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NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

Bio-Solids or Sewage Sludge Revealed
Part 4 of 4

By John Ferguson

News of the dangers of sewage sludge continues to come out almost daily. The Boston Globe newspaper had an article recently on a facility that composted sewage sludge. The facility mixed biosolids compost into a product called “top-shelf loam” whom claimed to be an organic composting company. A farmer purchased this material to use on their farm. This contaminated their property so much they could not eat the vegetables from their garden or eat the eggs from their chickens.

Massachusetts state officials have already identified 218 properties that are contaminated from the applications of these products. Additionally, 83 community water systems have been identified with the toxic PFAS chemicals.

The full article can be found at:

www.bostonglobe.com

A few questions I occasionally get asked is:

1) “Can sewage sludge (bio-solids) be composted? “

The answer is Yes. However, composting of sewage sludge can be done but the factors involved are much more complex both from a scientific point of view as well as

governmental regulations. The potential for foul odors is much higher, the cost is higher (extra government regulation), and the chance of very dangerous and toxic pollutants in the sludge and in the compost where they become more concentrated is extremely high.

However, with proper planning and site preparation some of the extra problems can be overcome. Several studies have shown that compost made with some sewage sludge (no industry or hospitals dumping into it) can be beneficial in very limited applications, **IF** properly done and used on disturbed sites (cleaning up toxic waste dumps, mine tailings, etc.).

Mankind, at the top of the food chain produces some of the richest manure if we eat a clean and healthy chemical free diet. As such it would theoretically make a very good compost.

To make even some of the human manure useful, it would require the material entering the sewage system is regulated at the source, preventing toxic contamination from occurring, **then** composting can be a solution and long-time frame composting methodology can ensure that some of these chemicals are broken down. This extra processing costs a lot more money hence companies and governments do not do it.

As we have discussed above, modern waste water treatment facilities, *in compliance* with current regulations, produce a sewage sludge that can legally be composted but is full of toxic and extremely dangerous substances from pharmaceuticals and pathogens to heavy metals.

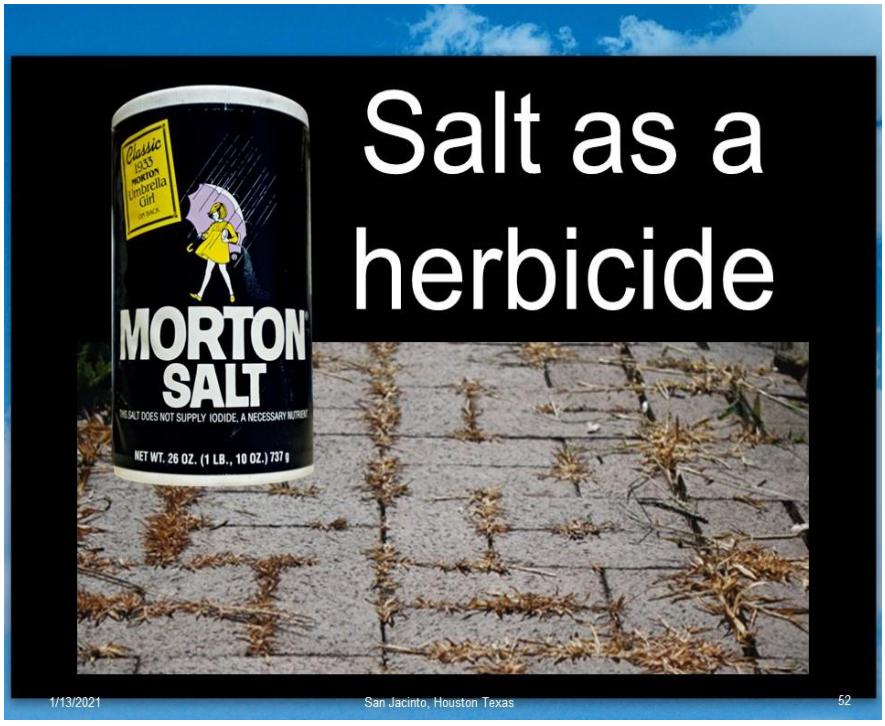
2) "Do we have companies in this area that sell compost made from sewage sludge?"

We have several companies that compost sewage sludge (often called biosolids to hide what it really is) and sell it in the Houston area under various names. In some areas it is also sold to other soil yards to use in their products. See #7 for more details.

3) "Will sewage sludge make my grass green?"

