

OPEN CHANNEL NEWS

MCES Industrial Waste & Pollution Prevention

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Metropolitan Council Environmental Services

Metropolitan Council Environmental Services (MCES) is one of three divisions of the Metropolitan Council, a regional public agency working for the seven-county metropolitan area. The mission of MCES is to provide wastewater services that protect the public health and environment while supporting regional growth.

Services provided by MCES ensure that:

- (1) sufficient sewer capacity exists to serve planned development, and sufficient capital investments are made to preserve the region's water quality;
- (2) wastewater collection and treatment services are provided in a cost- and quality-competitive manner for 103 communities and more than 800 industrial clients; and
- (3) local plans provide for adequate water supply and nonpoint source pollution prevention in the region.

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Water Resources Management Policy Plan

The Twin Cities metropolitan area is blessed with abundant water resources. The region offers its residents a reliable supply of high-quality water from within its seven-county border. Nonetheless, the region cannot afford to be complacent or careless about its water resources. Regional water demand in 2004 totaled more than 1.3 billion gallons per day. That will only grow along with the region's economy and population. The Metropolitan Council projects that the region will grow by nearly one million people and 500,000 households by 2030. Wise stewardship of our resources is required.

The Council's commitment to environmental stewardship is translated into the policies and implementation strategies contained in its updated **Water Resources Management Policy Plan**. The updated plan lays out when and how regional sewer service will be provided to the planning areas identified in the **2030 Regional Development Framework**. In addition, the new plan contains policies and implementation strategies pertinent to water supply, surface water management, and other wastewater issues. The main changes from the previous policy include:

- A coordinated approach to water supply planning that provides a sustainable, reliable, and secure supply of high-quality water in support of economic growth.
- An approach to surface water management that ties together the control of pollution from point and nonpoint sources.
- Considerations for acquiring and operating local wastewater treatment plants in rural growth centers upon request where enough growth is projected to make it economically feasible for the Council to become involved.
- Strategies to minimize excessive inflow and infiltration (I/I) burdens on the metropolitan sewer system.

The updated Water Resources Management Policy Plan is expected to go before the full Council for adoption in May or June of this year. The plan can be viewed at:

<http://www.metrocouncil.org/planning/environment/WRMPP/WRMPP2005.htm>

Important Dates:

June 9, 2005 – Industrial Waste Customer Forum.

July 1, 2005 – Hauled commercial waste disposal restriction takes effect.

July 15, 2005 - All Liquid Waste Hauler reports due at MCES offices.

July 30, 2005 - All Regular and Special Discharge quarterly and semi-annual reports due at MCES offices.

Hastings Plant Phosphorus Management Plan

A Phosphorus Management Plan was completed for the Hastings Wastewater Treatment Plant in February of this year. By implementing this plan, MCES has reduced the amount of phosphorus discharged from the plant into its receiving waters.

Phosphorus is a necessary nutrient for plant and animal growth. However, excess amounts of phosphorus in surface waters can lead to algal blooms, depleted oxygen levels and adverse effects on water quality. In an effort to limit the amount of phosphorus entering Minnesota surface waters, the Metropolitan Council developed a phosphorus reduction strategy in June 1997, which calls for cost-effective phosphorus reductions in its wastewater discharges. Specifically, as the treatment plant hydraulic capacities are expanded, phosphorus removal will be designed into the expansions, with the intent that all MCES plants will be operating with phosphorus removal by 2015.

Because the Hastings Plant will not be expanding operations at its current location and therefore will not be upgrading for phosphorus removal, a Phosphorus Management Plan was required in its most recent operating permit. The Phosphorus Management Plan calls for characterization of plant influent and effluent phosphorus loadings, identification of sources of high phosphorus loadings and plans for reducing the loadings, evaluation of phosphorus removal options through wastewater treatment, and discussion of future facility plans and impact on receiving waters.

Phosphorus loadings were characterized by compiling four years of plant influent and effluent data. Using this data, Industrial Waste and Pollution Prevention staff investigated potential sources of phosphorus coming into the plant, and Treatment Services staff evaluated facility operations to determine the potential for phosphorus removal through existing wastewater treatment methods.

IWPP Staff Investigate Phosphorus Sources

Permitted industrial users served by the plant, along with other area businesses, were surveyed and monitored to determine phosphorus contributions. Of the six permitted industrial users and almost 60 businesses reviewed, IWPP found one permitted industry that contributes about 5 percent of the phosphorus loading to the treatment plant. IWPP staff will work with this industry to investigate methods, such as chemical substitution, to reduce its phosphorus contributions. All other permitted industries and businesses were found to be minimal contributors.

Treatment Services Staff Evaluate Phosphorus Removal

Both a chemical and a biological method for removing phosphorus were investigated. The chemical method



Inside view of the Bio-P anaerobic tank

involves mixing alum with the wastewater and allowing the phosphorus to precipitate out. The precipitate is then removed with the waste-activated sludge. The volume of sludge produced using this method is increased by about 30 percent. This method is effective, however, is costly. It is estimated that employing this method would increase operating costs by about \$100,000 annually. This estimate includes chemical and sludge handling costs, but does not include the capital cost for a chemical feed system.

