

JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

Bio-Solids or Sewage Sludge Revealed

by John Ferguson

Historically, biosolids (sewage sludge) have been dealt with common disposal practices including ocean dumping, landfilling, and incineration. When sewage sludge is buried in landfill it creates many problems hence landfill operators do not want it. Incineration creates toxic gasses and is very expensive and ocean dumping has been outlawed due to extreme environmental damage it causes. As a result, disposal prices are rising. To save money many cities are pelletizing it to sell as fertilizer or composting it. There is a limited market for this toxic material, hence several companies are using it in bagged products to sell to gardeners and homeowners. They believe that our yards and gardens are the perfect dumping ground. Let's start our review of this issue with the following article by Dr. Snyder:

Ten Government-Industry Myths about Biosolids

Caroline Snyder Ph.D.*

MYTH NO. 1: For more than 2000 years industrial waste and sewage sludge have been land-applied as soil amendments. (Source: EPA i)

FACT : The myriad hazardous industrial chemical wastes found concentrated in



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modern treated sewage sludges (biosolids), including pesticides, pharmaceuticals, plasticizers, flame retardants and growth hormones to mention a few, did not even exist until recent decades.

MYTH NO. 2: Biosolids are nutrient-rich organic fertilizers. (Source: EPA ii)

FACT : It's highly deceptive to call mixtures of many thousands of industrial chemical pollutants "nutrient-rich", simply because several of the pollutants are nitrogen and phosphorus compounds found in commercial fertilizers. Biosolids produced from sewage sludges generated in industrial urban centers are undoubtedly the most pollutant-rich materials on Earth. When applied to land, industrial pollutants in biosolids re-enter aquatic systems and are magnified up the food chain.

MYTH NO. 3: Over 99% of biosolids is composed of water, organic matter, sand, silt, and common natural elements. (Source: NEBRA iv)

FACT : It's also deceptive to call mixtures of many thousands of industrial chemical pollutants "natural," especially when EPA and the biosolids industry are targeting consumers who use the words "natural" and "organic" to mean free of synthetic chemical contaminants.

MYTH NO. 4: Biosolids are essentially pathogen free. (Source: State of California v)

FACT : Many if not most pathogenic (disease-causing) bacteria and viruses can



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survive treatment processes used to produce biosolids (Class A and Class B); and many dangerous pathogens, such as Salmonella and Staphylococcus , can re-grow to high levels in biosolids, which is mostly comprised of human feces. vi New research indicates that sewage sludge treatment facilities are actually breeding grounds for antibiotic-resistant pathogens. vii

MYTH NO. 5: Infectious prions will not survive wastewater treatment and therefore, are not present in land-applied biosolids. (Source: U. Arizona viii)

FACT : The latest research shows that prions survive wastewater treatment processes. ix

MYTH NO. 6: Biosolids are not sources of pathogens or toxicants. Sludge syndrome is a somatic disease triggered by biosolids odors and by fears raised in the community and through the media. (Source: Mid-Atlantic Biosolids Association x)

FACT : Odors from biosolids are a warning that the material is emitting disease causing pathogens and biological toxins, e.g ., endotoxins. Peer-reviewed scientific studies have demonstrated that resulting health effects are not imagined but real. xi

MYTH NO. 7: Allegations of health problems linked to biosolids exposure are urban myths. (Source: NEBRA xii)

FACT : Many hundreds of sludge-exposed rural neighbors have reported chronic respiratory, skin and gastrointestinal conditions consistent with exposures to the types of chemical and biological contaminants found in biosolids. The relationship between land application of biosolids and such adverse health effects has been documented in valid scientific studies, including the peer-reviewed scientific literature. xiii



MYTH NO. 8 : Treatment breaks down most organic chemical pollutants.
(Source: NEBRA xiv)

FACT : EPA's 2009 Targeted National Sewage Sludge Survey of 74 sewage treatment plants in 38 states, which sampled 145 industrial chemical pollutants, found them in every sample. xv Their concentration ranges often topped ppm-levels and higher, exceeding concentrations considered safe in drinking water by orders of magnitude. Moreover, the breakdown products from organic chemical pollutants are often more harmful than the parent compounds. xvi

