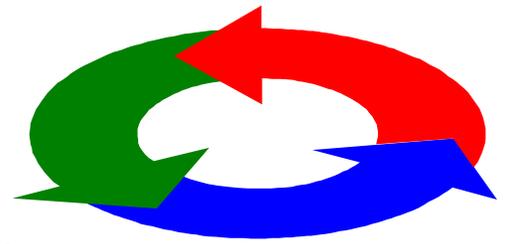


Amendments



Improving Awareness & Advocacy of the Michigan Biosolids Program

Volume 5, First Quarter

February, 2004

Biosolids Seminar Update

By Steve Mahoney, MDA

There is still plenty of time and room to attend **the 2004 MSUE Biosolids Workshop** and the 2004 Biosolids Seminar titled: **Building Biosolids Acceptance**. The speakers who have accepted our invitation to speak are: Dr. Jim Smith, USEPA; Dr. Rufus Chaney, USDA; Richard Kendall, Automation Nation, Inc.; Sam Senn, Bascor, Inc.; Donald Hoekstra, Ontario WEA; Bob O'dette, Synagro; and Dr. Joan Rose, MSU.

A copy of the Seminar brochure is located on the MWEA web site: www.mi-wea.org, click on "Seminars" on the left side of the page and click on "flyer", which concludes the Seminar/Workshop announcement. **CEC's are available for the workshop, tour, and seminar: 1.2 for the workshop, .2 for the tours, and .5 for the seminar.** You may also contact the MWEA office at 517-641-7377 or me at 517-241-2508 for more information.

WEF News

2004 Brings Good News for Biosolids Recycling

1/29/2004 - The Water Environment Federation (WEF) welcomes good news for biosolids recycling -- the practice of treating, processing, and recycling organic wastewater byproduct into fertilizer and other usable products -- and applauds the recent actions of the U.S. Environmental Protection Agency (EPA) in support of the practice. The National Biosolids Partnership (NBP), which includes WEF as one of its partnering organizations, is expecting success this year with its pilot-tested environmental management system (EMS) for the biosolids program. EMS verification signifies that an agency supports excellence in biosolids management, exceeds regulatory compliance obligations, and provides meaningful opportunities for public participation. To date, two agencies have achieved independent, third-party verification, and a total of seventeen new agencies are expected to undergo audits in 2004. Recently, several court decisions over local regulation of land-applied biosolids have been in favor of the practice. In November 2003, a Federal Court ruled to

WEF News continued on next column

WEF News, continued from previous column

reject anti-biosolids ordinances in Appomattox County, Virginia, capping a string of legal victories for Virginia farmers seeking to end the county's illegal ban on biosolids. According to Mike Moore, Chair of WEF's Residuals and Biosolids Committee, "WEF is pleased by the positive progress of the biosolids recycling program and believes that the recent collective actions taken by EPA demonstrate that it is committed to the program's success and supports ongoing research while encouraging wastewater agencies to better manage their biosolids through an EMS." On 10-7-03, a petition from the Center for Food Safety called for EPA to place an emergency moratorium on the land-application of biosolids. WEF was part of a municipal coalition that submitted a response letter to EPA on 10-23-03, urging the Agency to deny the center's petition. On 12-22-03, the EPA responded to the center with a 22-page document outlining its findings -- that the assertions made by the Center for Safety concerning the hazards of land-applied biosolids were not substantiated. In related actions, on 12-31-03, EPA published in the Federal Register its final action plan responding to the National Research Council's recommendations from its July 2002 report on the land application of biosolids. The plan included 14 specific projects to enhance the Agency's ongoing research and outreach activities and presents the results of its review of existing biosolids regulations to identify additional pollutants for potential future regulations made from biosolids and announced on 10-17-03, its final decision not to regulate dioxins in land-applied biosolids. After five years of study, including outside peer review, EPA determined that dioxins from this source do not pose a significant risk to human health or the environment.

WEF will hold its 18th Annual Residuals and Biosolids Management Conference, February 22-24, 2004, at the Grand America Hotel in Salt Lake City, Utah, where these and other topics will be discussed. For more information about the conference, visit www.wef.org. To obtain background information on these recent actions visit www.biosolids.org.

