OPEN CHANNEL NEWS

MCES Industrial Waste & Pollution Prevention

Issue #38/November 2011

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 106 communities and nearly 800 industrial clients; and

(3) local plans provide for adequate water supply and nonpoint source pollution prevention in the region.

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MCES Local Limits Evaluation

In September of this year, the MCES Industrial Waste & Pollution Prevention Section completed its evaluation of the local limits for discharge to the sanitary sewer and submitted it to the Minnesota Pollution Control Agency (MPCA). The study is currently under review by the MPCA.

The recommendation of this study was to not change any of the local limits. The study, however, did indicate that two parameters, phosphorus and selenium, warrant special attention and additional actions by MCES. MCES actively treats for phosphorus at most of its treatment plants, using either biological or chemical treatment technologies. No violations of NPDES permits have been indicated for phosphorus at any of the plants. Furthermore, a large portion of the phosphorus loading of the treatment plants comes from domestic sources, which are not controlled by Industrial Discharge Permits. Data indicates, however, that slug loadings of phosphorus do occur at the plants. These slug loadings create a challenge for the treatment systems at an additional cost. With lower NPDES permit limits being considered for the treatment plants, MCES may need to consider some type of future control mechanism for phosphorus, which may include a local limit and/or a phosphorus surcharge.

MCES continues to work with a single industrial user to address the selenium issues at the Seneca Plant. The 2011 study confirmed the results of the 2006 study, which indicated that a local limit should be set for selenium based on the water quality standards of the Minnesota River downstream of the Seneca Plant.

Continued inside…

Important Dates:

Jan. 15, 2012 – Liquid Waste Hauler quarterly reports due at MCES offices for all LWH permittees.
Jan. 30, 2012 – All Regular and Special Discharge quarterly and semi-annual and annual reports due at MCES Offices.
Mail Reports to: MCES, IWPP Section, 390 North Robert Street, St. Paul, MN 55101-1805.

MCES Local Limits Evaluation

Continued…

Since such a limit would affect only one user, MCES has placed a limit in that permit only instead of promulgating a local limit for the entire system. The MPCA has concurred with this approach.

MCES is required by its NPDES permits and by the U.S. Environmental Protection Agency (EPA) to conduct this evaluation every five years. The study consists of comparing the limiting factors of each MCES treatment plant's effluent discharge limits, sludge land spreading or incineration limits, process inhibition limits and worker health and safety concerns, with the plant's loadings and removal rates. From these considerations, a Maximum Allowable Headworks Loading (MAHL) is calculated. Known domestic/commercial loadings and a safety factor are subtracted from the MAHL. This leaves an allowable industrial loading, which is then divided by the cumulative flows of the industrial users to determine the local limit.

The metals scans that have been required in all standard Industrial Discharge Permits every three years were used in this study. The next study will be conducted by September 2016. Since we have generally used only three years of industrial user data for these studies, metals scans have not been included in all the 2011 and 2012 permit renewals. These scans may again be required in 2013 if MCES determines the need for the additional data. The 1996 study resulted in lower limits for five of the eight regulated parameters. Subsequent studies in 2001, 2006 and now in 2011 have indicated that the limits established in 1996 are sufficient to protect the wastewater treatment plants and receiving waters.

The MCES local limits are found in the Waste Discharge Rules, Section 401, "Local Pretreatment Standards." Companies that are also subject to EPA Categorical Limits are required to meet the most stringent of the two limits for each parameter.

Meet Ashley Corbeille, 2011 IWPP Summer Intern

Stemming from IWPP Section's experience in the summer of 2010, IWPP had the opportunity to welcome another engineering intern, Ashley Corbeille. Ashley, a native of Wisconsin and a senior environmental engineering student at Michigan Technological University, was unconventional from the start. Whether it was her over-the-phone interview, or finding her summer apartment on craigslist, or arriving in the Cities sight unseen, Ashley hit the pavement running. And literally, as a triathlete, she did just that.

Ashley's primary project was to develop a procedure for the issuance of General Permits for Zero Discharge Categorical Industrial Users, whose processes are covered under U.S. EPA Categorical Pretreatment Regulations, but do not discharge industrial waste to the sanitary sewer. Both MPCA and EPA have recommended that POTWs track and control all categorical industrial users (CIUs) with zero discharge of process wastewater from their categorical operations.

Starting with an initial listing of categorical industrial users (CIUs) surveyed in 2010, Ashley searched various internal and external sources to expand the list of CIUs. Each of these IUs completed a categorical survey, were inspected and then a final determination was made as to whether they would be issued a General Permit – Zero Categorical Discharge. Prior to Ashley's departure, 14 General Permits have been issued to metal molding and casting facilities. Several more are in the process of being issued to other CIUs, such as metal finishers and pharmaceutical manufacturing facilities. Others, such as Despatch Industries, were inspected and found that they had completely eliminated their EPA categorical process, and therefore, issuance of a General Permit was not warranted.

Ashley Corbeille, center, standing with Tim Mahowald, left, and Al Chlan, right, from Despatch Industries, Inc.

During her internship, Ashley learned about our pretreatment program, environmental regulations, and the administration and enforcement of Industrial Discharge Permits. This experience was beneficial to both Ashley and MCES. Ashley was able to gain valuable insight as to how her course work applies to real world situations, and IWPP received help in our General Permits program and other projects.

