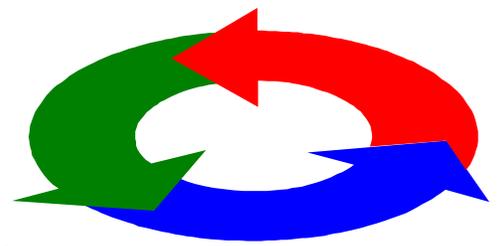


Amendments



Improving Awareness & Advocacy of the Michigan Biosolids Program

Volume 11, 3rd Quarter

September, 2008

2008 Biosolids Conference

2009 Biosolids Conference

The Michigan Biosolids Team is planning its 2009 Biosolids Conference scheduled for March 3-4, 2009. The theme for the 2009 Conference is "Biosolids and Energy". The Lansing Holiday Inn South will be hosting the event. We are working on a great line-up of speakers so mark your calendars!

Program Alerts

EPA Looks at Potential Impacts of Pharmaceuticals in Water

BY Enesta Jones

WASHINGTON EPA announced in an August 6 press release that it is seeking comment on an Information Collection Request (ICR) that will be used in a detailed study of methods employed to dispose of unused pharmaceuticals by hospitals, long-term care facilities, hospices and veterinary hospitals. EPA will use this information to inform future potential regulatory actions, and identify best management and proper disposal practices. This is one of several actions the agency is taking to strengthen its understanding of disposal practices and potential risks from pharmaceuticals in water, the press release said.

The agency also is commissioning the National Academy of Sciences to provide scientific advice on the potential risk to human health from low levels of pharmaceutical residues in drinking water. The National Academy of Sciences will convene a workshop of scientific experts on December 11-12 to advise the agency on methods for screening and prioritizing pharmaceuticals to determine potential risk. The other actions taken by EPA include:

- Expanding a recent fish tissue pilot study to determine whether residues from pharmaceuticals and personal care products (PPCPs) may be present in fish and waterways nationwide.
- Developing a methodology to establish water quality criteria to protect aquatic life.

- Conducting studies to examine the potential occurrence of PPCPs in sewage sludge and wastewater.

To help in these efforts, EPA has developed state-of-the-art analytical methods capable of detecting various pharmaceuticals, steroids and hormones at very low levels. The EPA also is participating in an international effort with the World Health Organization to study appropriate risk assessment methods for pharmaceuticals as environmental contaminants. EPA will accept public comments on the Health Care Industry ICR for 90 days after it is published in the Federal Register. More information on EPA's research and response to PPCPs in the environment, visit: <http://www.epa.gov/waterscience/ppcp/>.

Dioxin Risk in Soil and Plant Tissues after Long-Term Biosolids Application.

American Society of Agronomy

Land application of biosolids (treated municipal sewage sludge) is a common practice because biosolids are a rich source of plant nutrients and organic matter. However, the presence of detectable levels of dioxins in biosolids led to concerns that farmland application may result in accumulation of dioxins in soil and their subsequent translocation through the human food chain because several congeners of dioxins have extremely high bioaccumulation potential. The U.S. EPA evaluated the risk of dioxins in land applied biosolids and concluded that dioxins from this source do not pose a significant risk to human health or the environment. However, there is very little information available on the effect of long-term application of biosolids on accumulation of dioxins in soil and uptake by plants.

Scientists at the Metropolitan Water Reclamation District of Greater Chicago (District) investigated the effects of continuous and long-term application of biosolids on the levels of dioxins in soil and corn tissues collected from the District's long-term field plots that were established in 1973. Specifically, they collected soil, corn grain, and corn stover samples from the field plots consisting of a 0 (control), 504, and 2016 Mg ha⁻¹ cumulative biosolids loading applied through annual applications from 1973 to 2002. They

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measured 29 congeners of dioxins, furans, and polychlorinated biphenyls (PCBs). Results from this study were published in July-August 2008 issue of the *Journal of Environmental Quality*. This research was also presented at the Sustainable Land Application Conference held in January 2004 in Orlando, Florida.