Also considered was a biological phosphorus (Bio-P) removal method, which uses an anaerobic/aerobic sequence in the activated sludge process. This sequence results in a large population of phosphorus-removing microorganisms and an increased phosphorus uptake. The phosphorus accumulates in the biomass and is removed in the form of waste activated sludge. While the existing plant was not designed for Bio-P, there is, however, some capability for incorporating the anaerobic stage needed for Bio-P. This is because the plant is currently operating at 70 percent of its hydraulic capacity. A seven-month experiment with the Bio-P process showed a 20 percent phosphorus reduction. Based on these results, the plant will continue to operate in the Bio-P mode as long as its flow remains at 75 percent or less of design capacity.

Future Facility Plans

By minimizing phosphorus loadings at the source and operating the Bio-P method for phosphorus removal, the plant is able to follow its Phosphorus Management Plan and reduce its phosphorus discharge to the fullest practicable extent. The Hastings plant is located on the eastern edge of downtown Hastings. MCES plans to replace this plant and build a new and slightly larger facility about two miles away on the city's eastern border. The new plant will be designed for Bio-P and construction is expected to start within the next five years. Construction of the new facility will ensure MCES meets its phosphorus strategy goals to have all plants operating with phosphorus removal by 2015.

More Dental Offices are Installing Amalgam Separators

Implementation continues for the joint MCES/Minnesota Dental Association "Voluntary Dental Office Amalgam Recovery Program." This program promotes the installation of amalgam separators and the proper management of dental wastes. Amalgam separators remove 99 percent of the amalgam present in wastewater from dental office vacuum systems. These efforts will reduce the amount of mercury (from amalgam) that would otherwise be discharged into the sanitary sewer, and thus, will reduce environmental mercury releases. So far, 72 percent of the general practice dental offices in MCES's service area have installed a separator, and an additional 20 percent have committed to installing one. The Minnesota Dental Association (MDA) is also promoting the program throughout the rest of Minnesota, with a similar success rate. For more information on the program, go to MDA's Web site at www.mndental.org click on "Dental Professionals" then "Amalgam Recovery Program."

Commercial Waste Disposal Restriction

Effective July 1, 2005, disposal of commercial waste loads by permitted liquid waste haulers, with the exception of portable toilet waste, is restricted to MCES's designated disposal sites located at 3rd and Commercial in St. Paul and the Blue Lake Plant in Shakopee. The Seneca Plant in Eagan is also open on a temporary basis for loads not currently accepted at the Empire Plant due to construction. This restriction comes after MCES spent more than \$900,000 on interceptor cleaning projects downstream of disposal sites. By limiting commercial waste disposal to these sites, which have better hydraulics for flushing through the high solids content typical of commercial waste, future problems (excess sedimentation, corrosion, odors) and expensive maintenance can be avoided. This change is in alignment with the recommendations of the MCES System-Wide Septage Management Study adopted in January of this year.

Load Charge Rates Increased in 2005

As of Jan. 1, 2005 a new rate structure went into effect for all hauled liquid waste loads. The new load charge rates include full debt service and treatment cost components, which ensures that MCES recovers all costs associated with acceptance and treatment of hauled liquid wastes. For a listing of all 2005 rates and fees, visit www.metrocouncil.org/environment/IndustrialWaste/news_rate_s.htm

Metro Area Hospitals Recycle Reagents

Information provided by Allina Medical Laboratories

In mid-2004, Allina Medical Laboratories implemented a solvent recycling process at several large Metro Area hospitals - Abbott Northwestern, Unity, Mercy, and United Hospitals. These hospitals use significant volumes of alcohols, xylene, and formalin every day in laboratory operations. With the ever-tightening regulatory agency mandates, the rising costs of handling hazardous chemicals, and the tight budget constraints of healthcare facilities, recycling just made sense.

Two recycling units (B&R Instruments) were installed at each site. One unit recycles formalin and the other, which uses a spinning band fractional distillation column technique, recycles both alcohol and xylene solvents. Installation of the units posed minimal remodeling or technical concerns, and operation requires minimal staff training and operational time. The units have pre-programmed systems installed and are fully automatic. It takes only 10 minutes to load and start the program. The microprocessor controller watches over the unit, constantly checking all safety parameters and automatically stopping it at the end of the program. The recycled solvents are as pure as the new solvent with an 80 percent recovery of alcohols and formalin and a 95 percent recovery of xylenes. Small amounts of residue left from the process are collected and handled as hazardous waste, a fraction of the volume prior to recycling.

Allina Medical Laboratories has been highly successful utilizing this recycling technology. In the first six weeks of operations, Abbott Northwestern Hospital Laboratory alone recovered more than \$6,000 worth of reagents. With the units averaging around \$16,000 each for a five-gallon capacity, these units will pay for themselves in short order.



Solvent recycling units installed and in operation at Abbott Northwestern Hospital Laboratory.

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Industrial Waste Customer Forum – June 9, 2005

The next Industrial Waste Customer Forum will be held on **Thursday, June 9, 2005**, at 8 a.m. in the MCES meeting room. The meeting room is located at the Metro 94 Business Center, 455 Etna St., Suite 32, St. Paul. All customers holding MCES industrial discharge permits are invited. Please RSVP before June 3 by calling 651-602-4711 and leaving a message.

Industrial Waste and Pollution Prevention (IWPP) Section staff, along with staff from MCES Finance and other areas, will present topics regarding MCES budget and rates, more information on the Water Resources Management Policy Plan, and other topics of interest to industrial customers. Staff will be available to answer questions and receive comments from attendees.

The customer forum is a great way for MCES to communicate with industrial users and make sure that we hear your ideas and concerns on issues that may affect your firm. We hope to see you at the forum!