MYTH NO. 9: Biosolids contaminants are tightly bound to soil and do not become bioavailable. According to Rufus Chaney, "You can put enough heavy metals in the soil to kill the crop but that crop is still safe for human consumption." (Source: USDA xvii)

FACT : EPA and the USDA buried studies demonstrating heavy metals in biosolids exceeding current levels permitted by EPA caused liver and kidney damage in farm animals grazing on fields treated with biosolids. xviii. After EPA promulgated the current sludge rule in 1992, it worked with the Water Environment Federation to establish the "National Biosolids Public Acceptance Campaign." EPA's Office of Inspector General investigated EPA's efforts to silence Dr. David Lewis, one of its top scientists who documented adverse health effects, and concluded that EPA could not assure the public that land application of biosolids is safe. xix



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MYTH NO. 10: US sludge regulations that govern the land application of biosolids (40 CFR Part 503) are completely protective, based on science and valid risk assessment models. (Source: NEBRA xx)

FACT : A 1999 Cornell Waste Management Institute paper concluded that the 503s do not protect human health, agriculture, or the environment. xxi The 503s regulate only nine metals plus inorganic nutrients (N, P). Even though industry can legally discharge any amount of hazardous waste into sewage treatment plants, the rules are based on chemical-by-chemical risk assessment which ignores the effects of mixtures and interactions. The 2002 NRC biosolids panel recognized this and concluded that *“ is not possible to conduct a risk assessment for biosolids at this time (or perhaps ever) that will lead to risk-management strategies that will provide adequate health protection without some form of ongoing monitoring and surveillance . . . the degree of uncertainty requires some form of active health and environmental tracking . xxii*

i R.K. Bastian. Interpreting Science in the Real World for Sustainable Land Application 2005; JEQ, 34,1:174.

ii EPA Fact Sheet. <http://water.epa.gov/polwaste/wastewater/treatment/biosolids/>

iii Hale, R.C., M.J. LaGuardia, E.P. Harvey, M.O. Gaylor, T.M. Mainor, and W.H. Duff. Persistent pollutants in land applied sludges. Nature 412:140-141.

iv NEBRA, Response to Toxic Action Center’s Toxic Sludge in Our Communities. March 3, 2003.

v CalRecycle. <http://www.calrecycle.ca.gov/organics/biosolids/>

vi Gattie, DK and DL Lewis. 2004. A high-level disinfection standard for land-applied sewage sludge (biosolids). Environ. Health Perspect . 112:126-31.

vii Gibbs, RA et al. 1997. Re-growth of faecal coliforms and salmonellae in stored biosolids and soil amended with biosolids. Water Science and Technology 35 (11-12).



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viii Miles S.L; Takizawa, C.P. Gerba, and I.L. Pepper. 2011. Survival of Infectious Prions in Class B Biosolids. *J.Env..Sci. & Hlth* . 46: 364-370.

ix Kaplan N. Prions' Great Escape.

<http://www.nature.com/news/2008/080701/full/news.2008.926.html>

x Toffey, W.E. Biosolids Odorant Emissions as a Cause of Somatic Disease. Presentation to the 2007 North East Biosolids & Residuals Conference & Exhibit. Philadelphia Water Department. December 4, 2007.

xi Shusterman, D. 1992. Critical review; the health significance of environmental odor pollution. *Arch.Environ.Health* 47:76-87.

xii NEBRA March 3, 2003 op.cit p. 10.

xiii Lewis, D. L. et al. 2002. Interactions of pathogens and irritant chemicals in land-applied sewage sludges (biosolids) *BMC* 2:11. <http://www.biomedcentral.com/1471-2458/2/11> ; Lewis, DL, Gattie DK.

