



The United Sludge-Free Alliance

Health, Food, & Water

FOOD & SEWAGE SLUDGE: LEGALIZING THE POISONING OF OUR FOOD SUPPLY

By Darree Sicher

The lack of guidance about the use of sewage sludge where our food is grown is stunning. Our knowledge about the issue has dramatically increased since the late 1970's and early 1980's, when the practice of using farmland as an inexpensive waste dump for municipal sewage became a national policy. Often proponents of sewage sludge 'fertilizer' cite the historical use of human 'manure' as proof of safety, conveniently disregarding the increased use and disposal of chemicals, pharmaceuticals, viruses, pathogens, hormones and other toxic waste from our modern lifestyle. The danger of sewage sludge is not a curious scientific or medical mystery, but is a known and foreseeable health and safety issue.

The 1981 US Environmental Protection Agency (EPA) document "Land Application of Municipal Sewage Sludge for the Production of Fruits and Vegetables: A Statement of Federal Policy" fully recognizes the potential dangers. The guidelines are filled with wording "if the guidelines are followed" and "although the cumulative cadmium in land application may be reached", yet the application of sewage to farmland is based on the nitrogen and phosphorous rates. In fact, the 1981 EPA guidelines find no danger in polychlorinated biphenyls (PCB) levels; only encourage "incorporation" in the soil. Studies included noting that human food crops like carrots have levels of PCB's but, "... assumes that carrots will receive the normal processing of scrubbing and peeling, since carrots tend to accumulate PCB's in the skin" (pg 9). No mystery - we know that PCB's are carcinogenic and are linked to dysfunction in organs including the liver and brain yet the EPA refuses to control the distribution of this toxin on our food supply.

Even this document, signed by the US EPA, US Department of Agriculture and the US Food and Drug Administration, recognizes that heavy metals "translocate" into edible tissue of plants and animals. "However, many sludges also contain substances which could contaminate such crops and make them unfit for human consumption. The contaminants of greatest concern are the heavy metals, toxic organic compounds, and pathogenic microorganisms..." (pg 2). The EPA federal policy recognizes the following edible plants by gauging their metal uptake: "high uptake - lettuce, spinach, chard, escarole, endive, cress, turnip greens, carrots; moderate uptake - kale, collards, beets, turnips, radish, mustard, potatoes, and onion."

No food crop, aside from USDA organic, is regulated from growing on land treated with sewage sludge "fertilizer". Some industry food companies who are not necessarily organic, like Del Monte and Heinz, have taken a cautious route to consumer health and safety and choose not to purchase food grown in sludge. Check our ongoing "Sludge-Free Foods" list for more companies. The EPA - responsible for setting the national standard for the safe use of toxic substances like sewage sludge - requires testing by the sludge hauler or municipal waste treatment plant for only 9 substances and one bacteria. There are no standard requirements for testing of heavy metal or toxin build-up in the soil that receive sewage sludge. In fact, the standards for the testing and deposit of products delivered to landfills are stricter and more regulated than for products delivered to the location of our food and water supply. One example is that both radiation and cadmium are required to be tested for landfill deposit, but neither are required testing if they are deposited on farmland, parks, playground and fertilizer.

In 1978, Cornell Waste Management Institute applied Syracuse, New York sludge, to on-site test orchards with the goal of tracking the high levels of toxic pollutants, such as PCB's and dioxin. Retesting the soils as recently as 2001, no noticeable change in the toxicity level of the soil of these known cancer causing pollutants was discovered. Sewage sludge commonly contains high levels of heavy metals that do not require testing or regulation, yet scientific studies prove that heavy metals accumulate not only in the soil where the sludge is spread but also in the plants and animal that we ingest. Because heavy metals and other known toxins accumulate in our bodies from the foods we eat, the water we drink, the products we use

and the air we breathe, eliminating known sources from our food source and environmental system is not only sensible, but necessary.