The study revealed that the levels of dioxins in soil, from the control and agronomic rate biosolids plots, were not statistically different, but the soil levels of dioxins were much higher in the plots that have been receiving four times higher rates of biosolids application. Dioxins were not detected in the corn grains. Only trace levels were found in the corn stover, and there was not a statistical difference between the control and the biosolids-amended plots. These observations suggest that dioxins from land application of biosolids do not pose any risk to human health or the environment if biosolids are land applied according to the U.S. EPA regulations.

The District has on-going research to investigate the trend of dioxins levels in biosolids over time. The U.S. EPA's 2001 Dioxins Update to the National Sewage Sludge Survey indicated that dioxins levels in biosolids have declined since the last USEPA survey in 1988. This downward trend is expected to continue due to the regulatory controls on additional sources of dioxins in the environment, particularly on some combustion practices. These findings support the U.S. EPA's decision not to regulate dioxins in land applied biosolids. The full article is available for no charge for 30 days following the date of this summary. View the article at

<http://jeq.scijournals.org/cgi/content/abstract/37/4/1497>.

The *Journal of Environmental Quality*, <http://jeq.scijournals.org> is a peer-reviewed, international journal of environmental quality in natural and agricultural ecosystems, published six times a year by the American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and the Soil Science Society of America (SSSA). The *Journal of Environmental Quality* covers various aspects of anthropogenic impacts on the environment, including terrestrial, atmospheric, and aquatic systems.

Michigan News

State parks testing 'green' toilet-shower

Grand Haven facility will test the water- and energy-efficient building for 97 other Mich. sites.

James Prichard / Associated Press

GRAND HAVEN -- When nature calls, campers at Grand Haven State Park can now go "green" at a new, environmentally friendly toilet-shower building that is the first of its kind in the state park system.

Construction on a similar facility at Otsego Lake State Park near Gaylord is scheduled to begin this fall. Officials hope to eventually replace all the restrooms at Michigan's 97 state parks and recreation areas with buildings like the one in Grand Haven, which opened for use May 5.

"This is the first of its kind, so we kind of get to be the ones to test it out," says Patrick Whalen, supervisor of Grand Haven State Park. The water and energy-efficient product, designed by Grand Rapids-based Integrated Architecture LLC, features natural daytime lighting, artificial nighttime lighting triggered by occupancy detectors, timer-controlled showers with on-demand water heaters, reduced-flow shower heads, and low-flow toilets and urinals.

A small array of solar panels on the roof supplements the electricity used for the building's ventilation system. Building materials, including masonry, metal and wood, were selected for their long-term maintenance qualities. A new sanitary sewer line should mean a safer watershed.

The campground closed a couple of months early last year, right after Labor Day, to give work crews time to demolish the previous, half-century-old toilet-shower building and start on its replacement. The park features a large, sandy beach alongside Lake Michigan, so construction workers battled the wind and the sand and wintry conditions to complete the project on time. "It was a challenging winter for them, to say the least, to work in the environment that we have here," says Whalen.

The \$750,000 cost of the new toilet-shower building -- including tearing down its predecessor, installing utility upgrades and winter construction, was paid for by a federal Land and Water Conservation Fund grant and a matching grant from the state Park Improvement Fund. The state fund consists of money collected at Michigan state parks for motor vehicle permits, camping fees and concessions. The Michigan Department of Natural Resources (DNR) Parks and Recreation Division operates the park system.

The new campground buildings are part of the DNR's Green Initiatives program, which promotes

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environmentally friendly management practices and product usage at state parks, state recreation areas, and state harbors. Other initiatives now in place or previously tested include cutting back on mowing at certain locations, increasing recycling efforts and using biodiesel fuel in diesel-powered mowers, tractors, bulldozers and backhoes.

The idea for updating the parks' toilet-showers arose as the state was planning to build a new one at Traverse City State Park, which opened at the start of the 2007 camping season, says Dan Lord, development planner for Parks and Recreation. Plans were drawn up last year for a more environmentally friendly toilet-shower building at Grand Haven State Park that could accommodate the approximately 92,500 campers who stay there each year.