Source: Water Environment Federation (WEF)

POTW Focus

Delhi Charter Township Treatment Plant Overview

Delhi Charter Township owns and operates a wastewater treatment plant that treats wastewater discharges originating primarily from residential sources. The treatment plant provides service for the entire township, with the exception of the northeast portion, which discharges to the City of Lansing WWTP. The plant was originally constructed in 1962 and included facilities for primary treatment and anaerobic digestion. Secondary treatment was added in 1978 by the addition of rotating biological contactors (RBCs), secondary clarifiers, polishing ponds, and a chlorination system. Additional digester facilities were also added in 1978. Sludge storage tanks were added in the late 1980s. In 1994, secondary treatment was modified by replacing the RBCs with a three-pass activated sludge basin, new secondary clarifiers and an attached-growth nitrification tower to provide tertiary treatment. In the late 1990s, an additional sludge storage tank was constructed to double the storage capacity in addition to upgrades to grit removal and odor control systems at the plant. The latest plant upgrade in 2003 includes the addition of a three-pass activated sludge basin, a new sodium hypochlorite disinfection system, and headworks improvements, including installation of in-channel grinders, to improve solids capture. The upgrade also includes installation of larger capacity return activated sludge (RAS) screw pumps and blowers for increased aeration capacity.

Raw wastewater enters the Delhi Charter Township POTW via 21-inch and 36-inch intercepting sewers. Flows from the intercepting sewers enter an influent wet well where they are combined with recycle flows that include waste activated sludge (WAS) and digester and sludge storage tank supernatant. The wastewater is lifted from the influent channel to the in-channel sewage grinders via three Archimedes screw pumps. Raw influent flowrates that exceed the pumping capacity of the influent screw pumps are diverted to a lagoon storage pumping station where the flow is pumped to polishing ponds for storage or emergency treatment.

Influent wastewater is routed through two parallel in-channel grinders which remove stringy material such as cloth, paper, and plastic which can damage downstream equipment. Grit is removed by an aerated grit chamber and classifier that are located immediately downstream of the in-channel grinders. The grit chamber and classifier protect mechanical equipment from abrasion and accompanying abnormal wear, reduces the formation of heavy deposits in pipelines, channels and conduits, and reduces the frequency of digester cleaning caused by excessive accumulations of grit.

POTW Focus continued on next page

Michigan Biosolids Team in Action

The Michigan Biosolids Team displayed at the Michigan Association of Conservation Districts (MACD) Annual Conference in Grand Rapids from December 10-12, 2003, the Michigan Township Association Annual Conference in Lansing on January 27-29, 2004, and the MWEA/AWWA Joint Expo in Lansing on February 4 and 5, 2004. Each of these events gave the Biosolids Team great exposure to distribute Biosolids information to each of the audiences. Good discussions were prevalent at each of these events between Biosolids booth staff and conference attendees.

The next big Michigan Biosolids Team event is the Annual MSU Ag Expo held in July 20-22, 2004. The demonstration plot, comparing biosolids and regular fertilizer, will contain sweet corn which will be ready to be enjoyed on the final day of the Expo. Everyone is welcome. More details will be forthcoming in the next issue of *Amendments*.

Calendar of Events

Thursday, February 19, 2004, 10:00 A.M.

MWEA Biosolids Committee Meeting
Location: City of Lansing WWTP
Topic: WWTP Plant Tour

Tuesday and Wednesday, March 2 and 3, 2004

MSUE Biosolids Workshop
Lansing Clarion Hotel, Lansing, MI
www.mi-wea.org or 517-241-2508 for more information

Wednesday and Thursday, March 3 and 4, 2004

MWEA Biosolids Seminar and WWTP Tours
Lansing Clarion Hotel, Lansing, MI
www.mi-wea.org or 517-241-2508 for more information

Thursday, March 18, 2004, 10:00 A.M.

MWEA Biosolids Committee Meeting
Location: SCCMUA CWF, DeWitt

For more information on the meetings and directions, please contact Todd Wibright at (616) 457-0720.



