



Advancing *Biosolids*  
Environmental Management  
Systems in Local **Communities**

NACWA WEF EPA

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**Week of November 16, 2009 - No. 647**



**To: NBP Web Site Registrants and Visitors**

**From: Sam Hadeed, NBP Office: 703-684-2418 or  
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**Subject: Weekly Biosolids Update from NBP**

WEF Water Blog – Biosolids Recycling Works for DC Water and Sewer Authority; City of Lawrence, KS Successfully Completes NBP EMS Reverification Audit; San Francisco Area Utility Turns Food Waste into Green Energy; Addressing an Environmental ‘Ick’ Factor; in Canada; Recycling is the Future in Middle East; Sedona City, AZ Council Delves into Sludge Alternatives; This Week in Washington from WEF.

From **WEF Headquarters**. **WEF Water Blog – Biosolids Recycling Works for DC Water and Sewer Authority**. A water blog prepared by Chris Peot, Biosolids Manager, District of Columbia Water & Sewer Authority was posted on the WEF web page on November 16 and will appear for two weeks. The water blog topic - [“Biosolids Recycling Works for Us”](#) - describes DC WASA’s land application program and discusses some of the misperceptions about the practice and inaccuracies that have appeared in the media. DC WASA has been an NBPEMS certified agency since September 2004.

From **Sam Hadeed, [shadeed@wef.org](mailto:shadeed@wef.org)**. **City of Lawrence, KS Successfully Completes NBP EMS Reverification Audit**. The City of Lawrence, KS Department of Utilities completed its reverification audit of its NBP environmental management system (EMS) certification on October 31, 2009 by KEMA-Registered Quality, Inc. The Lawrence, KS biosolids EMS has been certified since October 2005 and achieved platinum level status since 2006. Undergoing regular reverification audit are part of an agency’s requirement to maintain NBP certification. Some of the strengths noted in this [2009 interim audit](#) included:

### EMS STRENGTHS

- There is a clear commitment from management at all levels to develop an effective management system for continually improving biosolids management, quality, environmental, health and safety performance throughout the Department.
- Use of a robust MSO process continues to increase and is leading to beneficial system improvements.
- Nutriject is providing capable assistance in continually improving biosolids practices.

## OUTCOMES

The City of Lawrence biosolids program is improving through the use of their management system. The following improvement outcomes within the past two years were confirmed.

### Interested Party Relations

- An active fats, oil and grease (FOG) program is in place including public education. Results have significantly reduced line maintenance (74 work orders in 2006, 10 work orders in 2009).
- Class A biosolids are beginning to be used at local parks and recreation sites with positive feedback from City officials.

### Biosolids Quality Practices

- Use of a management system approach, including employee participation and MSOs has improved safety at the plant.
- Work efficiency has improved by 100% or more in several areas, driven by driving down responsibilities and sharing resources.
- Composting methods for Class A biosolids are being introduced, resulting in improved productivity.

### Environmental Performance

- Reduced use of hypochlorite has lowered trihalomethane (THM) levels in water.

### Regulatory Compliance

- Reduced use of ammonia has lowered free ammonia from 0.4ppm (2007) to 0.1 ppm average.

### [#Top of the Document](#)

From **USA Today, 11-9-09. *San Francisco Area Utility Turns Food Waste into Green Energy.***  
OAKLAND — While many see restaurant leftovers as trash, a San Francisco-area utility sees them as a source of energy. The East Bay Municipal Utility District, which provides water and wastewater treatment in the eastern San Francisco Bay Area, is turning food scraps from 2,300 Bay Area restaurants and grocery stores into electricity to help it power its wastewater facility. Every day, one or two 20-ton trucks pull up to the plant here and dump food waste into giant tanks. At the end of the process, the food scraps create methane gas. It helps power the plant's electricity-making generators.

The project is the first of its kind in the nation for a wastewater treatment plant, the Environmental Protection Agency says, and it's at the forefront of an almost untapped renewable energy resource. While a handful of utilities, companies and universities nationwide have attempted to recycle food scraps into energy, less than 3% of those scraps are diverted from landfills, the EPA says. Most often, food waste that doesn't go to landfills is composted for use in fertilizers. Every year, more than 30 million tons of food waste goes to landfills, the EPA says, accounting for about 20% of landfill waste.

The San Francisco-area utility district powers its wastewater plant, which serves about 650,000 Bay Area homes, by capturing methane gas by processing many kinds of waste, starting with wastewater. To take up excess capacity, the utility started collecting other waste in 2001, including that from wineries, dairies and chicken processors, says David Williams, director of wastewater for the utility.