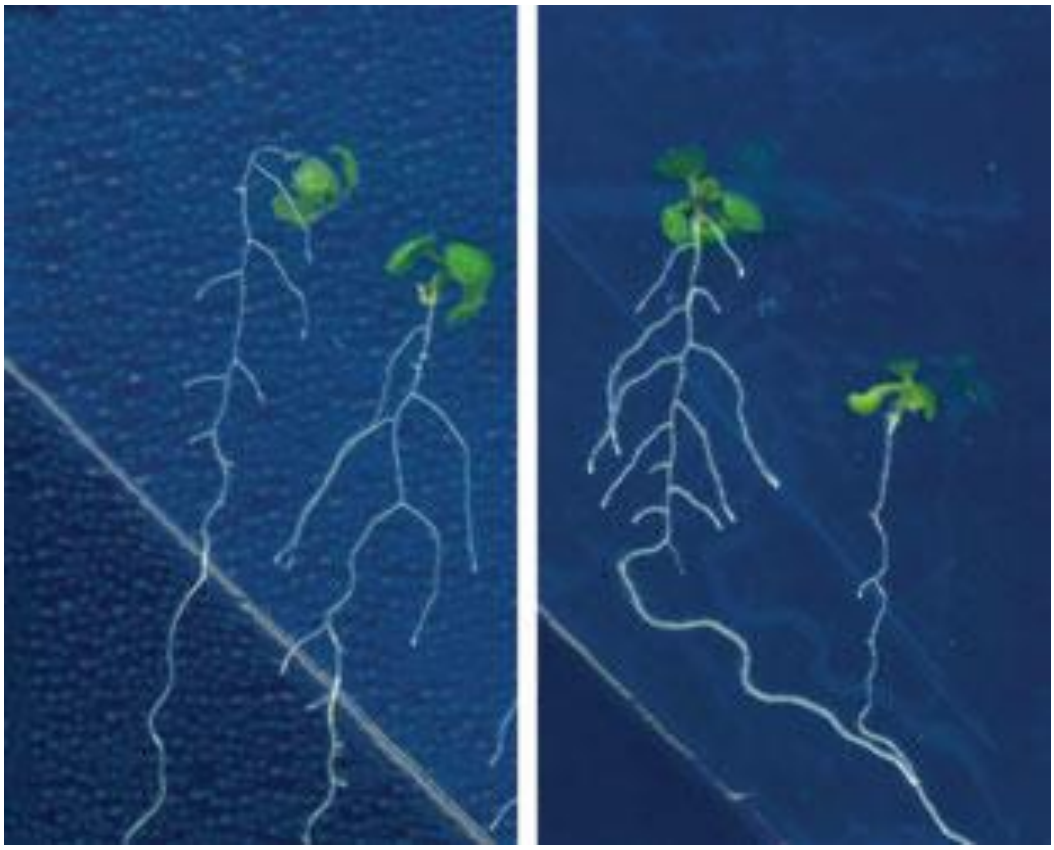
Yes, one application will green up your grass or even make hay grow faster. However, it starts the process of poisoning one's soil. Each application there after makes the issues worse. Sewage sludge (biosolid) compost often has a lot of salt in it and with each application it can build up in the soil.

Salt is not good for plants as this old advertisement illustrates:



The other thing that happens as salts build up in our soil is that roots can sense it and will turn away (not go deep into the soil) hence one has to water more often which then can lead to other issues.

In the photo below, when no salt is present the roots go down through the membrane and when dissolved salts are present the roots turn away.



So even though it may appear to offer short term benefits it creates many long-term problems.

4) "How will the combination of these toxic chemicals affect us?"

Most gardeners know about a toxicology term called "Lethal Dose" often referred to as LD. LD-50 means the chemical is lethal 50% of the time.

Pesticide manufactures often combine several chemicals that each have a higher LD number, however when combined the result is a LD that is much less than LD-50 hence it is far more toxic (it takes a lot less of the material to kill 50% of the test animals or people). With the thousands of different potential chemicals now in sewage sludge there is no way to predict what may occur as they combine. Avoidance is the only way to protects one's self, family, and pets.

5) "Does composting sewage sludge make things worse?"

Often the case is yes. Using certain composting methodologies can biodegrade a few chemicals and reduce some pathogens, I would guess that 99% of composting facilities do not use them as it costs more and take much longer.

On the other hand, as the sewage sludge cake is being composted, water is evaporated, carbon escapes to the atmosphere as carbon dioxide and methane, nitrogen is lost as nitrous oxides, etc. The result is three is a large reduction in volume and the toxic material from heavy metals to PFAS becomes more concentrated in the compost.

A few of the brands confirmed to be made with sewage sludge can be found at:

www. sludgenews.org

6) Is sewage sludge used in other products. YES – Milorganite and Hou-Actinite are dried sewage sludge products that are commonly sold as fertilizers. A sample label is shown below.

According to one website: "A product similar to Milorganite is Hou-Actinite which is a granular, heat-dried biosolids product produced by the City of Houston, **HOU-ACTINITE™ Activated Sewage Sludge, 6-3-0 1.0 Fe,** Available in Fairway Granules and Greens Grade sizing.