The flexibility built into the design will allow future versions to be larger or smaller, for certain features to be added or trimmed and for different materials to be incorporated into the construction. The building planned for Otsego Lake State Park will be smaller than the one in Grand Haven and feed runoff rainwater from the roof into a garden of native plants, says architect Ryan Brouwer of Integrated Architecture. "It's meant to be self-sufficient landscaping," he says.

Randy Pease, also an architect at the firm, says another special feature of the new toilet-shower buildings in the state park system is the high degree of accessibility for disabled users. The facilities will be 85 percent to 90 percent accessible, "far, far exceeding the guidelines of the Americans with Disabilities Act of 1990," he says. "Integrated Architecture may pitch the design to parks and recreation agencies in other states," he says.

A handful of other parks and recreation areas around the country have built or are planning new green restrooms, including Shaver's Creek Environmental Center in central Pennsylvania, the Bronx Zoo in New York City and the Clay County, Missouri, Recreational Trail system.

DNR officials estimate that the Grand Haven building will use about 40 percent less water and require significantly less electricity than the building it replaced. Still, that equates to only about 10 campsites with electrical hookups, so unless campers themselves conserve more energy, there's little chance of a significant drop in the state parks system's utility bills, which totaled \$2.5 million last year.

"It's really our visitors that we've got to help to educate, try to get them to maybe turn off the air conditioning in the RV unit when they go down to the lake and to not run the luminaries all night long," says Lord.

"We are trying some aggressive programs this summer to try and get a little more visitor participation to help combat those costs."

Human Waste as Fertilizer Defended

BY Steven Hepker
Jackson Citizen Patriot

The polite term for human fertilizer being spread on some Jackson County farms is biosolids. Though it still can smell putrid on a hot day, it is not raw sewage that was banned from farm fields here in 2001. Some neighbors of farms using processed human waste have voiced concerns recently to the Citizen Patriot and Jackson County Health Department.

Treated human sludge has been applied on 2,500 acres in the county, and another 1,000 acres are permitted to accept sludge, a state official said. Farmers and those who guard the environment and public health say using treated sludge to grow crops is a sound and responsible practice that is monitored closely. "It is very comparable to composted livestock manure, only better," Department of Environmental Quality biosolids coordinator Greg Merricle said. "We have three choices for disposal: bury it in landfills, incinerate it or use it for fertilizer."

Municipal waste-treatment plants separate liquids from solids. In Jackson County, treated water is discharged into the Grand River. "Leoni Township and Jackson sewage plants place solid waste in piles and let bacteria eat themselves to death," Merricle said. The resulting product is not manure, but dead bacteria teeming with nutrients and organic nitrogen. "About 98 to 99 percent of pathogens are removed, and the rest we rely on sunlight and air to kill in the fields," Merricle said.

The potential threat from pathogens was partly behind the Jackson County Ordinance in 2001 that banned the use of raw sewage on farms. No actual health concern has been documented. Steve Hall, Environmental Health Director for the County Health Department, said his agency is vigilant about anyone spreading raw sewage, or septic-tank waste on fields. "It is treated waste, and they are allowed to apply it to their fields," Hall said of treated sludge from wastewater-treatment plants. "There are sample testing requirements, and it

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is heavily regulated by the Department of Environmental Quality."

Jackson County's waste ordinance calls for fines against waste haulers who clean septic tanks and spread the sewage on fields. Septage, as it is called, must go to a treatment plant if it is collected in Jackson County.

Only a few haulers have been cited. Violations can lead to losing their waste-hauling licenses.

About half of Michigan's wastewater plants recycle solid waste, which Merricle said, "is more expensive than burning or landfilling. It's the green thing to do."

Part of the expense is having it hauled away and applied to fields by private firms such as Texas-based Synagro. Contractors collect the solids, test them and apply the fertilizer on fallow fields. Farmers who recently harvested winter wheat have been fertilizing the fields with animal and human waste in recent weeks. The sludge must be worked into the soil when it is applied. Mark Howe, whose family farms 3,500 acres in Hanover Township, said "Synagro is spreading sludge from Detroit on 400 of their acres. When corn and soybean fields are harvested, sludge will be applied in those fields. We are willing to spread it on thousands of acres if it is available."