Ashley Corbeille was one of 48 student interns hired by the Council this summer. The interns worked in many areas of the Council: research, transit facilities planning, engineering and construction, human resources, public affairs and more. To find out about careers at the Council visit http://agency.governmentjobs.com/metrocouncil/default.cfm

Recycled Water Cools Welds at Johnson Screens

Article provided by MnTAP

Johnson Screens, a fabricator of metal filters and screens, continually investigates ways to improve the environmental impact of the facility in New Brighton, Minnesota. In 2009, the company hosted a MnTAP (Minnesota Technical Assistance Program) intern who worked with staff members to explore opportunities to improve processes and upgrade to more efficient equipment.

The MnTAP intern focused primarily on water and electricity use. Prior to hosting the intern, more than 10 million gallons of water were consumed annually for manufacturing processes such as cleaning parts and cooling both parts and machines. The water use presented opportunities for improvement through reuse and reduction. Significant amounts of electricity were also used to support welding operations, air conditioning, lighting, various motors, and compressed air.

Water Use Recommendations

Approximately 2.5 million gallons of tap or recycled water were used in the screen fabrication machines (SFMs) to directly cool the welds and the welding equipment. The water recycling system collected used water from the SFMs in a trough and diverted it to a sump near the water tank. A sump pump, operated by an automatic float, pumped that water into a three-part collection tank. Debris that was heavier than water was collected at the bottom of the first tank; water then flowed into the second tank, where oils were skimmed off. Water from the third tank was pumped back to the SFMs and as the tank levels dropped, fresh water was added. Despite having a water recycling system in place, not all SFMs were connected to or using water from the system.

The MnTAP intern explored non-aqueous cooling alternatives for the SFMs, such as carbon dioxide snow, but found that water was the most cost effective method for cooling the welds. Therefore, the intern evaluated improvements and replacement opportunities for the water recycling system. Changes that incorporated the current pipes and water system were the most economical way to reduce the amount of water used. The MnTAP intern recommended integrating all SFMs into the current recycling system and installing a centrifugal separator and belt skimmer to the tanks. The centrifugal separator creates a vortex in the first tank that forces debris out of the water and into a chamber that gets manually dumped daily. The belt skimmer provides a more efficient separation of oil from the water in the second tank. The improved water recycling system conserves up to 2.4 million gallons of water per year, providing Johnson Screens with $9,700 in annual cost savings. To further improve the water recycling process, Johnson Screens is currently investigating a CoMag water filtration system installation, which is an enhanced water polishing technology.

Energy Efficiency Recommendations

Through a compressed air audit, the intern determined that the air dryer for the backup air compressor ran almost continuously for about 8,000 hours per year, while its compressor only ran when the pressure of the system dropped to 90 psi or lower, which was about 550 hours per year on average. To conserve energy, a relay switch was installed on the compressed air dryer, so that it only runs when the backup air compressor is on. This improvement conserves 26,000 kWh and saves $1,400 per year. The intern also found and fixed compressed air leaks, saving over 312,000 kWh and $16,000 annually.

Additional Recommendations

In addition to improvements to the cooling water recycling and the compressed air dryer processes, Johnson Screens implemented other recommendations. For example, the office steam humidifier was replaced with a dry fog humidifier, saving $7,500 per year, and the wash room ventilator run time was reduced, saving 21,900 kWh and $1,200. Overall, the company implemented recommendations to reduce 150 pounds of waste, 2.4 million gallons of water, over 360,000 kWh, and 3,000 therms per year, with a total annual savings of $36,600.

Recently, Johnson Screens was awarded the Manufacturers' Alliance 2010 Manufacturer of the Year Award for sharing information and experiences that can help strengthen the local manufacturing community.

Apply Today for 2012 MnTAP Intern!

Applications will be accepted through February for the 2012 intern program. If you are interested in hosting a MnTAP intern at your facility contact Krysta Larson, intern program coordinator, at 612-624-4697 or kjlarson@umn.edu.

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MCES,
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390 North Robert Street
St. Paul, MN 55101-1805

Leo H. Hermes
Industrial Waste &
Pollution Prevention Section
Manager

For further information on
Open Channel News
contact:
Maggie Lundell / 651-602-4769

For general information on
the Industrial Waste &
Pollution Prevention Section contact:
Jane Trosdahl / 651-602-4704

2012 Rates and Fees

Rates and fees affecting industrial users for 2012 are as follows:

Strength Charge rates for wastewater generated within the Council's region and discharged on site will be $0.16 per excess pound of total suspended solids (TSS) and $0.08 per excess pound of chemical oxygen demand (COD).

Full-cost recovery rates for treatment of industrial wastewater hauled to approved MCES disposal sites will be $0.330 per excess pound of TSS and $0.165 per excess pound of COD. There is an additional $15.00 per 1,000 gallon service fee for out-of-region loads. This service fee amount has increased for 2012.

Standard load charges for liquid waste haulers are $49.97 per 1,000 gallons. Holding tank wastes are charged $6.78 per 1,000 gallons. The Portable Toilet Waste rate is $63.73 per 1,000 gallons. Collar county domestic waste load charges are $64.97 per 1,000 gallons.

The Sewer Availability Charge (SAC), which is paid to the local community, is $2,365 per unit. The associated Temporary Capacity Charge (formerly known as Add-on Service Charge) rate is $1.18 per 1,000 gallons. The Temporary Capacity Charge is paid directly to MCES for temporary use of Metropolitan Disposal System (MDS) capacity.

For all permittees, permit fees range from $675 to $6,350, depending on permit status. General permit fees for special user groups range from $100 to $500.

For more information regarding rates and fees, please contact your MCES engineer or visit: www.metrocouncil.org/environment/IndustrialWaste/news_rates.htm.