"Hou-Actinite™ is a naturally nutrient rich slow release activated sewage sludge. **Hou-Actinite's™** slow-release characteristics reduce the risk of burning and leaching from over watering."

From a local retailer website: **Product Overview**

Hou-Actinite is a registered, Class A fertilizer with the Texas State Chemist. It is a recycled, slow-release fertilizer that is released by natural microbial action in the soil. Hou-Actinite is easy to apply and releases nitrogen slowly preventing ground water runoff and does not require immediate watering.

- Natural, slow-release nitrogen
- Adds organic matter
- Water insoluble nitrogen environmentally safe
- Virtually dust free
- Non-burning, if used as directed

The product descriptions make it seem great and do not tell the consumer they are buying toxic waste.

7) How can I tell if the soil company I purchase soil products from, uses sewage sludge in their products?

A person can go to the TCEQ website for solid waste authorizations and see what kind of permit they have. There are four types of authorization (permits) by TCEQ for composting:

i) Exempt – a facility can take grass, leaves, manures. Easy to obtain and very little regulation.

ii) Notification – the above plus food waste, dead animals, liquid wastes, etc. Additional permitting and vetting required.

iii) Registration – the above plus sewage sludge. Lots of additional engineering and facility requirements that are very expensive to do. Hence, companies do not spend the money for this authorization unless they compost sewage sludge.

Both TCEQ and EPA require additional record keeping as to how many tons of sludge they accept along with other data.

iv) Permit – all the above plus unsorted garbage straight from the curb. Extremely expensive and tedious. I have not heard of any facilities in Texas doing this.

For more information see Chapter 332 of the Health and Safety code which spells out the types of authorization available and the requirements. Additional requirements can be found in Chapter 328 on recycling and in Chapter 325 on solid waste regulations.

A warning sign may be companies that sell dyed mulch, as it is very bad for plants, often toxic, and causes environmental problems. These type companies would be more likely to use sewage sludge since they do not care about their customers of being a steward of the environment.

8) What can be done about the situation?

Many of us remember the large train load of sewage sludge that was shipped from New York that was sent to Texas a number of years back that sat on the tracks for a long time as we did not want it. Sewage sludge is a major disposal and handling issue.

There are several possible solutions to a horrible environmental problem:

Since mankind is at the top of the food chain our manure would make the highest quality compost. To make this feasible, companies should not be allowed to dump toxins into the sewer. They should handle their own problems and pay the associated costs. Taxpayers should not subsidize them in this manner.

Hospitals should not be allowed to dump their waste into public sewer systems. Their waste could easily be disposed of by incineration or other methods. There are several methods to reduce pathogens from super heating the sludge to ultraviolet light to kill pathogens. This should be a requirement of all waste treatment facilities.

Preventing the worst of the toxic material from entering the waste stream would eliminate many of the problems with sewage sludge is the first step.

With the most toxic chemicals and metals eliminated there are composting methodologies that will biodegrade many of the remaining chemicals. **Then** the compost produced could then be useful for many other applications like along highways (which already have a toxic exposure from automobiles, establishing vegetation along streams and bayous or rehabilitating electrical or pipeline easements or even treating old creosote plants or oil processing storage sites to improve soils and help with revegetation.

Other landscaping uses could be on turfgrass farms, reforestation projects, improve soil properties in detention basins so more storm water soaks in the soil to reducing flooding, etc.

If the biosolids are cleaned up, there are many applications where a one-time application could be beneficial hence no buildup of toxic material from repeated applications.

A cleaned-up sewage sludge could be used to produce biogas for fuel and the residuals could be processed for other applications. For example, the world is running out of easily mineable (cheap) phosphorous (P) to make fertilizers. Without phosphorous our food supply will suffer and yields decline. Biosolids are a rich source of this needed nutrient to grow food and other plants.

A good use of taxpayer dollars that are now spent on advertising promoting toxic sewage sludge, would be to use the money to fund research on how to economically recover the phosphorous and other valuable nutrients.

Another short-term solution is to put it in salt domes. If we can store crude oil or radioactive waste in empty salt domes why not sewage sludge. I suspect in some areas of the country we could fine abandoned mines that could be backfilled with sludge cake.

We have special sealed landfills for hazardous waste, why not have sealed landfills built to handle sewage sludge. Yes, it would cost more to the disposal companies but most likely save a fortune in health care costs not to mention quality of life.

The bottom line is that land application or composting of sewage sludge is very profitable for some companies and they have a vested interest in protecting the status quo.

The publisher Elsevier has a collection or research papers called "Elsevier Public Health Emergency Collection". In it, is a paper from the Journal of Environmental Management (2017) titled: "The Presence of contamination in sewage sludge – The current situation".

The toxins and dangers of sewage sludge (biosolids) continue to get worse every day and they are strongly linked to many human health problems as well as environmental disasters.

As the old proverb states: "Buyer Beware"