is Milorganite made?

Following wastewater treatment processes, excess water is removed by treating it with polymers and squeezing it in a filter press. It is then heated, dried and made into small granules. This heating kills viral and bacterial pathogens. The product is a heat dried pellet and not compost.

Is it organic?

The use of the term organic is confusing. Milorganite (and all sewage sludge products) contain organic material (materials derived from living things). However, they are not allowed for use in certified organic agricultural production according to US Department of Agriculture regulations. So, if Milorganite or any sludge product including composted

sewage sludge were used on a garden, the produce would not be considered organically grown.

Is it a deer repellent?

An application to USEPA Office of Pesticides is in process (as of 10/05) to obtain certification for Milorganite as a deer repellent. This process addresses product toxicity, but does not address its effectiveness as a deer repellent.

Preliminary research in New York found that broadcasting Milorganite at 5 pounds/100 sq. feet twice a month reduced deer damage in the summer when alternative foods were available, but did not reduce winter or early spring damage. In another study, Milorganite tied in sachets had a slight effect in reducing damage to Yew bushes. Chrysanthemums in Georgia received less deer damage in a one-month summer study.

Is it safe?

Safe is a relative term. People have different views of how much risk is acceptable. Milorganite and some other sludge products meeting certain criteria are approved by the US Environmental Protection Agency (USEPA) for distribution for any use, including home gardens. However, some people remain concerned about the safety and environmental impacts of possible contaminants, many of which are not tested. In particular, pharmaceuticals and many toxic organic chemicals are present in sludges but are not regulated or monitored.

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Can it be used on food crops?

Under USEPA rules, Milorganite can be used without restriction. Current rules in New York State (part 360.5) are more restrictive. Based on NYS rules, a waiting period of 38 months should be observed between application of any sludge product, including Milorganite, and planting of food crops. NYS rules require a label for sludge products stating the type of waste material and the recommended safe uses, restrictions on use and application rates.

What are the chemicals of concern?

Metals: Levels of the nine metals regulated by USEPA in Milorganite are well below the maximum levels allowed. Data are available for a few other metals. Iron concentrations are relatively high (4-6%), a property Milorganite promotes for greening lawns.

Organic Chemicals: Milorganite is tested for some organic chemicals including PCBs and dioxins (a group of highly toxic organic chemicals), polybrominated diphenyl ethers (PBDEs which are a group of chemicals that have properties similar to PCBs), as well as the 114 organic chemicals that fall under the “priority pollutants” designation (a group of industrial water pollutants identified in the 1970s by USEPA).

Concentrations of organic chemicals in Milorganite are lower than in many sludges (probably due to evaporation during the heat treatment step).

What are the risks?

Soil Ingestion: The primary pathway of exposure is by ingestion (eating). Dogs and people (particularly children) can ingest Milorganite and the soil to which it has been applied either purposefully or simply through hand-to-mouth contact.

Crop Contamination: Some contaminants may end up in crops (either taken up into the plants through the roots or as particles on the plant surfaces). For contaminants like metals and some toxic organics that do not degrade, the amount available to the plants will be related to the amount of material applied to the soil over time and the concentration in the material

being applied. The relatively low concentration of contaminants in Milorganite reduces this risk.

How can risks be minimized?

Risks can be reduced by minimizing contact of dogs and children with the material both in storage and after it is applied to soils. Some dogs are attracted to and eat fecal materials, including Milorganite. Thus bags should be stored where dogs cannot access them.

Limiting the amount used, carefully washing produce, or avoiding use on vegetables are also ways to reduce risks.

It is important to wash hands after handling the product or working in soils to which it has been applied.

Milorganite or other sludge-based products such as composted sewage sludge may be used on sports fields and parks for fertilizing turf. If you are concerned, find out when and where such materials are used and follow good hygiene practices (shower and wash clothes after playing, keep small children from the area to minimize ingestion).

If prior use of Milorganite or another product is a concern, it could be diluted or covered by adding other soil materials.

Other Resources for the Home Gardener:

Organic Matter in the Yard: www.gardening.cornell.edu/factsheets/orgmatter/index.html

Health & Safety Guidance for Small Scale Composting: cwmi.css.cornell.edu/smallscaleguidance.pdf

Preventing Animal Nuisances in Small Scale Composting: cwmi.css.cornell.edu/nuisance.pdf

Small Scale or Backyard Composting site: cwmi.css.cornell.edu/smallscale.htm