He said his family -- father James, mother Susan and wife Dawn -- inform neighbors about the process but still hear wild rumors of raw sewage, used syringes and dangerous pathogens.

"What people don't realize is that their wastes from their septic tanks end up in someone's field," Mark Howe said. "I like to let everyone know that Disney World and other theme parks fertilize their landscape and flowers with human sludge, and those places are beautiful."

Synagro serves 600 water and wastewater plants in 30 states, including Michigan, and supplies processed human waste to several Jackson County farms. A company report claims it serves 70 percent of Michigan's treatment plants.

While processed sludge from the Jackson and Leoni Township wastewater-treatment plants is spread on farms mostly north of I-94 in Jackson County, Synagro applies sludge from Detroit's municipal treatment plant on farms in the Hanover area.

Merricle said Detroit sludge is actually a little cleaner than Jackson sludge because of more advanced treatment.

With commercial nitrogen soaring to more than \$800 a ton this year, treated sludge is like gold to farmers. The

sludge and its application are free to farmers. Howe said "the general public hears about soaring grain prices but might not be aware that the prices for diesel fuel, fertilizer, land, seeds and chemicals have more than kept pace." Besides the economic benefits to farmers, sludge fits the current green movement by improving the food supply and soil condition with a waste product the average citizen would just as soon ignore.

"Biosolids are the second-largest recycling program in the state, right behind scrap metal," Merricle said. There are some controls on access to fields and the type of crops grown on fields where sludge is applied. Merricle said "farmers cannot grow root vegetables, such as potatoes, for 38 months. Produce that might touch the soil -- strawberries, green beans or tomatoes -- cannot be grown for 12 months."

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Elsewhere

Sewage Solution at Hand in Sudbury, Canada.

Sudbury Star

Facility will cost \$30M-\$38M. The foul odors of a sewage sludge dump, endured by Lively and Copper Cliff residents for decades, could be eliminated permanently within as little as four years. That best-case scenario was revealed Tuesday during a public meeting staged by the City of Greater Sudbury and its consulting engineers who have been working on a solution to the chronic problem of sewage sludge disposal. "It's a huge relief," said Ward 2 Coun. Jacques Barbeau, who is confident a long-term solution to the sludge disposal issue will be in place by the end of 2010. "I'm happy with the progress," Barbeau said following Tuesday's meeting at the McClelland Community Centre in Copper Cliff." The deadline is now Dec. 31, 2010 -- that's two years ahead of what the projected date was only a year-and-a-half ago."

It's a problem that started 30 years ago, when it was an acceptable practice, unfortunately we waited until a year-and-a-half ago to get this process rolling. Now our backs are against the wall and it's got to happen by the end of 2010. About two-dozen residents turned out for Tuesday's meeting, organized as an official part of a mandated environmental assessment process for the city. The multi-phase process must be followed before the municipality can build a new facility to process thousands of tons of sewage sludge annually.

For three decades, sludge from local sewage treatment

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facilities has been dumped into a tailings pond owned by Vale Inco, between Lively and Copper Cliff. Residents of the two communities have often endured sickening odors from the pond, although authorities have said repeatedly the practice does not present a health hazard. Last year, during one of the most-acute odor outbreaks in memory, Mayor John Rodriguez and other city officials made a commitment to implement a long-term solution to the problem.

That solution appears to be a new processing facility that will cost an estimated \$30 million to \$38 million to build. Once the plant is operating, the city will no longer have to dump noxious sludge in the tailings pond. The new facility would provide increased treatment and processing of sludge, producing a dry compound that proponents insist will be benign, to the point where it can be used as agricultural fertilizer. If built, the new facility would be located next to the city's main sewage treatment facility at Kelly Lake.