Concentrations of cadmium, mercury, lead, silver, and tin are higher in sludge than human and animal manure. Tin and silver, found in most sludge, does not dilute in soil and is highly toxic. Other metals like sulfur, molybdenum, iron and cadmium interfere with the health of grazing animals, resulting in weight loss, lower productivity and reproductive failures. Certainly, healthier animals produce a healthier food supply, reducing the need for medications, antibiotics and hormones. Buildup of some metals, like cadmium, mercury and lead, are known to be cumulative and toxic to animals and humans. Metals such as copper, nickel and zinc are known to be damaging to crops and are “relatively immobile” in soils – they do not wash away, disappear in sunlight and persist for decades. By constantly adding sewage sludge to farmlands, we are inviting the destruction of the very source of our nourishment. In fact, farms throughout America have already begun failing due to toxic levels of metals and chemicals.

Nothing highlights the sewage sludge poisoning of our food source like the situation of two Georgia farms, Andy McElmurray and Bill Boyce. In 1979, Andy McElmurray accepted ‘safe’ sludge from the city of Augusta as a free fertilizer option. McElmurray noticed multiple Salmonella outbreaks in his dairy cows after grazing on sludged fields. Then in 1989, a marked decrease in milk production developed in the herd and McElmurray’s cows died slowly, withering with painful “AID’s-like” symptoms.

Boyceland Dairy Farms boasted a state prize-winning herd. Beautiful animals, excellent milk. In 1984, Bill Boyce accepted sewage sludge as a free fertilizer option. About ten years later, milk production suddenly collapsed and cows began sickening and dying at an alarming rate. 300 of Boyce’s prize-winning animals died. So did the family farm he had planned to pass on to his children.

Concerned about the unsettling pattern that both farms were experiencing, McElmurray and Boyce tested their soil, silage animal food and milk. The results were stunning - the sludged land contained toxic levels of compounds like heavy metals, arsenic and PCB’s two to 2,500 times federal health standards. The milk contained levels of thallium – an element formerly used in rat poison – in concentrations 120 times higher than allowed in drinking water. Many of the toxic compounds that collectively killed their land and livestock did not require testing to pass sludge safety standards. Ultimately, lawsuits were filed, but across America farmers continue to be offered this free “fertilizer” option. Litigation on this issue is ongoing, yet sewage sludge safety concerns from farmers and communities are dismissed by policy makers and elected representatives.

Many chemicals that are contained in wastewater become concentrated in sludges. This is particularly true for fat-soluble “persistent organic” chemicals, include PCB’s, dioxins and flame retardants (polybrominated biphenyles or PBB). National EPA required pollutant scans does not include persistent organic chemicals. Because these are “fat-soluble bio-accumulative chemicals”, they gather in fat tissue, meat and milk of livestock during grazing, becoming part of the food chain. Children are at special risk, since dioxin gathers in both animal milk and the breast milk for nursing mother. Many of these chemicals pose known cancer risks as well as developmental risks.

Triclocarban, a substance used in anti-bacterial soap, passes through the waste water treatment system and gathers in sewage sludge. Johns Hopkins Bloomberg School of Public Health reported in a 2006 study that 75% of triclocarban, a known toxic substance when ingested, passes through the waste water treatment plant and is now traced to contaminating rivers and streams.

“Triclocarban does not break down easily even under the intense measures applied during wastewater treatment,” states senior author Rolf U. Halden, PhD. “The irony is twofold. First, to protect our health, we mass-produce and use a toxic chemical which the Food and Drug Administration has determined has no scientifically proven benefit. Second, when trying to do the right thing by recycling nutrients contained in biosolids, we end up spreading a known reproductive toxicant on the soil where we grow our food.”

Sludge contains pathogens and endotoxins (illness causing cell wall material that remain after bacteria die). Pathogens are reduced before sludge application, endotoxins are not studied. Also, bacteria, viruses and parasites are found in sludge but not regulated. Federal rules assume that pathogens will be killed through environmental exposure, yet no studies by any federal, state or independent scientific community confirm this casual approach to spreading known infectious contaminations on our communities, food and water supply.

