



www.natureswayresources.com

Bio-Solids or Sewage Sludge Revealed

Part 1 of 4

Yesterday I was listening in on a City of Houston Solid Waste Department hosting an internet meeting on recycling organics. Several of the companies in our area that are composting sewage sludge are banding together and are pressuring TNLA (Texas Nursery and Landscape Association) to recommend it for use in landscaping and for sale in our nurseries and garden centers! This includes encouraging Landscape Architects to specify it in their projects.

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. These companies believe that our yards and gardens are the perfect dumping ground for this toxic waste. These companies do not care about you, your family and children or your pets, all they want is your money.

A question I often hear is "Why does the EPA allow this to happen?" The answer is simple, the EPA is run by the companies they are supposed to regulate.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

For example, last week the 9th U.S. Circuit Court of Appeals found the EPA failed to follow established guidelines for determining cancer risk, ignored important studies, ignored advice from scientific advisory panels, ignored their own scientists, and declared that the herbicide glyphosate was not carcinogenic. The court also found that the EPA's ruling was in violation of the Endangered Species Act in its assessment of glyphosate.

Similarly, the book below [Science for Sale](#) goes into the EPA coverup on sewage sludge and how the courts found the EPA guilty. Hence the nick name of the **Enhanced Profit Agency**.

The EPA no longer protects people, they just protect corporate interests, and this is what occurs with sewage sludge (aka Biosolids). More on this below.

Let's start our review of this issue with the following excellent 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 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

.....
101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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. iii

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 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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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

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*

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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).

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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

- 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
- 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/> by searching 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>

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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 9-6-13

I will add:

MYTH NO. 11: The EPA often states they did not find any toxins in the sample.

FACT: This statement often means the EPA never tested for the toxic chemical in question. If one does not test of course, they will not find anything.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe

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

Note: All proceeds from this book go to the National Whistle Blower's Center (www.whistleblowers.org)



101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

Bio-Solids or Sewage Sludge Revealed Part 2 of 4

First, what is biosolids? Biosolids is the *marketing name* given to the toxic sewage sludge cake that is 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***

Since Dr. Caroline Snyder wrote the article in Part 1, there has been a lot of additional research published and material discovered on the dangers of sewage sludge (biosolids). Let us look at some of the new information that has become available that we will not hear about in the media.

Let's look at **PFAS** (Perfluoroalkyl and Polyfluoroalkyl Substances), these are the **'forever chemicals' found in 99% of Americans"**.

Hundreds of everyday products are made with highly toxic fluorinated chemicals called PFAS. They build up in our bodies and never break down in the environment. Very small doses of PFAS have been linked to cancer, reproductive and immune system harm, and other diseases.

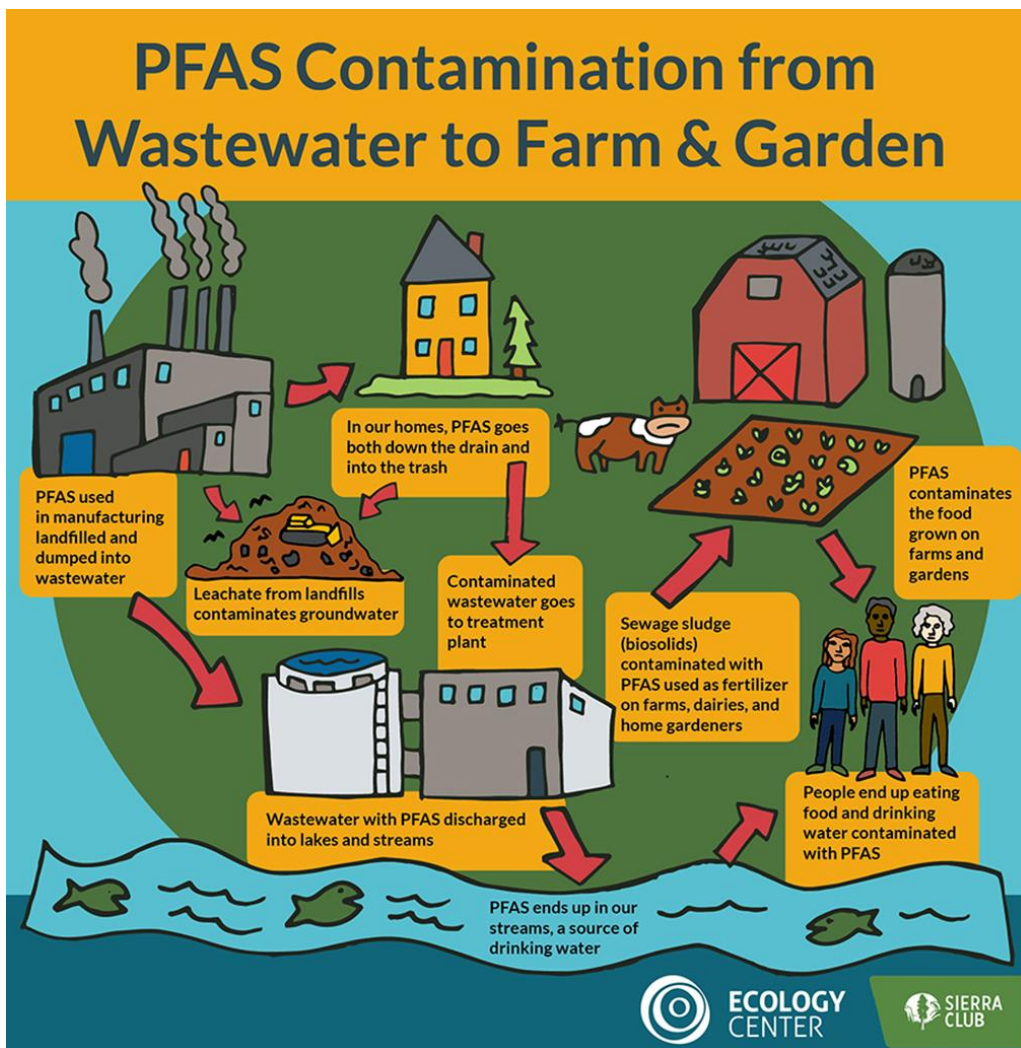
For decades, chemical companies covered up evidence of PFAS' health hazards. Today nearly all Americans, including newborn babies, have PFAS in their blood, and [more than 200 million people may be drinking PFAS-tainted water](#). What began as a ["miracle of modern chemistry"](#) is now a national crisis.

