

# CleanConnections

## JEA's Treatability Lab

By Dan Parnell and Nupa Maharaj

JEA operates a treatability testing lab to monitor industrial wastewater streams coming in to our water reclamation facilities (WRF). The JEA Industrial Pretreatment Program has tested most industrial waste streams coming into the Buckman WRF and has an ongoing program to continuously evaluate the effect of these streams on the biological treatment processes.

The main instrument used for these tests is an eight place aerobic respirometer. Each of the eight respirometer bottles represents a batch bench scale model of the treatment process, so eight different mixtures can be run at a time. A constant volume of microbes (activated sludge) is combined with industrial influent, a background food source, and nutrients in one or more of the 500 mL bottles. As the microbes in the activated sludge respire they pull in a measured amount of atmospheric oxygen. If there is a toxic or inhibitory effect the microbes will respire at a slower rate and use less oxygen than a control. Similarly, if a waste is readily biodegradable, the microbes will respire at a higher rate and/or use more oxygen than a control.

Thus, by measuring the respiration rate of the microbes combined with industrial influent and comparing that to a control sample of microbes with a reference waste, JEA can evaluate the overall biodegradability of specific wastes, as well as the potential for toxic effects or passthrough at the WRF. Similarly, by adding ammonia to some of the test bottles and to a reference bottle, it is easy to discern the effect of an industrial waste on the Buckman WRFs ability to nitrify (convert ammonia to nitrate), which is another important function of the wastewater treatment plant.

The respirometer is a great tool for evaluating the effects of individual wastestreams on the treatment process because it directly measures the effect on the treatment plants' microbes. If your facility is contemplating changes that could significantly alter your wastestream discharge, or if you have batch discharges that

may be of concern, JEA can assist in evaluating the potential effects of those discharges. In several instances where problem wastestreams were identified in the last year, the JEA Industrial Pretreatment Program worked with the industrial user to find cost effective alternative production processes that effectively mitigated negative effects on our treatment plant, saving JEA and the industry from incurring violations of discharge standards.

If you are interested in learning more about how the aerobic respirometer can be used or seeing some sample data output, we encourage you to contact Dan Parnell at 665-4796.

## Industrial Pretreatment Staff Changes

In the last few months the Industrial Pretreatment Program has had some staff changes. In June, James Ray (J) returned to the Program after a stint in JEA's Safety, Health Promotional and Education Department. J brings back 9 years of Industrial Pretreatment experience. J will act as a compliance officer and is taking the lead in developing an oil and grease best management practice program to reduce sewer line blockages attributed to Jacksonville restaurants.

Mitzi Vergenz left JEA in September and took a permanent position as a process engineer for a local industry. Randy Hilton has assumed Mitzi's permitting responsibilities.

# Buckman Update

The Buckman Water Reclamation Facility (WRF) has reached new milestones in terms of compliance with its National Pollutant Discharge Elimination System (NPDES) Permit and in terms of facility upgrades.

For the 2002 calendar year, the Buckman WRF has no NPDES Permit violations to date. This is another dramatic reduction from previous years. Also, the plant has passed a record 10 consecutive Whole Effluent Toxicity Tests. Many past toxicity failures seemed to be tied to higher effluent ammonia concentrations and slug loadings from industrial facilities. Facility improvements, operational changes, and reduction of slug discharges to the plant have all played key roles in reducing the effluent ammonia levels.

While the overall number of slug discharges to the plant has decreased, the Buckman WRF still experiences periods of high oxygen demand loading and excessive foaming. The JEA Industrial Pretreatment Program will continue to work with Industrial Users to reduce these loads. Thanks for your help in managing the loads to Buckman!

In October JEA commissioned a new solids handling facility that is changing the way JEA manages residual solids from the wastewater treatment process. In the past, residual solids were incinerated and the ash was hauled to the landfill. Beginning in October, a new facility was commissioned to convert these residual solids to dried pellets. The product, called GreenEdge®, is a complete, slow-release organic fertilizer, which supplies essential nutrients for turf grass and plant growth and health. GreenTechnologies, a technology and marketing company that develops, produces and markets technologies and products for turf grass and plant nutrition, will initially market GreenEdge® to golf courses, ball parks, and recreational parks. The company expects to introduce the product to the home lawn and professional lawn care market in the next six to twelve months. The new residual solids facility not only produces a product for beneficial reuse, but it eliminates incinerator emissions and frees up more precious space at the landfill.



The Buckman WRF during construction of facility upgrades.

## Compliance Tip - What's In a Name?

So you don't like receiving those ol' Nasty Grams? The Industrial Pretreatment program doesn't like to send them either and strives to work with Industry to reduce incidences of non-compliance. Each newsletter will have a compliance tip about common violations that can be prevented, hopefully, with a little education.

One of the easiest violations to avoid is a reporting violation from improper signature. Make sure your Self Monitoring Reports are signed by the right person. Only an employee that has been authorized by your company may sign Self Monitoring Reports. An authorized representative is named in your permit application or separately in a letter submitted to Industrial Pretreatment. When you are submitting reports, please send the report with the original signature, and keep a photocopy for your records.

When the above procedures are not followed, the violation incurred is termed Improper Signature. The first occurrence results in a phone call reminder and the second results in a Notice to Correct. Subsequent violations lead to higher enforcement levels.

Please make sure that if the authorized signatory is absent or has left your company, that someone else has been delegated in writing to the Industrial Pretreatment Program to sign your company's Self Monitoring Reports. The JEA Industrial Pretreatment Program would be pleased to meet with any new signatories to discuss their responsibilities and ways to avoid reporting violations. Please call your compliance officer if we can be of assistance in this or some other manner.

Clean Connections is published quarterly by the JEA Industrial Pretreatment Program. 21 West Church Street Jacksonville, FL 32202. (904) 665-5653.

For More information about our program, forms, and past issues, please visit the JEA Industrial Pretreatment Website ([jea.com/business/industrialpretreatment/index.asp](http://jea.com/business/industrialpretreatment/index.asp))