At one time food poisoning from salmonella and E. coli was associated with consuming contaminated animal products. But recent outbreaks of food poisoning in vegetables such as spinach, tomatoes, pistachios, peanut butter, alfalfa sprouts and bagged salad gives cause for re-evaluations. According to the Center for Disease Control, more than 200 known diseases are transmitted through foods, causing 6 million to 81 million illnesses and 9,000 deaths in the United States annually. And studies published by the Institute of Science in Society noted a two to tenfold increase in food borne illness from 1994 to 1999. Feigning ignorance or innocence about the source of these bacterial and pathogen outbreaks, the bureaucracies charged with protecting our health, food and water refuse to “connect the dots” of the legal application of hazardous sewage sludge to our food source. Common sense dispels the mystery that educated minds seem to miss – if you pour your waste on your food, you will get sick.

Scientists know that both salmonella and E. coli can spread to vegetables if fertilized with contaminated manure or water during growing and harvesting. Yet the practice of using the water released back into the community from the waste water treatment plants, called effluence, is popular especially in dry landscapes and under drought conditions. The EPA only requires limiting “indicator bacteria” of salmonella or E. coli. Sewage sludge is considered safe by EPA standards if **either** salmonella **or** E. coli is reduced at the source of testing – the wastewater treatment plant. Also, the “indicator bacteria” can pass EPA standards only to re-grow and increase once the sludge/biosolids becomes wet from water or rain. No further bacteria or pathogen testing is required.

Studies from the University of Hygiene, University of Graz, Austria evaluated the resistance patterns of E. coli in wastewater treatment plans. They found the highest resistance rates were found in E. coli strains that received not only municipal waste, but also hospital waste. Although there was a reduction in the value of the E. coli exiting the WWTP as effluence, resistant bacteria were found to be released into the environment.

Research by the Professor Gadi Frankel and Dr. Rob Shaw, from Imperial College and University of Birmingham, London in 2008 give a definitive link of how the bacteria and plants interact. The findings confirm how bacteria like salmonella and other pathogens cause contamination in the food chain, risking human health and safety. Among other findings, “Scientists know that salmonella and E. coli 0157 – a strain of E. coli that causes sickness in humans – can spread in salads and vegetables if they are fertilized with contaminated manure, irrigated with contaminated water, or if they come into contact with contaminated products during cutting, washing, packing and preparation process.” Dr. Frankel notes that the number of cases of food poisoning from salads and vegetables are likely to increase as people add more fruits and vegetables to their diets in an effort to eat healthy. “All of these factors, together with the globalization of the food market, mean that cases of salmonella and E. coli poisoning caused by salads are likely to rise in the future.”

Salinas Valley, California has long been called the “Salad Bowl of America.” Much of our fresh, leafy greens come from this valley. Because of groundwater salinity problem, some farms in the Salinas Valley use the Monterey Wastewater Treatment Plant waste water to water crops. The effluence from the plant is piped up to 20 miles to the irrigation sites. Although there are no published reports on the microbial quality of the effluent use for irrigation at the point of use, bacteria from the WWTP shows an antibiotic resistance. Fresh produce is increasingly implicated in food-related illness. E. coli can survive in soil and water, and can be transferred onto plant surfaces through farm practices such as irrigation.

With the exception of salmonella and E. coli, the EPA does not require testing for any pathogens, pharmaceuticals, steroids, viruses, hormones or endotoxins. Deadly pathogens that are found to infect our hospitals, such as MRSA are discovered in our waterways and on our beaches, yet the EPA refrains from re-evaluating the national testing standards. The chemicals, heating and squeezing at waste water treatment plants do not cure or eliminate our modern hazardous waste.