2002. Pathogen risks from applying sewage sludge to land *Environ. Sci. Technol* . 36:286A-

293A; Ghosh, J. 2005. Bioaerosols Generated from Biosolids Applied Farm Fields in Wood County, Ohio. Master of Science Thesis, Graduate College of Bowling Green State University. Abstract by Robert K Vincent, Advisor.

www.ohiolink.edu/etd/sendpdf.cgi/Ghosh%20Jaydeep.pdf?bgsu1131322484 ; Khuder, S. et al . *Arch. Environ. Occup. Health* 2007; 62, 5–11.

xiv NEBRA. March 3, op.cit. p. 22.

xv USEPA. Biosolids: Targeted National Sewage Sludge Survey Report - Overview, January 2009, EPA 822-R-08-014. <http://water.epa.gov/scitech/wastetech/biosolids/tnsss-overview.cfm> ;

See also Jennifer G. Sepulvado, Andrea C. Blaine, Lakhwinder S. Hundal, and Christopher P. Higgins. Occurrence and Fate of Perfluorochemicals in Soil Following the Land Application of Municipal Biosolids. *Environmental Science and Technology* , Publication Date (Web): March 29, 2011 (Article) DOI: 10.1021/es103903d



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xvi DL Lewis, W Garrison, KE Wommack, A Whittemore, P Steudler, J Melillo. Influence of environmental changes on degradation of chiral pollutants in soils. *Nature* 1999; 401:898-901; Paris DF, Lewis DL. Chemical and microbial degradation of ten selected pesticides in aquatic systems. *Residue reviews* 1973; 45:95-124.

xvii MD Abernethy, "To sludge or not to sludge?: At summit, scientists discuss risks," Interview with R. Chaney, USDA. *Green Consumer Headlines*, Times-News, May 2, 2010.

<http://www.managemylife.com/mmh/articles/curated/278108>

xviii US EPA Report: EPA-600/S1-81-026, 232 p. (Apr. 1981). "Sewage Sludge – Viral and Pathogenic Agents in Soil-Plant-Animal Systems." G.T. Edds and J.M. Davidson, Institute of Food and Agricultural Systems, University of Florida. An EPA Project Summary is available at <http://nepis.epa.gov/bysearching/600S181026> or key words in the title of the report.

xix U.S. EPA Office of Inspector General Status Report - Land Application of Biosolids, 2002-S-000004, Mar. 28, 2002. www.epa.gov/oig/reports/2002/BIOSOLIDS_FINAL_REPORT.pdf

xx NEBRA, "Is biosolids recycling safe? How do we know?"

<http://www.nebiosolids.org/index.php?page=faqs>

xxi Harrison, E.Z. McBride M.B. and Bouldin D.R. Land application of sewage sludges: an appraisal of the US regulations. *International Journal of Environment and Pollution*, Vol.11, No.1. 1-36. Retrieved at <http://cwmi.css.cornell.edu/PDFS/LandApp.pdf>. See also Case for Caution Revisited 2008 (revised 2009) retrieved at <http://cwmi.css.cornell.edu/case.pdf>.

<http://cwmi.css.cornell.edu/PDFS/LandApp.pdf>. The 503 sludge rule can be found at <http://water.epa.gov/scitech/wastetech/biosolids/upload/fr2-19-93.pdf>

xxii National Academy of Sciences, National Research Council. *Biosolids Applied to Land: Advancing Standards and Practices*, National Academy Press, Jul. 2, 2002.

www.nap.edu/books/0309084865/html , *Citizens for Sludge-Free Land www.sludgefacts.org
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Note: There is a very good book on how the government (EPA) falsified safety data on sewage sludge and the following cover up, by a whistle blower Dr. David Lewis. Evidence presented in Federal courts confirmed Dr. Lewis's testimony.

Science For Sale: How the US Government Uses Powerful Corporations and Leading Universities to Support Government Policies, Silence Top Scientists, Jeopardize Our Health, and Protect Corporate Profits, by David Lewis, PhD., Skyhorse Publishing, 2014, ISBN: 978-1-62636-071-6

Since Dr. Caroline Snyder wrote the above article there has been a lot of additional research published and material discovered on the dangers of sewage sludge (biosolids).

First, what is biosolids? Biosolids is the marketing name given to the sewage sludge cake produced from waste water treatment plants. It was coined by public relations firms to make toxic sewage sludge sound benign and even friendly. Remember: Biosolids = Sewage Sludge Let us look at some of the new information that has become available that we will not hear about in the media.

There are hundreds of scientific reports on the dangers of artificial sweeteners from how they destroy the human enzyme system, to causing cancer, to causing weight gain. Another issue has emerged dealing with artificial sweeteners that they pass-through one's digestive system into the sewage sludge or waste water (purple pipe). These chemicals in the artificial sweeteners can cause good microbes in the soil to turn toxic (or become pathogenic) when the sludge itself, compost made from biosolids, or waste water from the dewatering of the sewage sludge is applied to the soil.