PFAS get in our bodies from many sources and end up in our sewage sludge. When the toxic sludge is used, from land application or in biosolid compost, these chemicals build

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe

up in the soil. Our vegetable crops absorb them and they become concentrated in our bodies when we eat the vegetables. The cumulative effect from food and other sources increasingly causes many health problems.

Many environmental groups are involved with educating consumers about the dangers of sewage sludge. The image below I borrowed from the Ecology Center and Sierra Club.



101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

Let's look at a simple example of how something common can cause problems in sewage sludge. 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. If they make it to the soil, they also cause significant harm.

Hence, another issue has emerged dealing with artificial sweeteners that they pass-through one's digestive system into the sewage sludge or waste water (also known as purple pipe water). 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 the biosolids, or waste water from the dewatering of the sewage sludge is applied to the soil.

This is very similar to what was discussed in our newsletter where I recently talked about how a good yeast (fungi) *Candida albicans* becomes pathogenic. This fungus is all around us, in the soils, in the air we breathe, and lives in our digestive tract. The paper found it exists in two forms, one that is harmless and one that can kill you. Chemicals in the environment turn it into a pathogen.

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. Radioactive compounds are regularly used in cancer treatment and in many industrial applications. These radioactive compounds cause DNA damage and increase the cellular damage from natural gamma radiation.

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 sewage sludge like "Dillo Dirt" or fertilizer pellets like "Milorganite or Houactinite" (dried and pelletized sewage sludge) contain chemicals

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

that cause many health problems from birth defects to cancer. Additionally, over two 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://www.organicconsumers.org/news/toxic-sewage-sludge-your-food>

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. Medical doctors increasingly prescribe antibiotics to their patients for any cause. Hence, pathogens with antibiotic resistant genes are 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.

Research from The University of Birmingham and the International Center for Diarrheal Disease Research has found high levels of antibiotic resistance genes in surface water exposed to sewage sludge and in in sewage sludge. Journal mSystems, (2021)

Biosolid composting is only required to reach a temperature of 55⁰ C (131⁰ F) for a few days. However, it takes a temperature of 90⁰ C (194⁰ 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.

The University of North Carolina found that over half the people living within one half mile of a sewage sludge land application site developed acute physical symptoms. These included eye, nose, and throat irritations, gastrointestinal symptoms (nausea, vomiting and diarrhea). Other people experienced coughing, difficulty breathing, sinus congestion or drainage, and skin infections or sores.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

In one study a farmer began to lose his milk cows after applying biosolids to his pastures. It turns out the sludge was contaminated with the element Thallium (Tl) which is the active ingredient in rat poisoning. This toxic metal is also used in the production of the artificial sweetener NutraSweet.

Mineral imbalances in the soil can be caused by biosolid applications. A few examples are:

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.

Other sewage sludges have been found to contain lead, dioxins and asbestos. It just depends on what industries are dumping into the sewer systems.

It gets worse when using biosolids that are often 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 stunt the growth of many plant species like Pines.

High levels of zinc (Zn) are often found in sewage sludge (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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

contaminated by excess elements (or toxins) it is very costly to fix the problems and takes a very long time.