Food scraps from restaurants and hotels were added in 2004. The plant now processes 100 to 200 tons of food scraps a week. The goal is to do 100 to 200 tons a day – enough to power the equivalent of 1,300 to 2,600 homes – and rapid expansion is now expected. By the end of next year, the district expects to create so much power from non-traditional waste that it'll be able to sell excess power to Pacific Gas & Electric, a local electricity supplier, Williams says. If 50% of the USA's food waste went through a similar process as the one here, there'd be enough power for 2.5 million homes a year, the EPA says.

### **Dinner plates to electricity**

The food-scrap project "hasn't been a cakewalk," Williams says. Waste haulers, who pay the utility district to take the waste, collect the food scraps from restaurants and hotels as part of their normal garbage pickups. Some of the haulers weed out big items, such as cardboard boxes used for produce. Other haulers have restaurants and grocers do more of the separation so that the waste is cleaner. Upon arrival via truck at the plant, the food scraps look like mounds of wet dirt. They're dumped into 20,000-gallon underground tanks. There, grinders turn the scraps into a mud-like substance. Bigger items, such as rocks and utensils, fall out.

On a recent morning, it took just minutes for a 20-ton truck to unload. Pressure pulls most of the odors into the tank. Still, the smell of cheese was present. "That all comes from last night's dinner plates," Williams said as he watched. From the underground tanks, the waste is run through sieves that reject plastics, bottle caps and other small items. Then, the waste goes into anaerobic "digesters," 2 million-gallon tanks filled with bacteria.

The bacteria break down the solids in the waste to 10% of their original volume. Methane gas is released in the process, which takes several weeks. Instead of being released into the atmosphere as a greenhouse gas – as can happen at landfills – the gas is sent via overhead pipe to the plant's power room. The gas is consumed to make electricity; the leftover waste is composted for use as fertilizer.

"It's a very green program and pretty cutting edge," says Paul Morsen, executive director of the Central Contra Costa Solid Waste Authority. The district, formed to handle garbage contracts for six Bay Area communities, works with a garbage hauler to send food scraps to the East Bay utility for recycling. Forty-five restaurants in its service area signed up for the program, Morsen says. That'll double by early next year. Response has been favorable to the year-old program, Morsen says. Some restaurants have had to wait to be added. "We ask restaurants to do their part to clean the environment," he says. Since the program is still in its pilot phase, Morsen says it's unclear whether costs for participating restaurants will go up, down or stay the same. If they go up, "We have confidence it won't be a huge increase," he says.

### **Educating busy busboys**

The biggest challenge for the East Bay utility district is keeping plastics and other contaminants out of the food scraps and preventing them from clogging pipes should they

get to the plant. To help with that, haulers educate restaurant and grocery store workers on the need to separate food scraps from other trash. "You're trying to educate a busy busboy who may only be on the job a couple of months and perhaps making minimum wage. It's difficult," Williams says.

Waste separation is about to become more the norm, at least in San Francisco. A city ordinance that took effect Oct. 21 requires almost every residence and business to have three color-coded bins for waste: blue for recycling, green for compost and black for trash. The composting bins are supplied to residents at no extra cost. On a voluntary basis, city businesses and residents have been able to have curbside collection for food scraps in a separate bin since 2001. By separating food scraps – most of which are then composted – the businesses may end up paying less than if they'd sent the scraps to a landfill, says Robert Reed, a spokesman for Recology, San Francisco's waste collection company.

Even if the East Bay utility district fulfills its plans to process 200 tons of food waste a day, it'll tap less than 10% of the available supply, Williams says. If it got it all – 1,800 tons generated by commercial enterprises daily in the region – it could provide enough power for more than 25,000 homes. "That's a small city," Williams says.

**Editor's Note [SJH]:** East Bay MUD is an NBP EMS certified agency.

[#Top of the Document](#)

From ***Chronicle-Herald, Halifax, Nova Scotia, Canada, 11-16-09. Addressing an Environmental 'Ick' Factor in Canada.*** *Use of biosolids on local farms is a controversial issue.* Growing concern over the use of biosolids on farmland has more to do with the "ick factor" than science, says a provincial Environment Department official. Michael Langman, a soil scientist and senior policy adviser with the department, said in a recent interview that there is a perception among the public that "something must be wrong because of where the material comes from." "But we're trying to address that ick factor and the concerns," Mr. Langman said.