Another new issue has emerged with sewage sludge (biosolids) in recent years, is that it now contains radioactive isotopes from both medicine and industry that bio-accumulate in the sludge. These radioactive compounds cause DNA damage and increase the cellular damage from natural gamma radiation.



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In addition, there are now many petrochemical derivatives in the sewage sludge and over 80,000 different chemicals have been identified. There has been NO testing on how they interact. Compost made from the sewage sludge like "Dillo Dirt" or fertilizer pellets like "Milorganite or Houactinite" (dried and pelletized sewage sludge) contain chemicals that cause many health problems from birth defects to cancer. Additionally, over 2 dozen human pathogens can survive the standard waste water treatment process.

Note: The Dr. Mercola's health e-newsletter had a recent article on this issue and it can be found at: https://articles.mercola.com/sites/articles/archive/2018/12/05/biosolids-contaminating-food.aspx?utm_source=dnl&utm_medium=email&utm_content=art2&utm_campaign=20181205Z1_B_UCM&et_cid=DM251358&et_rid=486994883

Antibiotic resistance is an issue causing more and more problems in our society today and now killing thousands of people every year. Antibiotics are fed to animals to make them grow faster and keep them alive from the unhealthy conditions of our factory farms. Doctor's increasingly prescribe antibiotics to their patients for any cause. Hence, pathogens with antibiotic resistant genes is excreted in the manure (human or animal). These antibiotic resistant genes can be transferred back to the environment and pose a serious threat to public health. Biosolid composting is only required to reach a temperature of 55 0 C (131 0 F) for a few days. However, it takes a temperature of 90 0 C (194 0 F) to kill these antibiotic resistant bacteria and destroy the genes. When one land applies sewage sludge (biosolids) or compost made from biosolids, these dangerous genes and bacteria are released back into the environment. Journal of Environmental Science and Technology, 2017.



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Researchers recently found that there is another reason to avoid biosolids or compost from biosolids as they cause mineral imbalances in the soil. One of the issues is that the repeated use of biosolids leads to an excess of copper in our soils and when this occurs, the symptoms we see in our plants resembles an iron (Fe) deficiency. Hence, if we add iron, we make the soil problems worse. Another issue with using biosolids is that it is high in manganese (Mn). When there is too much manganese in our soil, the activity of required enzymes and hormones in plants are reduced. With excess manganese in the soil, many legumes will no longer fix nitrogen into the soil. High levels of manganese prevent plants from absorbing and using calcium (Ca) efficiently, which leads to a calcium deficiency in plants. This deficiency in turn, increases the insect and disease problems a gardener will encounter. High levels of manganese also stunts the growth of many plant species like Pines. A third issue is the high levels of zinc (Zn) often found in sewage sludge cake (131-1,670 ppm). In soils, levels of zinc over 500 ppm are known to prevent plants from absorbing other critical elements which lead to many long-term problems. Many plant species have been shown to accumulate zinc in their tissues to the point of death. Once the soil has been contaminated by excess elements (or toxins) it is very costly to fix the problems and takes a very long time.

Another new problem that occurs when biosolids are applied to the soil is that many plants suffer, even with low level exposure. The drugs (pharmaceuticals) left over in the sludge interferes with plant hormones that support the plants defense mechanisms against predators and diseases, thus increasing the problems. They also reduce a plants ability to absorb energy from sunlight and in some cases even caused a reduced level of chlorophyll due to too much magnesium (Mg) since sewage sludge has magnesium in it. At higher levels plants can experience stunted roots and burnt edges of leaves. The chemicals caused many plants to absorb so many elements that they were essentially poisoning the plants.



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There are 27 toxic heavy metals known to cause health problems. However, the EPA only monitors 9 of the 27 toxic heavy metals. There are over 352 toxic chemical pollutants that have been identified in the sewage sludge, including pesticides, pharmaceuticals, and solvents. Of these 61 are listed as hazardous materials with known human health effects. Some of these include hormones (including those used in birth control pills), fire retardants, plasticizers, PCP's, dioxins, PFH's, etc. Other chemicals in sewage sludge are medicines from anti-depressants to steroids, detergents, fragrances, disinfectants like triclosan, antibiotics, hormones like estrogen, PCB's (poly chlorinated biphenyls), asbestos (two thirds of the sludges tested), pesticides, heavy metals (arsenic, mercury, lead, nickel, cadmium), dioxins, naphthalene, and other POP (persistent organic pollutants).