"Although the proposed plant has yet to receive final approval and financing from city council, such a facility must be developed," Barbeau said. "Not only is dumping sludge into a mine tailings pond unacceptable for residents of the area, the practice will be outlawed by the province by the end of 2010," he noted. "Once the city stops dumping sludge into the Inco tailings pond, it could take as little as two years for the odor problem to disappear for Lively and Copper Cliff residents," said Shawn Scott, a consulting engineer hired by the city. "However, projecting a timeline for the disappearance of the stench is not an exact science and it conceivably could take several years for the problem to be eliminated," said Scott, of the firm Dennis Consultants. "At some point, the odor will be eliminated," as the sludge is covered by tailings from Vale Inco operations, he said.

The proposal to build a new sludge-processing facility appeared to gain acceptance from most residents on hand for Tuesday's meeting. However, some residents raised concern about the potential for the treated sludge to be used as agricultural fertilizer. "I wonder about the metal content of it," said Marjorie Reynolds. "It may be alright for mine (reclamation), for grasses, but I hope it's not going to be used for food growing. I don't think it would be suitable for that." Treated sewage sludge has been used as fertilizer in Ontario for about three decades. While proponents insist the so-called biosolids fertilizer is safe and does not cause adverse health effects, a seemingly equal number of critics argue otherwise. Opponents allege health and environmental impacts have been experienced from biosolids that inevitably contain toxic metals, chemicals

and other compounds and they note regulations in Ontario have not been updated over the last decade.

Liberty Energy Vows Sludge Incinerator in Hamilton, Ontario will be World Showcase.

Stoney Creek News

California-based Liberty Energy Inc. has moved a big step closer to building a giant sewage-sludge incinerator in Hamilton, with the posting of the plant's proposed licenses on the province's environmental registry. The public has until Sept. 20 to comment on draft licenses governing air, sewage, and waste emissions, but cannot appeal any conditions because the project has already received the necessary environmental approvals. Liberty spokesperson Trevor Pettit said his company hopes to begin construction next spring on the first phase of the \$120-million plant and show naysayers that sludge incineration is "the wave of the future."

The Strathearne Avenue North incinerator will generate enough electricity to power 8,000 homes by burning up to 400,000 tons per year -- nearly eight times the amount generated by the city, which presently hires a contractor to spread its sludge on area farmland. "Without question we want this to be a showcase for energy-from-waste for the world," Mr. Pettit said. "I don't think you expect everybody to embrace it, but I think we can illustrate the success stories throughout the world and we intend to surpass those success stories," he said. "This is proven technology and we've gone the extra lengths to accommodate virtually every study they wanted, anything that anyone has wanted in terms of tests that we'll do."

Lynda Lukasik, Executive Director for Environment Hamilton, said her group remains opposed to the incinerator, but welcomes Liberty Energy's willingness to listen to concerns about monitoring. Although not reflected in the current draft license on air emissions, she said company officials have verbally agreed to her request that they continue to test for emissions of polycyclic aromatic hydrocarbons beyond the first year a commitment she wants reflected in the final version. Ms. Lukasik said "although allowing the public to comment on the licenses is better than not doing so, she would have preferred having the right of appeal under the Environmental Bill of Rights." "We still haven't been convinced that this is the best way to deal with sewage sludge," she said, arguing the province needs to come up with a long-term strategy that includes clamping down on sewer toxins, a key concern for its use as fertilizer. "Having said that,

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The reality is that this facility has been approved. We're certainly going to take steps to ensure that there is rigorous monitoring and there are strong requirements in those (licenses) to ensure there aren't any negative impacts." The licenses are available for viewing on-line at www.ebr.gov.on.ca. The registration number is 010-4084.

Migoranite Contamination Sourced

Milwaukee, WI-Journal Sentinel

Toxic chemical may have leaked from old die-casting company. A closed die-casting company on Milwaukee's north side is suspected of being one of the sources of toxic chemicals that contaminated sewage sludge fertilizer in 2007. This ultimately cost the Milwaukee Metropolitan Sewerage District nearly \$4.7 million in lost Milorganite sales and cleanup expenses. Viewed from the street, the building at 4132 N. Holton St., appears in need of repair, with broken windows, rusted ventilation pipes, torn awnings on loading docks, and a green tarp on one section of its roof billowing in the wind. The 70,000 square foot Milwaukee Die Casting Co. closed in 2000. Not visible is the historic accumulation of chemicals, known as polychlorinated biphenyls, in sewer pipes within the building that represent a threat to the Milwaukee River, District and State Environmental Officials said.

MMSD has ordered building owners Theresa and George Slyman to disconnect all plumbing, including toilets, and pour concrete into floor drains and all pipes connecting to sewers, in an attempt to prevent more of the chemicals from reaching the sewers," said Thomas Crawford, a Senior Staff Attorney with the District. The order was delivered Friday, to the Slymans at their residence in Copley, Ohio. "If the Slymans do not comply by Aug.1, the District will do the work on Monday, Aug. 4, and hold the Slymans liable for the costs," Crawford said. "The reservoir of PCBs on the Slyman property is a huge risk to MMSD and the Milwaukee River," Crawford said. A storm sewer on the north end of the property drains directly into the nearby river. "Recent tests found unusually heavy concentrations of PCBs up to 18,300 parts per million in oily water in a floor sump inside the old die-casting plant," said Peter Topczewski, MMSD Water Quality Protection Manager.

Building pipes drain to a city sanitary sewer on the northeast corner of the property, where up to 2,530 parts per million of PCBs were found in a thin layer of sand and grit at the bottom of the sewer. Operating industries in the districts service area, by comparison, are not allowed to discharge wastewater to sewers

containing a detectable amount of PCBs. The chemicals can be detected in wastewater at concentrations as low as 0.0005 parts per million. Production of PCBs was banned in the United States in 1979 after studies linked exposure to the chemicals to cancer and damage to the immune system. Prior to the ban, the chemicals had been used in a wide variety of equipment and products, such as electrical transformers, motor oil, foam insulation and the hydraulic fluids used in die-casting machines.

At Milwaukee Die Casting, fresh fluid was stored in an underground tank until it was needed, while used fluid was stored in an aboveground tank. The original building was constructed in 1952 and both tanks had leaked over the years, contaminating soil and groundwater at the 3.7 acre property with PCBs, according to records on file at the state Department of Natural Resources. "The Slymans bought the factory in 1982, after PCBs were no longer mixed with hydraulic fluids," said George Slyman. The company made zinc and aluminum castings. Though an environmental engineering consultant hired by the company discovered soil and groundwater contamination in 1992, the Slymans did not notify the DNR of the spills until 1995, state records show. The Slymans have not complied with court-ordered cleanups in 1997 and 1998, records show. "PCBs accumulated over decades in the city's sewer line extending from the plant to MMSDDs regional interceptor sewer," district officials said.

In June 2007, a cleaning crew was working in the interceptor sewer downstream of its connection to the city pipe coming from the factory. The crew probably dislodged an accumulation of PCBs in sediment on the bottom of the regional sewer and the freed chemicals flowed to the Jones Island Sewage Treatment Plant. The compounds ultimately contaminated sewage sludge removed from the treatment process. Last July, several tons of tainted sludge fertilizer were spread on parts of 30 public recreational areas, including soccer, football and baseball fields, before MMSD learned of the contamination. Each of the properties was fenced off and temporarily closed during the peak of the outdoor recreation season. Several thousand tons of tainted sewage sludge were disposed of in landfills because it was unsuitable for production of Milorganite, the popular fertilizer product produced at Jones Island.

Source:

<http://www.jsonline.com/story/index.aspx?id=771861>.

Sludge to be Studied in NC for Health Concerns

NC News & Observer

CHAPEL HILL - It happens. Tons of it, accumulating

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with every toilet flush. But agreement on wastewater residuals -- what's left of sewage after treated water is discharged back into rivers and streams -- pretty much stops there. There isn't even agreement on what to call it. Environmentalists and some researchers call it sewage sludge. The industry term is "biosolids." Some farmers swear by it, saying the free nutrients keep them in business as the costs of oil-dependent fertilizer continue to rise. But some people living near the farms where it's spread say the heavy metals, chemicals and pharmaceuticals found in some sludge make them sick.

The Environmental Protection Agency says the practice is safe if standards are followed. Researchers say there isn't enough science to know for sure, but two studies have been launched recently, including one that will track the health woes of people living near sludge-spreading sites in North Carolina and Virginia. Environmentalists are asking for greater oversight and more science. This year they successfully requested the state's first public hearing on an application permit, the city of Burlington's request for renewed permission to spread sludge in Orange, Chatham and other counties.

Cheap Fertilizer

Wastewater treatment plants around the country face the same challenge of disposing of residuals, mixtures of human waste, industrial discharges and whatever else goes down drains. They typically have three options: Burn it, bury it or spread it on land. Much of the nutrient-rich material goes to farmers as free fertilizer. Raleigh, Durham and the Orange Water and Sewer Authority all spread sludge on farmland. Biosolids are a cheap, effective fertilizer -- less expensive than chemical fertilizers, said Karen McAdams, a farm agent for the cooperative extension service. Chatham County farmer Gary Moon has had biosolids applied to his pastures since 1995. "I think it's just as safe, if not safer than chemical fertilizer," he said. "Also, it makes the grass grow better than anything we've ever tried." Moon said he and his family live on the farm and that they've never had any health problems. Nor have the beef cattle he grazes on the fields, he said. Moon said opponents' claims are unproven and that he's satisfied with the federal oversight of the practice. Lower fertilizer costs mean lower food costs, Moon said. Without sludge, he added, "There'd be a whole lot of farmers going out of business."

Unknown Contents

Humans have put their waste and animal manure on fields probably as long as there have been farms. But industrial society -- and its waste -- is different, says

Steve Wing, an epidemiologist at UNC-Chapel Hill. "A lot of waste, the human waste, is mixed with chemical waste," said Wing. "There are metals. There are bacteria and viruses and parasites. There are other types of chemicals that are used in industrial processes." But sludge contents can vary widely from city to city and, potentially, from truckload to truckload. "We like not to talk about sludge, but sludge's ... because you can't make these generalizations," said Murray McBride, director of the Waste Management Institute at Cornell University. "You can't really say for sure what's going to be there," said McBride, a soil chemist.

Rules Apply

The EPA sets standards for sludge contents and application and how soon fields can be grazed or harvested after spreading. The agency regulates levels of metals and other toxins such as arsenic, lead and mercury. It sets standards for reducing pathogens such as viruses, bacteria and parasites during sewage treatment. There are also state rules for how close biosolids can be spread near water sources and adjoining properties. Much of the biosolids spread on farms are "Class B" biosolids and have less-stringent requirements for pathogen content. More processed "Class A" biosolids, which contain no detectable pathogens, can be given or sold to the public. The state Division of Water Quality issues permits to wastewater treatment plants for biosolids application and regulates the practice at the state level. Environmentalists are asking the state for increased testing, wider buffers, and written public notification when biosolids are applied.

Health Concerns

Nancy Holt has campaigned for years against land application. Holt says she has an inoperable brain tumor and attributes it to toxins in biosolids spread on two nearby farms. Holt, who lives in the Bradshaw Quarry Road area of western Orange County, keeps a long list of her neighbors' health problems, and she persuaded Orange County to fund a study to investigate surface water and air quality at applications. "Human health has got to have more value," she said. "Right now, we're collateral damage to the chemical industry, to the sludge industry." There's a lot of anecdotal information about health problems related to land application, said McBride, the director of the Cornell institute. "We get calls all the time about people exposed near sludge application sites and getting quite sick," he said. But there are few peer-reviewed studies, he said. Wing, the epidemiologist at UNC, is beginning a multiyear study of lung function and symptoms of people living near

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application sites in North Carolina and Virginia. But it would be extremely difficult to verify claims of cancer clusters, Wing said. "If people around these sludge sites are getting cancer because of the sludge, if that were true, I don't think we'd be able to figure it out ... because we don't have enough measurements." Besides Wing, another UNC researcher is beginning a project involving biosolids. Chip Simmons, an environmental microbiologist, has money from Orange County to study whether and how certain microorganisms move away from application sites. But he cautions that his work will be only a preliminary study. "We probably will not be able to generate enough data to make heads or tails out of it," Simmons said. His hope is to learn more about how to study application sites and attract more money. Simmons, whose work is being funded by a \$10,000 contract with the Orange County Health Department, said he has had trouble finding a site to study since the money was approved in 2006. Landowners, he said, have been wary of the research project because of media attention to biosolids issues. McBride, the soil chemist, said he doesn't think more research is the answer. "There are so many chemicals in sludge's," he said, and more being constantly developed. "I don't think the research can ever catch up."

Ontario Farmers Split Over Sludge Safety

Ontario Independent

The price is right. With savings of more than \$100 an acre for fertilizer, the offer of free stuff is tempting for farmers struggling to make a living in the face of rising costs and diminishing returns. Harry Buurma wishes he could get enough sludge to cover his entire 3,000-acre farm in Watford, partway between London and Sarnia. *Most sludge is sprayed as liquid, though some pellets are used.*

As it is, he supplements commercial fertilizer with biosolids to feed his cash crops. Sludging cornfields, for example, saves him \$75 on fertilizing costs of \$150 per acre, he says. Fertilizer prices have doubled and tripled so biosolids are a better deal than ever, says Mr. Buurma, who uses both free liquid sludge and dried sludge pellets that cost him \$19 a ton. The pellets have fewer odors and reduced pathogen content, and there are fewer restrictions on when and how they can be applied, he says.

The beauty of biosolids, apart from the price, is their nutrients and organic matter, says Mr. Buurma, who believes they are as safe as pig or cow manure. The soil and plants process this stuff and render everything harmless. We're not eating it directly.. He scoffs at statements that contaminants from industrial waste find

their way into biosolids. That's a total misconception. Industrial waste doesn't go into city sewers. Twenty or 30 years ago, yes, but the level of heavy metals except for copper has been reduced 90 per cent. We have a really tight system now.. The real crime,, he says, is that not all biosolids are spread on farmland. Taking the stuff to landfill is wrong, really wrong,, especially when the ingredients in fertilizer will run out in 50 years, Mr. Buurma says.

While biosolids are fine for his crops, he is not so sure about vegetables. He thinks it could be bad for business. If I had a vegetable stand, I wouldn't be selling it because of the image.. People recoil at the thought of eating food grown in their own feces, regardless of how it might have been treated. That perception helps fuel the division within the agricultural community on the merits of sludge. While some farmers like Mr. Buurma can't get enough of the stuff, others are reluctant because of public opposition and concerns about safety and liability.

The Ecological Farmers Association of Ontario recently passed a resolution urging a moratorium on spreading sludge and for more research to determine its long-term effects. The organization is concerned harmful chemicals and pathogens in biosolids are contaminating the food chain. While a number of farmers believe sludge has made their livestock ill, the evidence is largely anecdotal. But some argue the uncertainty is enough to raise questions about its use. Fred Price used biosolids on his farm near Hanover more than 10 years ago. After feeding his 100 head of beef cattle hay grown on sludge-treated land, only half the usual number of cows became pregnant, he says. You couldn't find anything wrong with them but once we quit spreading sludge and once they went onto pasture in the spring, they were breeding again.. Price suspects the cause was hormones found in birth control drugs finding their way into the land through the sludge. He says three other farmers experienced similar problems. His farm is now sludge-free. "I sure don't want it any more. I'm always looking for cheaper ways to get fertilizer but it ended up costing a lot." Donald Good is an Ottawa Lawyer who has spent years warning farmers about the inherent risk of using material contaminated with human diseases. "Never adopt a practice that undermines the confidence of consumers in the safety of food you produce," he advises. The application of sewage sludge to farmland does just that.

Calendar of Events

MBT Meetings - Holiday Party in Frankenmuth, MI
Thursday, September 18, 2008 10:00 a.m.