High levels of Phosphorous (P) are commonly found in sewage sludge. When applied to the soil, excess phosphorus occurs. When there are too much phosphorous in the soil, mycorrhizal fungi that are essential for a plant's health will not colonize plant roots.

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.

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).

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

Industry has manipulated the system (EPA) 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.

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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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. These particles get into our lungs and other bodily tissue where they are linked to increased health issues.

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 (food recalls) 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 consumers 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. 28th, 2018: See trailer 2 below, and prepare to be shocked

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



Your world is being deliberately mass poisoned with toxic sewage sludge that's dumped on forests, food crops, city parks and landscapes and on landscape maintenance of 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:

www.biosludge.news

www.BrighteonFilms.com

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe

NATURE'S WAY 
RESOURCES
an organically based service company

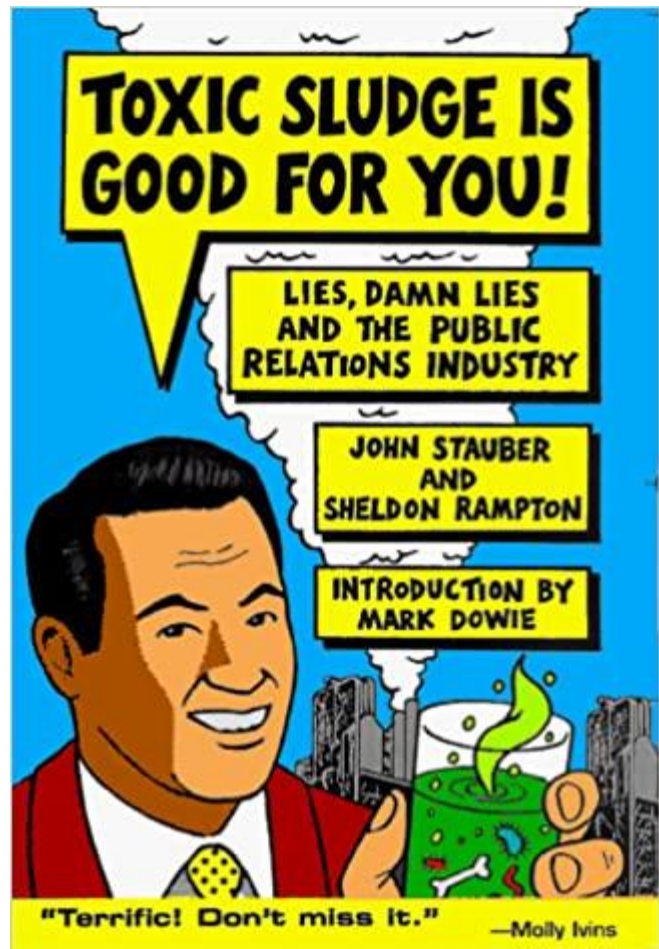
www.natureswayresources.com

www.Biosludged.com

www.SourceWatch.org

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.



101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



Part 3 of 4

In Part 2 we talked about **PFAS** (Perfluoroalkyl and Polyfluoroalkyl Substances), these are the **‘forever chemicals’ found in 99% of Americans**”. This past week the Wall Street Journal (April 5, 2022) had a report on this issue.

Dairy farms in Maine were shut down and had to have their meat, milk and cheese destroyed due to PFAS contamination. They did not use sewage sludge (biosolids) on their farm; however, they had purchased hay from a neighbor that used biosolids as fertilizer where the chemicals were absorbed from the soil. When the cows ate the hay, these toxic chemicals became concentrated in the meat, milk, cheese, etc.

The state of Maine found these dangerous chemicals in milk, eggs, beef, fish, and even venison (deer). There are now over 700 sites in just Maine under investigation. So far 33 farms in Maine have been found to have high levels of these toxic chemicals and three have been shut down.

As a result, the state of Maine has Banned the spreading of biosolids (and compost made from this sewage sludge) on pastures and fields in the state of Maine. Due to the extreme toxicity of these PFAS chemicals the EPA reduced the amount in drinking water to only 0.02 parts per trillion this past June!

So how did we get into this mess? One of the ways is the Water Environment Federation (WEF) which is one of the largest lobbying and public relation organizations promoting the sale of biosolids for U.S. sewage treatment plants. Members include the U.S. composting Council, corporations like Synagro and publications like Biocycle.

Research papers are coming out almost daily on the danger of biosolids.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

For example, a study in the Journal Genome Research (2019) has found drug resistant pathogens in the waste water from sewage treatment plants. These drug resistant strains were being released into the environment from the waste water discharge or when used for irrigation (purple pipe). The counts of these pathogens were higher if there is hospitals sewage going to the treatment plant. Using ultra violet light as an additional treatment significantly reduced these pathogens but is seldom used. This is another reason for gardeners to avoid products made from biosolids (sewage sludge cake).