Note: Industry has manipulated the system to allow each company to dump 33 pounds of hazardous waste per month into the sewer without having to report it. The amount and type of toxics in sludge depends on the source and the treatment it has received.

Researchers at the Spanish Foundation for Science and Technology have found an association between esophageal cancer in people living in areas where soils have lead (Pb) in them. Lung cancers are higher in areas that have excess copper in them. Brain tumors are more common with soils that have arsenic in them. Bladder cancer is associated with soils with high cadmium levels. *Journal of Environmental Geochemistry and Health*, 2017; 40 (1): 283. All of these toxic and dangerous heavy metals are found in sewage sludge and they are not removed by pelletizing or by composting, or by changing the name from sewage sludge to "Biosolids". In 2014 the United States Geological Survey analyzed nine different consumer products containing biosolids as a main ingredient, for 87 different chemicals found in cleaners, personal care products, pharmaceuticals, and other products. These analyses detected 55 of the 87 chemicals measured in at least one of the nine biosolid samples, with as many as 45 chemicals found in a single sample.



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In 2014, the City of Charlotte discovered extreme levels of PCB's in their biosolids after being alerted by SCDHEC that illegal PCB dumping was taking place at regional waste water treatment plants across the state. Biosolids land application was halted after an emergency regulation was enacted by SCDHEC that outlawed any PCB contaminated biosolids from being land applied regardless if Class A or Class B. Very soon thereafter, SCDHEC expanded PCB fish consumption advisories for nearly every waterway bordering biosolids land application fields.

The most recent discovers of dangerous materials in biosolids is nano-particles that have showed up in the last few years. Health effects from these items are just beginning to be studied.

The current EPA regulations are outdated and no longer protect the public. Many of the diseases and illnesses reported in the media over the last few years have come from conventional crops fertilized with sewage sludge. This is another reason to buy organic produce as sewage sludge is not allowed to be used.

Warning signs that a product contains sewage sludge or sewage sludge compost are the following Buzz words (the producers rarely tell you the truth or one would not purchase it):

Natural organic nitrogen

Naturally grows plants

Recycling symbol on the bags

Pictures of a mother and child or beautiful flowers

A big seal from some certifying agency

Meets strict EPA standards

EPA's exceptional quality compost (means it is sewage sludge)

Note: The Biosludged full movie launched Wednesday, Nov. 28 th , 2018: See trailer 2 here, and prepare to be shocked



Your world is being deliberately mass poisoned with toxic sewage sludge that's dumped on forests, food crops, city parks and public-school grounds. A massive, coordinated cover-up has been in place for years, making sure you never learn the truth about this deliberate environmental poisoning that's spreading toxins everywhere. Two years in the making, the Biosludge film launched Wednesday, Nov. 28, 2018, at Biosludged.com and BrighteonFilms.com . You can watch the full film for free, and you'll also be able to download the film's video file and post the full video to your own video channels. The full film is closed captioned for the hearing impaired.

Other Resources:

<http://www.biosludge.news>



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<http://www.BrighteonFilms.com>

<http://www.Biosludged.com>

<http://www.SourceWatch.org>

<http://www.NaturalNews.com>

The book "Toxic Sludge Is Good For You", by John Stauber and Sheldon Rampton, 1995, Common Courage Press, ISBN: 1-56751-060-4 is about the public relations industry and how they try to green wash the risk factors of sewage sludge and compost made from sewage sludge.

Will sewage sludge make my grass green? Yes, one application will green up your grass or make hay grow faster. However, it starts the process of poisoning one's soil. Each application there after makes the issues worse. Many of the issues above can be reduced by different management techniques, different treatment systems and regulations to protect people rather than industry profits. Proper composting can also reduce many of the issues, however I have yet to find a company that does it in a manner to reduce these issues.

We as a society have to do something with our waste. If we would clean it up at the source and do not allow dumping of toxic chemicals into the sewers, then we would have a product that could help reduce some other environmental issues.