This quarterly newsletter is a joint effort of the **Michigan Biosolids Team partnership**. It is designed to provide timely, relevant information about the beneficial use of biosolids. Submit information of interest or comments to: [Steve Mahoney - mahoneys@michigan.gov](mailto:Steve.Mahoney-mahoneys@michigan.gov) or telephone (517) 241-2508

Grit is automatically removed from the grit chamber by an air lift pump into the grit classifier and disposed at a landfill. Flow from the aerated grit chamber effluent channel is routed to two 50-foot diameter primary clarifiers, which are provided to co-settle primary solids and WAS. Settled solids are pumped to anaerobic digesters and scum skimmed from the clarifiers is mixed with sawdust and sent to the landfill. Ferric chloride can be added prior to grit removal to facilitate phosphorus removal. Secondary treatment facilities include an activated sludge system for removal of organic matter (BOD) from the wastewater. The biological process converts the organic matter into flocculant settleable biological and inorganic solids that are subsequently removed in the secondary sedimentation tanks. Air is introduced into the aeration tanks to provide oxygen for the microorganisms to metabolize the BOD in the primary clarifier effluent. Two 80-foot diameter secondary clarifiers separate the microorganisms from the wastewater. A portion of the microorganisms is returned to the head of the aeration tanks for treating incoming wastewater and excess microorganisms are wasted (WAS) to the primary clarifiers. Currently, the plant adds ferric chloride to the discharge of the aeration tanks to chemically enhance phosphorus removal from the wastewater. Secondary effluent is pumped to the tertiary treatment nitrification tower where ammonia-nitrogen (NH₃-N) is converted to nitrate. The tower is a trickling filter that contains synthetic media that provides a large surface area for nitrifying organisms to grow. As wastewater flows through the synthetic media, the nitrifying organisms convert the NH₃-N to nitrate. Generally, nitrification tower effluent is chlorinated and flows by gravity to the aerated polishing pond. Three polishing ponds receive flows from tertiary treatment and raw influent wastewater during high flow periods. The polishing ponds are provided to (1) increase treatment quality, (2) provide chlorine contact time and reduce chlorine residuals, (3) raise the dissolved oxygen level of the final effluent, and (4) serve as storage during high flow periods. The polishing pond effluent is subsequently dechlorinated using sodium bisulfite and discharged through the outfall on the Grand River, approximately 0.5 miles to the southwest of the POTW. Two progressive cavity pumps are used to pump settled solids from the primary clarifiers to the anaerobic digesters. The anaerobic digesters are used to biologically stabilize the sludge, which consists of insoluble organic and inorganic solids from the raw wastewater and biological solids produced in secondary treatment. Primary digesters are used for digestion and are heated and mixed, while the secondary digester provides sludge storage and concentration of digested sludge. Biosolids removed from the anaerobic digesters are stored on-site in sludge storage tanks and land applied for beneficial

reuse. Gravity thickening of Biosolids occurs in the storage tanks prior to land application. Liquid supernatant from the sludge storage tanks is continuously returned to the influent wet well via a supernatant pump station.

EPA Proposes Revision of Compost Designation to Include Manure and Biosolids

From **George Clark**, GClarke@SYNAGRO.com:
"Today's Federal Register contains a proposed rule to revise EPA's current compost designation to include compost made from manure or biosolids under the Resource Conservation and Recovery Act (RCRA). Up until now, EPA did not list biosolids or manures under this program, although they did have material such as food waste listed. This is part of a revamping of the "Greening the Government Through Recycling" Program and details new procurement guidelines for recoverable materials." A portion of the descriptive text follows: "Today, in CPG V (Comprehensive Procurement Guideline), EPA is proposing to revise the current compost designation to include composts made from manure or biosolids, and also designate fertilizers made from recovered organic materials. Both of these items fall under the Landscaping Products category of designations in the CPG. A. What Criteria Does EPA Use for *Selecting Items for Designation*? While not limiting consideration to these criteria, RCRA section 6002(e) requires EPA to consider the following when determining which items it will designate: (1) Availability of the item; (2) Potential impact of the procurement of the item by procuring agencies on the solid waste stream; (3) Economic and technological feasibility of producing the item; and (4) Other uses for the recovered materials used to produce the item. EPA consulted with federal procurement and requirement officials to identify other criteria to consider when selecting items for designation. Based on these discussions, the Agency concluded that the factors set forth in RCRA section 6002(c) should also be considered in its selection decisions. This provision requires each procuring agency that procures an item designated by EPA to procure the item composed of the highest percentage of recovered materials practicable, while maintaining a satisfactory level of competition. A procuring agency, however, may decide not to procure an EPA-designated item containing recovered materials if it determines: (1) The item is not available within a reasonable period of time, (2) the item fails to meet the performance standards set forth in the agency's specification, or (3) the item is available only at an unreasonable price. EPA recognized that the above criteria limit the conditions under which procuring agencies must purchase EPA-designated items with recovered materials content, and, thereby, could limit the potential impact of an individual item designation on the demand for that recovered content item in the U.S. economy." For more, see Federal Register / Vol. 68, No. 237 / Wednesday, December 10, 2003 / Proposed Rules.