Some farmers in the province are using biosolids as fertilizer on their farmland because it's much cheaper than conventional fertilizers. The material comes from the N-Viro facility near Halifax. It treats human, commercial and industrial sewage sludge to destroy bacteria. The Nova Scotia Environmental Network has asked for a ban on its use on farm and public lands in the province, arguing that biosolids contain contaminants that are not destroyed in the treatment process. It also has requested a plebiscite on the issue. It says that N-Viro hopes to see as much as 34,000 tonnes of the material spread on 4,800 hectares of land in Nova Scotia each year.

Kings County council recently passed a motion seeking a ban on its use in the county until more study is done. Warden Fred Whalen has written Environment Minister Sterling Belliveau asking for a temporary moratorium but hasn't yet received a reply. The province placed a temporary moratorium on its use in 2003 and held public meetings, workshops and discussions with scientists, which resulted in the lifting of the ban.

Mr. Langman said he believes that the province, under newly revised guidelines governing the use of biosolids, has some of the most stringent controls and regulations in the world. Environmentalists say the guidelines don't mean much because they are unenforceable.

"The standards we are setting for metals and pathogens in biosolids are exactly the same as the national standards set for compost," Mr. Langman said. Biosolids are used on farmland around the world and in every province in Canada, he said. "This isn't new. Biosolids have been land applied for years all over North America for 50 years or more." He said farmers are using the material on a regular basis in Ontario and have not experienced any environmental or health problems. "It's the perception about the marketability of local food. That really is the issue," said Mr. Langman, who is a co-chairman of the Biosolids Task Group, a national committee under the Canadian Council of Ministers of the Environment.

Part of the group's work is to look at possible contaminants and pathogens in biosolids. Mr. Langman said the sewage treatment process doesn't remove all heavy metals, but the concentrations are so low as to be negligible to human health. He said some food grown internationally and imported into Canada is grown using biosolids, and "some of those products don't have anywhere near the treatment standards that we use in Canada." Mr. Langman said there has been enough research on the subject that he feels comfortable with the province's decision to allow land application of the material.

But some people and groups remain concerned about its use. Marilyn Cameron, chairwoman of the environmental network's biosolids and waste-water caucus, said in a recent interview that there are potentially thousands of unknown contaminants in treated sewage sludge that could be harmful to human health. They include flame retardant, chlorine, pharmaceuticals and even radioactive chemicals. She said there could be up to 90,000 potential pollutants in sewage sludge. "And what we know about them is the tiniest tip of the iceberg."

#### [#Top of the Document](#)

From ***ArabianBusiness.com - Dubai,Umm al Qaiwain,United Arab Emirates, 11-16-09. Recycling is the Future in Middle East. The Middle East's water supply depends heavily on the issue of wastewater reuse.*** At a break-out session held during Frost & Sullivan's recent Growth, Innovation and Leadership (GIL) Conference held in Abu Dhabi in September, senior figures from the region's water industry were asked to list the most important issues that were currently prevalent in the wastewater sector. The experts – from industry giants such as Metito, Concorde-Corodex Group and Aquatech – were split into four groups, with each group suggesting three key themes of interest to the sector. Naturally, a few of these topics came up more than once. At the top of list came the need to improve the reuse of wastewater, with some companies campaigning for wider use of treated sewage effluent (TSE) and a call for more effort on the sludge-to-energy front. Also mentioned was the need for better strategy planning for larger developments, and the upgrade of existing plant.

It comes as no surprise that the issue of private financing was also brought up, especially in the tough operating environment that the industry is currently facing. Lastly, there was also a call to improve the GCC's strategic storage of water, which in most cases is just two days, in comparison to, say, 21 days in South Africa. "On the whole, the Middle East is expected to spend about US \$100-120 billion over the next 10 years on water and wastewater investments to counter the severity of water scarcity," says John Raspin, partner and director at Frost & Sullivan's Energy & Environment, Europe, Middle East & Africa practice.

“But traditionally, due to societal perceptions, wastewater reuse has not been embraced well in the GCC countries,” Raspin adds. “In recent years, increased water demand for landscaping, district cooling, construction activities and concerns about environmental degradation have made a strong case in favour of wastewater reuse. However, the amount to which the potential of this economically-attractive option is exploited remains to be seen.”

Raspin’s view is one that was also espoused by the keynote speaker at October’s Saudi Water & Power Forum, who told a host of senior figures in Jeddah that the region needed to reuse its water more efficiently. “I come from London, where all the water we drink has passed through numerous human bodies in every town along the River Thames before it reaches my tap,” said Fred Pearce, a scientific journalist and author. “At each town, it is abstracted, drunk, excreted, collected, cleaned up and put back into the river - it is safe, I assure you.”