The development of antibiotic resistance within sewer plants is well known. Dr. Amy Pruden of Colorado State University for which she received the highest US civilian national award in 2006, demonstrated that the genetic fragments, antibiotic resistant genes which are developed within sewer plants, pass to the environment and, in spite of chlorination, are picked up in fresh water intakes, pass through drinking water treatment chlorination and filtration and end in the potable water supply.

Dr. Pruden, along with Dr. Edo McGowan, medical geo-hydrologist, and Dr. Joan B. Rose of Michigan State University, all served on a WERF/US EPA expert team looking at the subject of pathogens in sewage sludge/biosolids. Dr. McGowan states, “We tested some of the recycled water produced in California (waste water treatment plants) under state criteria. This is recycled water that is tertiary treated and chlorinated prior to release. What we found when we ran tests on this finished water was multi-drug resistance, in one

case resistance to 11 of the 12 test materials. We noted bacteria that were obviously also resistant to chlorine. We tested water from two separate sewer districts. We attempted to test a third district source that uses the water to spray irrigate strawberries and broccoli. When we stated why we wanted to test this water we were promptly refused and immediately handed off to the district's legal counsel."

How safe is the sewage sludge legally spread on our food and water supply? With the EPA regulation requiring testing for only nine elements – mercury, arsenic, molybdenum, nickel, selenium, cadmium, copper, lead and zinc – and reduction of only salmonella or E. coli, the list of known toxins in sludge that do not require testing and are found on a regular basis are vast. These include plutonium found in Boulder, Colorado; radiation found in sludge from Royersford, Pennsylvania; Teflon type chemicals, including perfluorooctanoic acids, or PFO's and PFOA's in agricultural soils where cattle graze in Decatur, Alabama; salmonella in groundwater from run-off in Athens, Georgia; hermaphrodite frogs and fish found downstream from wastewater treatment plants; flame retardants and the disinfectant triclosan found in every sewage sludge sample tested by the EPA in their 2007 national survey. Although the effects of these toxins on soil organisms, plants and grazing livestock, animals, water and humans is known, the EPA and US government bureaucracies refuse to re-evaluate the practice of land applying sewage sludge.

WHO SAYS NO

Terms like "natural" and "healthy" don't protect your food supply – they prohibit hormones. USDA organic products are restricted from using sewage sludge as a fertilizer, but sludge industry pressures are a constant threat to this bastion of safe sustenance. Some industry food companies who are not necessarily organic, like Del Monte and Heinz, have taken a cautious route to consumer health and safety and choose not to purchase food grown in sludge. Check our ongoing "Sludge-Free Foods" list for more companies.

Noting possible environmental hazards, European laws enacted in 2003, lists PBB's as one of 6 controlled substances under, "Restriction of Hazardous Substance Directive." Other countries have followed suit, including China and South Korea in 2007. Concerns regarding organic chemicals include ecological impacts to soil health and wildlife and entry into the human food chain, particularly through accumulation in dairy products.

In March 2009, the Irish Grain Assurance Scheme voted that they will not support grains grown in sewage sludge. Concern over serious lack of legislative control over the spreading of sewage sludge on agricultural crops prompted the move and officials from the Food Safety Authority, Irish Grain and Feed Association and Department of Agriculture voted to follow suit.

And from environmental organizations, like the Sierra Club and Audubon of Florida, comes a view of the sewage sludge issue that recognizes our role and participation in the food and water cycle.

Who says "No" to sewage sludge? Communities and individuals just like you. Contact food companies and tell them you want a 'sludge-free guarantee' – and forward their reply to us! Tell your grocery store manager you are concerned about sewage sludge in our food supply (yes, their business associations know this issue!). Buy organic when possible. If you buy from local farmers, ask if they use sludge or biosolids on their farm. Call your elected officials. Throughout America and the world, people are taking a stand and demanding that our policy makers protect the people, not the policy. Demand safe food – demand the halt of land application of sewage sludge.