Domestic sewage may be farm fertilizer *by ERIC DeMINK, The Lapeer County Press*

ELBA TWP—Area farmers looking for a safe, inexpensive source of fertilizer need not look any further than their nearest sewer plant.

As an alternative to the traditional use of manure and other common fertilizers, the state Department of Environmental Quality is introducing biosolids as a viable third option for farmers—and unlike in other states, the cost is free.

Biosolids are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When properly treated and processed, the sewage can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. Biosolids are the end result of the wastewater treatment process.

"This is really good stuff," said Dr. Bahram Zamani, Environmental Quality Analyst for the DEQ, who appeared before the Elba Township board Monday night. "People look at it as human waste, and they don't like the idea. It's a perception thing that turns people off. Land application with manure has been practiced for thousands of years and accepted by the public. Land application with biosolids is not accepted yet and needs public education."

Farmers and gardeners have been recycling biosolids for ages. The land application takes place in all 50 states but less than 1% percent is used on the nation's agricultural land. About 50% of all biosolids are not being recycled to land. Zamani said he is responsible for over 1,000 sites in Michigan that are using biosolids.

The benefits of using biosolids are many, for the farmer as well as the environment.

Farmers using biosolids are able to replenish the soil's organic matter and productivity. Organic matter within the biosolids help improve the soil structure and its ability to absorb and store water, which sustains crops through dry spells and reduces erosion. Biosolids also minimize the stress humans place on the environment through landfills.

In addition to the public's aversion to the fact that it is human waste, the foremost concern is with its safety.

In fact, water treatment technology has made our water safer. Thirty years ago, thousands of American cities dumped their raw sewage directly into the nation's rivers and lakes. Through regulation of this dumping, local governments are now required to treat wastewater and to make the decision whether to recycle biosolids as fertilizer, incinerate it or bury it.

As for its pathogen content, Zamani said there are no known deaths attributed to use of biosolids as a fertilizer.

"This is unlike manure where its pathogens have killed people," he said. "Biosolids, with all the treatment it gets, is much safer."

Zamani explained that pathogens live in our digestive system under very acidic conditions. Once they are removed from the body, he said, these conditions are not the same, so the environment is very harsh. Zamani said biosolids are further treated to provide an even harsher environment using alkaline conditions. Zamani said these measures drastically reduce or eliminate most if not all of the pathogens.

As far as the safety of biosolids, the National Academy of Sciences has reviewed current practices, public health concerns, and regulatory standards and has concluded that "the use of these materials, in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production, and to the environment."

Biosolids that are to be applied to the land meet strict Environmental Protection Agency regulation and quality standards. These standards are based on EPA's rigorous review of decades of long-term scientific research.

The organic nitrogen and phosphorous found in biosolids are used very efficiently by crops, because these plant nutrients are released slowly throughout the growing season. This enables the crops to absorb the nutrients as the crop grows and lessens the likelihood of groundwater pollution by nitrogen and phosphorus.

It is known that metals and other constituents in biosolids can negatively impact environmental health and safety. This is regulated by the EPA. Risk assessment is based on the scenario of someone eating the biosolids.

Another concern is smell.

In Michigan, biosolids are applied to cropland using primarily a liquid subsurface injection. Other application methods include semi-solid surface spreading and incorporation, and liquid and semi-solid surface application.

Biosolids may have their own distinctive odor depending on the type of treatment it has been through. Many of the odor-causing bacteria in biosolids have been destroyed in the stabilization process. Some biosolids may have only a slight musty, ammonia odor. Others have a stronger odor that may be offensive to some people.

"The odor isn't any different than the manure smell which you smell all the time," Zamani said. "People have just gotten used to it or have come to accept it." Most odors are caused by compounds that contain sulfur and ammonia, which are both plant nutrients. For more information on biosolids and their availability, Zamani can be reached at (517) 335-6110.