So how can this revolution in the recycling of wastewater realistically come about? John Ord, MWH Global’s principal process engineer, based in the UK, says that the way that contracts are awarded to companies should be revamped to better understand the needs of water reuse. “The procurement route typically adopted in the region follows the design and build path for desalination, wastewater treatment and re-use projects, including advanced re-use,” Ord explains. “To optimise the water/wastewater balance at both the design and operational stages, you could defer the installation of the advanced re-use section of a re-use installation until after the wastewater treatment plant becomes operational.”

Ord says that the reuse demands for both irrigation and advance re-use quality water would be potentially better comprehended as a result. “This, in combination with the ability to trial Reverse Osmosis systems on waste streams, would provide the opportunity to both tailor treatment flows and qualities to actual demands, while also allowing the process to be configured to treat the specific wastewater generated,” he adds.

However, a key factor in the success of these suggestions would undoubtedly be cost. It is crucial that any additional elements in the contract-award process do not lead to extra investment. The same is true for government regulation. “In order to encourage treated wastewater recycling, appropriate, justified and necessary regulation is required that does not introduce significant and weighty investment for compliance monitoring,” explains Magdalena Hijaz, process engineer for local engineering firm Eagle Electromechanical LLC. “Consultants and contractors need to be able to share their experiences of appropriate technological solutions with local authorities for a better understanding of what can be achieved to safeguard the environment and, crucially, public health.”

The sludge-to-energy issue is certainly one that is of interest to regional executives. As MWH looks to find ways of recycling sludge from its plants – such as the planned reuse of sludge as fertiliser at its Jebel Ali plant – it has been keen to access the opinions of its competitors, and recently hosted a biosolids round table discussion to explore the options for sludge treatment and reuse in the region.

[#Top of the Document](#)

From **Sedona.biz, AZ, 11-12-09. Sedona City, AZ Council Delves into Sludge Alternatives.** SEDONA, AZ - At the November 10, 2009 City Council meeting, Charles

Mosley, Director of Public works outlined various options for replacing the biosolids drying beds at the city's Wastewater Reclamation Plant. Biosolids waste generated from the plant is currently aerobically digested and the water is removed either in a centrifuge or on an air drying bed. The remaining sludge is then transported to the Gray Wolf landfill owned by Waste Management in Dewey, AZ. The plant is currently equipped with 10 drying beds, each 90 feet in length, 40 feet wide, and 2 feet deep. The beds typically last 10 years.

The existing air drying beds are in need of repair and nearing their treatment capacity. The most common concern with air drying beds is cracking and possible seepage of waste into the aquifer. The city contracted with Carollo Engineers, an environmental engineering company that specializes in the planning, design, and construction of wastewater facilities to present alternative biosolids drying methods, their associated costs, and pros and cons. Carollo presented the following alternatives:

**Alternative 1B:** Demolish the existing beds and replace them with new drying beds with slightly greater dimensions (94 feet in length, 42 feet wide, and 5 feet deep) and employ a decant system for separating lighter floating liquids from heavier liquids to enhance drying performance. Alternative 1B was developed to meet new requirements by the Arizona Department of Environmental Quality.

**Alternative 2:** The same as Alternative 1B except that the beds would be retrofitted to accommodate a thermo drying system in the future that would include enclosing the beds in a greenhouse type structure where 95% of the energy required for drying the sludge is provided by solar energy. A THERMO-SYSTEM reduces energy costs, reduces sludge volume and related transportation costs, and creates Class A biosolids that could possibly be sold (the city's current biosolids are Class B).

The THERMO-SYSTEM would last longer than the air drying beds (15 - 20 years), and cost \$3.4 million. Alternative 1B would cost \$1.3 million for 10 years (\$2.6 million for 20 years); however Alternative 2 has the additional benefits described above. Carollo also said that ADEQ might impose more stringent environmental standards in the future that could potentially prevent the use of traditional air drying beds.

The council voted unanimously to choose Alternative 1B citing the lower upfront cost as the primary reason.

[#Top of the Document](#)

From **Sam Hadeed**, [shadeed@wef.org](mailto:shadeed@wef.org). ***This Week in Washington from WEF.*** ***This Week in Washington (TWIW)*** is a free weekly e-newsletter of the Water Environment Federation's Government Affairs Department that is published on Fridays. It provides updates on the latest legislative and regulatory developments affecting the water and wastewater communities. View the [on-line edition](#). You can also bookmark this link for future reference. To receive via email, send your request to the **Editor – Sam Hadeed** at [shadeed@wef.org](mailto:shadeed@wef.org).

[#Top of the Document](#)