The consumer group Center for Media and Democracy has many informative papers on issues that society is facing:

<https://www.sourcewatch.org/index.php?title=SourceWatch>

For more examples, the link below, is on the dangers of sewage sludge also known as biosolids and the effect they have on health and the environment.

https://www.sourcewatch.org/index.php?title=Sewage_sludge

Many new research papers have been recently published on the effect's sewage sludge has on soil life, such as contamination by radioactive elements from chemotherapy, etc.

Something to think about, I know I did not. I was reading a research article published in the journal Environment International (May, 2020) by the University of Stirling in the U.K., that may affect some gardeners.

They found that the COVID19 virus can be spread by sewage sludge (also called biosolids for marketing purposes). This virus has been found in human feces or sewage up to 33 days after a patient has tested negative. Other Coronaviruses have been found viable even after 14 days.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

The researchers also believe that the virus could be transmitted in the waste water from sewage treatment plants. This wastewater is sometimes used to water gardens, golf courses, sports fields, etc. and is commonly referred to as “purple pipe water”.

As we discussed in previous articles, many companies that handle sewage sludge and handle waste water from sewage treatment plants, often want to dispose of this toxic waste on gardeners. For local gardeners, several compost (soil) companies in our area use sewage sludge in their products and sell biosolid compost to smaller soil yards.

One of the contaminants of this waste is painkillers like aspirin and ibuprofen which interferes with a plants growth and immune system. One of the things recently discovered is that these painkillers interfere with the flow of auxins which are a plants major growth hormone. They also interfered with the whole endomembrane system that resulted in disrupted cellular systems.

These changes lead to faulty plant growth, an example is that roots grew up rather than down. Journal Cell Reports (2020)

A lot of our food supply is grown with sewage sludge (biosolids) as a fertilizer or the fields are watered with the waste water. No wonder we see so many reports on the news about health problems from our conventional food supply. Another reason to buy organically grown food whenever possible or better yet grow your own organically.

For example, below is an excerpt from a recent public health research paper:

Isolation of Toxigenic Clostridium difficile from Animal Manure and Composts Being Used as Biological Soil Amendments

Muthu Dharmasena, a Xiuping Jianga, Department of Food, Nutrition, and Packaging

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

Sciences, Clemson University, Clemson, South Carolina, USA

“IMPORTANCE Clostridium difficile infection (CDI) is a leading cause of antibiotic-associated diarrhea in health care facilities in developed countries. Extended hospital stays and recurrences severely increase the cost of treatments and the high mortality rate that is observed among the elderly. Community-associated CDI cases that occur without any recent contact with the hospital environment are increasing. Studies have reported the isolation of virulent C. difficile strains from water, soil, meat, vegetables, pets, livestock animals, and animal manure. The objective of this study was to isolate and characterize C. difficile strains from animal manure and commercially available compost products. Our results demonstrate that not only unprocessed animal manure but also finished composts made of different feedstocks can serve as a reservoir for C. difficile as well. Most importantly, our study revealed that properly processed compost is a potential source of toxigenic and clindamycin-resistant C. difficile isolates.”

Journal of Applied Environmental Microbiology (2018)

Hospitals with infected patients dump their sewage with the pathogens above into the public sewer systems where the pathogens are in the biosolids produced.

The most recent toxic contamination being found in sewage sludge is microplastics. Microplastics have been found to change the properties of the soil, altering bulk density, water-holding capacity and microbial activity. Which in turn hurts our plants.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

A paper in the Journal Environmental Science & Technology found that during the sewage treatment process the microfibers become concentrated in the sewage sludge. Levels over 15,000 per kilogram have been measured.

These microplastic act like a paper towel absorbing contaminants including PCB's and pathogens.

Another recent toxic in sewage sludge is the antimicrobials triclosan and triclocarban which have greatly increased in recent years. Millions of pounds of these chemicals are in everything from toothpaste to plastics and they are both major pollutants. These chemicals accumulate in sewage sludge and persist in the soil for a long time.

Another issue the media is not covering is that over 20 states have approved the dissolving of dead human bodies and flushing them down the sewer. As the Food Babe stated, "human goo and human sewage is being spread on farms to grow foods that can be labeled "non-GMO" on farms across America". The documentary "Biosludged" mentioned in Part 2, goes into more detail.

Part 4 of 4

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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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: <https://www.bostonglobe.com/2022/07/06/science/when-organic-is-toxic-how-composting-facility-likely-spread-massive-amounts-forever-chemicals-across-one-town-massachusetts/>

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.).

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe

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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



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

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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 protect 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 there 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:

<https://www.sludgenews.org/about/sludgenews.aspx?id=5>

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-**

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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:

.....
101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

- 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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



www.natureswayresources.com

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 find 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.

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe



The publisher Elsevier has a collection of 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”

101 Sherbrook Circle • Conroe, Tx 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe