Amendments

Improving Awareness & Advocacy of the Michigan Biosolids Program

Volume 14, First Quarter — January, 2010

MBT News

MBT 2010 Biosolids Conference

The Michigan Biosolids Team is planning the 2010 Biosolids Conference scheduled for March 16-17, 2010. The theme for the 2009 Conference is **"Going Green, Saving Green"**. The tours and conference will follow The Michigan State University Extension Biosolids Workshop by Dr. Lee Jacobs, March 15-16. The Crowne Plaza of Grand Rapids will be hosting the event. We will have CEUs: .4 Technical and .4 Managerial. To register: www.mi-wea.org. The following is the draft itinerary of the conference:

March 16, 2010

Biosolids Conference Tours: 1:30 – 6:00 p.m.

Sietsema Farms Feeds LLC
19117 Lake Montcalm Rd
Howard City, MI 49329

This facility converts turkey waste into steam and electric energy for feed production. The operation is housed on a 40-acre site at 19117 Lake Montcalm Road next to the Sietsema grain elevator just south of Howard City. The biomass system will utilize 1.5 million turkeys to convert 70,000 pounds of turkey litter into 12,000 kilowatts of electricity and 206,400 pounds of steam each day. The system is housed in a new 15,000-square-foot building with room to grow. Sietsema said the operation is expected to "drastically" reduce the plant's energy expenses, which currently average more than $500,000 annually.

Michigan Turkey Producers
2140 Chicago Dr SW
Wyoming, MI 49519

In 2000, Michigan Turkey Producers opened the first completely new turkey processing plant to come online in more than 15 years. Starting from scratch allowed us to build the latest technologies for harvesting, handling, chilling, deboning, and packaging operations. Many of the methods still used at older processing plants are antiquated by comparison.

Reception: 6:00 – 7:00 p.m.
Dinner: 7:00 – 8:00 p.m.
Entertainment: 8:00 – 10:00 p.m.

Wednesday, March 17, 2010

7:00 – 8:00 a.m.: Registration and Continental Breakfast
8:00 – 8:30 a.m.: Opening Remarks: *Moderator:* Steve Mahoney
Jerry Harte
"*Welcome to West Michigan*":
Don Stypula, GVMC
8:30 – 9:15 a.m.: "State of the State"
Representative Paul Opsommer,
9:15 – 10:00 a.m.: Cap and Trade: Any Consequences??
Congressman Mike Rogers (invited)

10:00 – 10:20 a.m.: Break and Networking in vendor area

10:20 – 10:50 a.m.:	Fertilizer Costs *John Christian, UAP*
10:55 – 11:25 a.m.:	Landfilling vs. Land Application *Tom Kent, Wyoming CWP*
11:30 – 12:00	Panel Discussion: Biosolids Land Application, Facility vs. Contractor *Port Huron, Delta Twp., & Alpena or West Branch*
10:20 – 10:50 a.m.:	City Energy Audit *David G. Roskowic, Turblex, Inc.*
10:55 – 11:25 a.m.:	European Experience *Dave Dupuis, United Water*
11:30 – 12:00	Terra-Gators vs.Tractor Pulled Applicators: *Synagro Consulting Engineers*

12:00 – 1:00 p.m.: Lunch and Networking in vendor area

1:00 – 1:30 p.m.	SlurryCarb™ Process, *Don Brindley, Enertec,*
1:35 – 2:05 p.m.	Nutrient Recovery from Anaerobic Digester Sidestreams *Lucy Pugh, AECOM*
2:10 – 2:40 p.m.	Digester Bio-Gas from Cheese Waste *Mark Eklund, P.E., Columbian TecTank*
2:45 – 3:15 p.m.	Food Waste Anaerobic Digester Gas *Torben Bonde, American Bio-Energy*
1:00 – 1:30 p.m.	Anaerobic Digester Gas Utilization *Rich Grant, Fleis & VandenBrink*
1:35 – 2:05 p.m.	Bio-Gas: Santa Cruz Story *Scott Rouse, Sierra Instruments*
2:10 – 2:40 p.m.	Grandville CWP Egg Shaped Anaerobic Digester and Bio-gas Cogeneration *Brian Hannon, P.E., Moore & Bruggink*

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2:45 – 3:15 p.m.	Co-Generation and Bio-Fuels *Terry Pahls, IPower Energy Systems, & Scott Decker, Alternative Energy Solutions*

3:15 – 3:35: Break and Networking in vendor area

3:40 – 4:15 p.m.: Greenhouse Gas (GHG) Rules
Vicki Garon & Dorothy Austin, Golder & Assoc.

4:15 – 4:30 p.m.: Closing remarks, CECs, door prizes

Michigan News

City of Gaylord WWTP & Gaylord St. Mary Cathedral School Partner for a 7th Grade Biosolids Field Trip

On October 23rd, 7th grade students from the Gaylord St. Mary's Middle School visited the Gaylord Wastewater Treatment Plant to learn about the wastewater treatment process. In addition, the class was scheduled to witness the final step of treatment and end use of biosolids by visiting a land application site. The field portion of the tour was hosted by Synagro Central, LLC, the city's biosolids land application contractor.

Prior to the field trip, students learned about soil nutrients, such as nitrogen, phosphorus and potassium, and the benefits of each for plant growth. Along with basic farm operations, the class discussed an overview of the wastewater process and the different steps of treatment.

While at the wastewater plant, students learned about flow rates, grit removal, aerobic digestion, sludge thickening and the laboratory workings in a wastewater plant. The tour guide, Mr. Jeff Purgiel of the City of Gaylord WWTP, did a wonderful job presenting the information at a level that kept the class interested and provided practical information in easy to understand terms. The students offered many thoughtful and insightful questions.

Unfortunately, Mother Nature put a damper on the second half of the field trip. Land application crews were working earlier in the day, but rain showers forced them to cease operations. Alternate plans were made and a representative from Synagro gave a classroom presentation about biosolids land application and the beneficial reuse of biosolids on farm fields. The students discussed the environmental regulation of biosolids land application, the benefits to soil and crops, soil structure and texture, and other general biosolids information. The students asked questions about different crops and application rates (agronomic rates), the types of application equipment used, locations where biosolids are applied in the state and WWTP laboratory jobs (and their ability to wear jeans to work). Students also recognized the risks of flushing medicines and pharmaceuticals down the toilet and thought doctors needed to catch up to biologists and realize the risks of such practices to the environment.

In the end, though the students didn't get to see the land application process in person, the class left with a new appreciation of what happens when they use the sink, shower and toilet and promised they'd keep educating those around them about biosolids. Thanks again to Mrs. Fain's Gaylord St. Mary's 7th grade class, Jeff Purgiel, the City of Gaylord Wastewater Treatment Plant, and Synagro.

Biosolids to be processed into usable compost

First of its type facility in state being built in Ishpeming

By JOHN PEPIN Journal Staff Writer
POSTED: October 6, 2009

ISHPEMING - Next spring, home gardeners in the Ishpeming area will be able to use compost generated from a new municipal waste biosolids treatment facility, the first of its kind in the state.

Work began in Ishpeming recently at the Ishpeming Area Joint Wastewater Treatment Facility on Michigan's first in-vessel composting system for treating municipal biosolids.

The $1.5 million project is being funded from several sources, including an Ishpeming and Ishpeming Township replacement fund, a capital fund comprised of leachate and other waste disposal proceeds and a tap-in fee being charged to the city of Negaunee for future use of the wastewater treatment facility.

Facility director Debbie Pellow said construction on a 5,775-square-foot building, which will house five 14-foot by 12-foot composting vessels, was started last month and is expected to be completed by March.

It takes 80 days for the vessels to produce the composting material, which officials said will be a soil amendment of "exceptional quality," meeting Environmental Protection Agency regulations of being 99 percent pathogen-free.

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The process uses renewable natural resources, including wood chips, instead of natural gas as its energy source. Pellow said the compost should be available next May at a cost of $5 per yard.

Specific details are still being worked out based on logistics, but Pellow said the compost is expected to be available to companies and also to the general public for home garden use.

"This process will take a product that is currently being landfilled and costing the users of this system from $100,000 to $200,000 annually and make it into a renewable resource," Pellow said. "Faced with today's economic issues it only makes good sense to produce a product that can generate revenue to offset operating costs, instead of costing more and more and filling up our landfill. Environmentally and economically this project is the right thing to do."

The primary responsibility of wastewater treatment facilities is the treatment of wastewater so it can be safely discharged back into the environment. The by-product of this treatment process is biosolids.

The Ishpeming area wastewater authority and staff have been researching solutions to biosolids disposal for the past six years.

In-vessel composting is done in enclosed vessels where time and temperature - along with the addition of wood chips and air -destroy pathogens.

City of Grand Rapids, MI Successfully Completes NBP EMS Reverification Audit.

Sam Hadeed, shadeed@wef.org

The City of Grand Rapids, MI completed its reverification audit of its NBP environmental management system (EMS) certification on November 20, 2009 by NSF-International Strategic Registrations. The Grand Rapids, MI biosolids EMS has been certified since December 2006 and achieved **platinum level** status since December 2007. Undergoing regular reverification audit are part of an agency's requirement to maintain NBP certification. The Environmental Protection Services Department's Wastewater Treatment Plant personnel involved in biosolids management should be recognized for their outstanding achievements, and the exceptional features of their Biosolids Management System. The following is a summary of those positive items observed during the 2009 Interim Audit.

Commendations:

- There was an excellent discussion of progress made in improving operations of activities at each of the critical control points in the biosolids value chain in the 2007 and 2008 Periodic Biosolids Program Performance Report.
- Laboratory personnel demonstrated an exceptional knowledge of the biosolids EMS policy, mission statement, critical control points, operational procedures and goals and objectives and outcomes.
- The City maintains an exemplary Biosolids EMS manual that continuously improves through frequent updates and upgrades.
- The shift to using Share point has improved document control.

And finally, the hard work and dedication of the EMS management team must be acknowledged. While maintaining the EMS verification goal is obviously a team effort the effectiveness of guidance provided by the Assistant Director assured maintenance of this common goal.

National News

EPA May Define Sewage Sludge/Biosolids as a Solid Waste

The U. S. EPA Office of Resource Conservation and Recovery (ORCR) – once known as the Office of Solid Waste – is in the process of defining sewage sludge and biosolids as a solid waste – at least in some instances. If the proposed change in definition is adopted – which now seems likely – the Office of Air and Radiation will likely begin regulating sewage sludge incinerators (SSIs) under the Clean Air Act (CAA) Section 129, rather than Section 112. Section 129 applies to all materials defined as solid wastes.

Category: General Posted by: NEBRA

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While this action clearly has significant impacts for municipalities that operate SSIs, it has the potential (though likely unintended) to affect other biosolids use or disposal options, particularly because other federal and many state regulations depend heavily on the definition of what constitutes solid waste.

A key part of the debate on defining sewage sludge/biosolids as a solid waste depends on whether or not the material is being "discarded." According to the January 2nd Federal Register, "EPA now needs to articulate which nonhazardous secondary materials constitute solid wastes under RCRA Subtitle D so that EPA can establish appropriate standards under CAA sections 112 and 129 for units that combust secondary materials for the purposes of energy recovery or when used as an ingredient" (Federal Register, 2009). Currently, there is growing action nationwide to maximize energy recovery from SSIs.

This EPA action is moving forward steadily, as the Agency has a court-ordered deadline of September 15th - but the Agency may ask for an extension of that deadline.

Biomass Magazine, 11-17-09.

California Sanitation District Provides Regional Biosolids Management Solution.

The Ventura Regional Sanitation District in southern Ventura County, Calif., has officially commenced operations at its biosolids drying and electric generation facility in Santa Paula, a project which the utility hopes will serve as a model for other regional governments and municipalities. It took about two years and $19 million to construct the facility, which is on three acres at the Toland Road Sanitary Landfill. The facility utilizes landfill gas to provide 100 percent of its required power (about 1 megawatt), and an extra 1.5 megawatts are sold to the local power grid, according to VRSD General Manger Mark Lawler. With some additional units, the facility could handle the biosolids from up to 700,000 people.

Within the 10-city county, VRSD is contracted to take biosolids from six cities that do wastewater treatment. The remainders are special districts that don't have large volumes of biosolids, so they haven't contracted with us just yet, but were working on those, Lawler said. We needed these contracts with the cities in order to get the financing for the project this project preceded with no grants or special loans, so we went for conventional financing. The land fill gas, after going through a process to remove excess liquids and filtration systems, is conveyed to the facility by a blower that supplies low-pressure gas to the biosolids dryer and a compressor that sends high-pressure gas to fuel nine micro-turbines for electricity generation.

Biosolids arrive at the facility via trucks, and are dried in two 80-ton batch dryers. Hot oil from process heaters circulates around the dryer shell and through a series of internal rotors that turn the biosolids to dry them evenly. Steam from the dryers is condensed to water, which is treated and then used for dust control at the landfill; exhaust air from the dryers is filtered to remove odors and particulates. The dried biosolids are conveyed to trailers at the receiving station and hauled to the landfill. The end product from the biosolids qualifies under California's Solid Waste Law, and is being used as daily cover at the landfill right now, Lawler said. California's Solid Waste Law AB 939 requires each city or county to divert 50 percent of all solid waste from landfill or transformation facilities by Jan. 1, 2000, through source reduction, recycling and composting activities.

Several people have contacted VRSD and are interested in securing the end product for commercial use as a fuel source or fertilizer, Lawler said. Since the electric generation and biosolids processing facility began initial start-up operations in August, the two dryers have been ramped up to handle about 120 tons of biosolids per day. It's the first of its kind, so we've been doing things slowly to make sure everything is done properly, Lawler said. To our knowledge, this is the first of its kind in California where somebody is treating biosolids regionally rather than individually. We'd really like to show other regional governments and municipalities what we have, and help those who are interested try to duplicate it.

River Reporter - Narrowsburg, NY, 11-26-09.

Biosolids Big Bucks A Resource in More Ways than One.

Some used to call it nightsoil, hearkening to the practice of applying raw human excrement to farm fields to increase soil fertility under cover of darkness. Back then, local waste hauler Ned Lang's father applied septage to his own farm at the top of Peggy Runway, now Steep Hill Road in Pennsylvania. My father utilized this resource, and we had the best crops around, said Lang, who today provides biosolids, or treated sewage sludge, to 34 sites in Wayne County and two in Pike County, PA.

The name of Lang's product is OrganaGrow, and it is the end result of a process that begins with everything we flush away or pour down a drain. His company, EnviroVentures, Inc., based in Narrowsburg, processes the wastewater it collects from residential septic systems, municipal wastewater treatment plants and food processors throughout the four-county region of Pike and Wayne in Pennsylvania and Sullivan and Orange in New York. We bring it in, mix it, kill it, and send it out, Lang said.

The past president of the national association of waste transporters began land applying biosolids roughly 15 years ago. Today, the company employs 36 full-timers and has offices in South Jersey, Central Jersey and upstate New York, although processing only occurs at the Narrowsburg site. He calls it a tough business that is heavily regulated. To successfully meet those regulations, Lang draws on the services provided by Diane Garvey, president of Garvey Resources, a consulting firm specializing in biosolids for wastewater treatment plants, processors and research organizations.

How it happens

Lang describes the procedure for processing sewage sludge into Class A biosolids this way: We either bring sludge back that is already dewatered and in a semi-solid form or process it in our facility here. Our screening process pulls out the non-biodegradable debris and that goes to landfills. We dewater the solids and develop a sludge cake. Once the sludge is in that state, we'll add approximately 25 percent of lime, on a dry-weight basis. When we blend that with the sludge, it brings the ph above 12, which kills the pathogens [bacteria, protozoa, enteric viruses and helminth worms]. But it doesn't take the nutrients away.

Lang is such a fan of the product that he bought a 258-acre farm in Pleasant Mount, PA where he applies it to grow orchard grass and Christmas trees and wants to incorporate its use into his forestry management plan. He describes biosolids as a huge resource for small farms. The cost of fertilizer is so high that the small farmer can't afford to farm if he has to use chemical fertilizers, said Lang. We increase their crop yield 50 to 100 percent. Plus, it's an organic form of nitrogen and phosphorous and helps the soil hold more moisture. I would use it to grow vegetables myself.

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Garvey likes it enough to use in her own garden, and says that since the organic form of nitrogen is not immediately available, it is released more slowly over time, minimizing the potential for runoff. Rates of application are calculated based on what a farmer is growing, according to Garvey. And she applauds the practice for its reduced carbon footprint. It's recycled, it replaces chemical fertilizers and it builds up organic matter in the soil. These are all ways we pull greenhouse gases out of the air, into a more beneficial form, she said.

Even so, produce grown on sludged land cannot be certified organic. And companies like Heinz, Kraft and DelMonte have chosen to reject crops grown on sludged soils. Why? They're just responding to public pressure, said Lang. Lang labeled home septic systems as the bigger culprits when it comes to potential contamination. Forty-five percent of homes in PA are serviced by on-lot septic systems, which discharge approximately 400 gallons of untreated water into the soil every day, he said. Any septic system is going to have a much greater impact on water quality than our product is ever going to have.

According to Lang, odor is the chief complaint associated with biosolids, and one that he tries to minimize, while pointing to what he sees as the alternative. If a farmer can't afford to keep his land because he can't afford the fertilizer, would you rather put up with the odor for a few days or would you rather have a lot of houses around you? Either you develop the property or utilize it for farming.

The lingering unknowns

Whether it comes from cows, chickens, pigs or humans, all manure has an odor. But increasing concerns about the antibiotics and growth hormones fed to animals are now being extended to human waste products, which contain the residues of countless pharmaceuticals in addition to the largely unidentified substances contained in many household cleaning products. Currently, no federal law requires manufacturers to list the chemical ingredients of cleaning products, so it's anyone's guess as to the constituents of most commonly used cleaners. Of those that are known, independent studies show links to respiratory irritation, asthma, allergies, reproductive system damage and birth defects. Some solvents are also believed to be toxic to the nervous system, while hormone-disrupting chemicals found in detergents, disinfectants, stain removers and floor cleaners can mimic the hormone estrogen.

Little is known of the fate of these compounds following land application. Nor is much known regarding the potential toxicity of breakdown products and their interactions. In Josh Harkinson's story, Sludge Happens, in Mother Jones magazine, a recent EPA survey of sludge samples from across the United States found nearly universal contamination by 10 flame retardants and 12 pharmaceuticals and exceptionally high levels of endocrine disruptors such as triclosan. Nor does the federal government require testing of drinking water for the presence of pharmaceuticals, many of which have found their way into the drinking water of 41 million Americans, according to a 2008 Associated Press (AP) investigation.

Pharmaceutical drugs are now present in the water supplies for 24 major metropolitan areas, including New York City, which derives its water from upstate reservoirs partially located within the Upper Delaware region. Tests of those source waters showed trace amounts of heart medicine, infection fighters, estrogen, anti-convulsants, a mood stabilizer and a tranquilizer. The quantities, measured in parts per billion or trillion, are well below medical dosage levels. But scientists are increasingly concerned about their presence and possible interactions and impacts.

"The emerging science is showing us that background levels of exquisitely small exposure can have additive effects, and such drugs can potentiate one another," said biologist Dr. Sandra Steingraber, a distinguished visiting scholar at Ithaca College. We don't know enough about the impacts of long-term low-level exposure to such chemicals. Steingraber points out that prior to birth, all mammals are exceptionally vulnerable to chemicals, particularly the hormonal system, which functions at the level of parts per million as bodies are assembled. Hormones are like the directors of this orchestration of the body, said Steingraber. The timing of exposure is something our regulatory system is not taking into account.

Garvey says most of the micro-constituents are removed by the dewatering process, while opponents of biosolids say such material actually concentrates in sewage sludge. Lang isn't worried. Bleaches are no problem. There's really not a lot of terrible stuff out there anymore. Even with people taking drugs, I've never known that to be a problem. There has never been any noticeable degradation to the quality of the wastewater due to the household products that are used, to my knowledge. Garvey added, we are researching the impacts, but biosolids are not the only place that you see these things. You see them in your body; you see them in your household. It's a matter of where are we going to spend our money, energy and resources in protecting human health and the environment.

It is this point on which both sides of the biosolids issue may agree. Opponents of biosolids land application point to it as yet another contributor to the cumulative impacts of various sources of contamination to water, air and soils. The question is, at what point does it become hazardous to human health?

A human health hazard?

In Pennsylvania, biosolids are regulated by the Department of Environmental Protection (DEP). On the federal level, the United States Environmental Protection Agency (EPA) regulates the use of sludge under its 503 rule. Of the complex mixture of heavy metals, chemicals, pharmaceuticals and pathogens present in sewage sludge, the EPA has established numerical limitations for only nine metals to avoid build-up in soils over time.

Health impacts such as digestive disorders, asthma and persistent infections like MRSA have been attributed to land application of biosolids. Two deaths are suspected to be linked to the practice in Pennsylvania. Tony Behun, an 11-year-old boy from Clearfield County, and 17-year-old Daniel Pennock of

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Robesonia, PA, both succumbed to infections that followed exposure to land-applied Class B sewage sludge. The DEP and the EPA have each denied the connection following their investigations.

Lang agrees with those conclusions. There are thousands of workers in sewer plants, working with raw sewage every day of their lives and, to date, there's not one documented case that I know of, of staph infection killing any of those workers. We have raw product coming in here. Everybody likes to blame the sludge, and they're looking for a catalyst to remove it from society. Well, you can't. This is a wonderful option. You can't ocean dump it. Why burn it and put the nutrients and other products in the air? And you still have an ash to get rid of. It's a great resource that needs to be looked at as a resource and this country's got to stop saying, "Not in my backyard."

Garvey concurred, adding that the benefits of biosolids land application far outweigh its perceived concerns. The bigger picture involves a triple bottom line, what's good for society, what's good for the environment and what's feasible economically, she said. EnviroVentures submits to DEP-approved quarterly lab analyses which test for metals, organics, enteric viruses, helminth ova and fecal coliform, according to Lang. Sixteen years worth of test results are available to the public. Lang also welcomes interested parties to tour the facility.

One thing is certain there is no end to the source material. And there is a potential gold mine available to those positioned to manage the product. According to Harkinson, the Carlyle Group paid $772 million for the sludge-residuals company Synagro. Lang sees the possibilities. This time of year, we're land-applying every day as long as it isn't raining, he said. Due to limited storage capacity and tied to restrictions related to the timing of land application, Lang says he is unable to meet local demand for the product. But he has applied for permits to expand his operation. I believe in the product. We've been doing it since 1994. My father used septage when I was a kid. You didn't even add lime. You'd just land apply it for your crops. It's a tremendous resource.

Michigan Biosolids Team

DEQ · Michigan Department of Agriculture · Michigan State University Extension · mwea we do water

Calendar of Events

MBT Meetings

2010 Meeting Schedule

Thursday, January 14, 2010
SCCMUA CWP, DeWitt, MI, 10:00 a.m. to 12:00 p.m.

Thursday, April 15, 2010
Delhi Township WWTP, 10:00 a.m. to 12:00 p.m.
Tour Facility

Thursday, June 17, 2010
Holland location TBD, 10:00 a.m. to 12:00 p.m.

Thursday, July 22, 2010
MBT Biosolids Demo Plot Booth
MSU Ag Expo

Thursday, September 16, 2010
Johnson Wildlife Center, Cadillac, MI
10:00 a.m. to 12:00 p.m.

Thursday, November 18, 2010
Location TBD, 10:00 a.m. to 12:00 p.m.
Holiday Party

Other Events

Michigan Township Association
January 27-28, 2010, Grand Rapids
MBT Display Booth

MWEA/AWWA Joint Expo
February 2-3, 2010, Lansing Center
MBT Display Booth

Michigan Science Teachers Association Annual Conference
March 4-6, 2010, Lansing Radisson
MBT Display

MSUE Biosolids Workshop
March 15-16, 2010, Grand Rapids

MBT Biosolids Conference
March 16-17, 2010, Grand Rapids

MSU Ag Expo
July 20-22, 2010, Michigan State University
MBT Display and Demo Plot