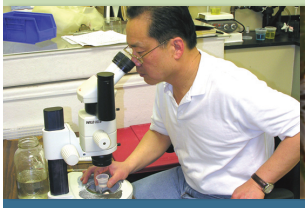
San Jose/
Santa Clara
Water Pollution
Control Plant

Tributary Tribune

www.sanjoseca.gov/esd

Summer 2009




In This Issue:

The **Tributary Tribune** informs the Industrial Users of the Plant's service area, which includes the cities of San José, Santa Clara, Milpitas, Cupertino Sanitary District, West Valley Sanitation District (including Campbell, Los Gatos, Monte Sereno, Saratoga), County Sanitation District No. 2-3, and Burbank Sanitary District.

Testing Water Quality – from a Jar

Ask a system operator what comes to mind with the word "jar," and chances are it won't be a container for homemade peach preserves. More likely, the word will conjure images of a miniature process or wastewater treatment plant.

Jar testing is a method used by many wastewater treatment system operators to simulate full-scale water treatment processes. Through experiments conducted in jars or beakers, operators can see how a certain treatment chemical will behave with a particular type of raw water. They can then use the results of their jar testing to determine which treatment chemical will work best with their system's raw water.

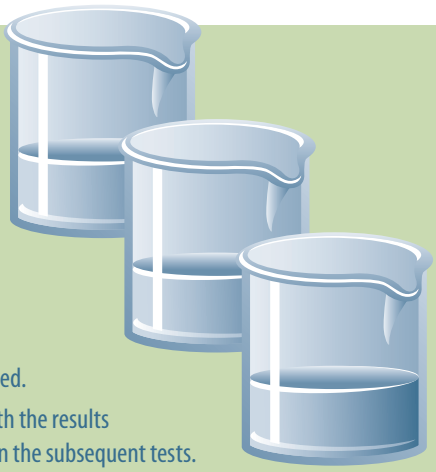
Specifically, with this type of testing, the amounts of treatment chemicals and the sequence in which they are added to the water samples are adjusted to achieve various results. Samples are stirred so that the formation, development, and settlement of flocculants (floc) can be watched — just as it would be in a full-scale treatment plant. The operator performs a series of tests to compare the effects of different amounts of flocculation agents at different pH values, ultimately determining the right size floc for a particular wastewater treatment plant.

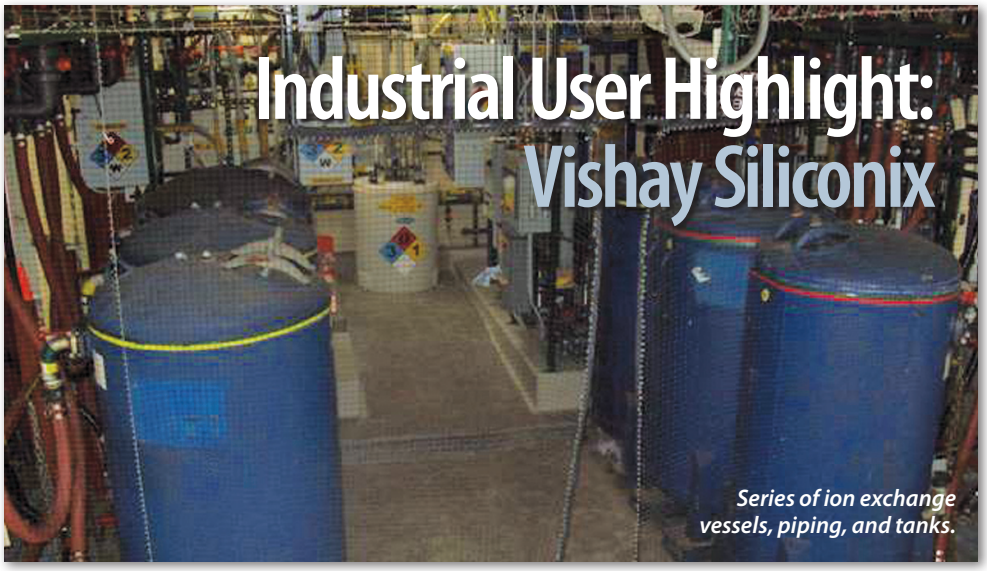
Although there is no required frequency for jar testing, the more it's done, the better the plant will operate. In addition, jar testing makes good financial sense. A common problem in wastewater treatment is overfeeding or overdosing, especially with coagulants. This may not hurt the quality of water, but overdosing can result in ongoing, unnecessarily high coagulant expenses. Jar testing helps prevent overdosing and thus saves money on chemical costs. It's one of the easiest things an operator can do to optimize system efficiency.

A complete jar testing setup can cost as much as $2,000, which may significantly impact a small system's annual equipment budget. In the long run, though, jar testing will prove its cost-effectiveness, and the initial price of the test equipment is often recovered in less than a year.

How a typical jar test is conducted:

- For each water sample, a number of beakers (jars) are filled with equal amounts of the water sample.
- Each beaker of the water sample is treated with a different dose of the specified chemical.
- Other parameters may be altered besides dosage, including chemical types, mixing rates, aeration period, filtration type, etc.
- By comparing the final water quality achieved in each beaker, the effect of the different treatment parameters can be determined.
- Jar testing is normally carried out in several beakers at a time, with the results from the first round guiding the choice of parameter alterations in the subsequent tests.





Industrial User Highlight: Vishay Siliconix

Series of ion exchange vessels, piping, and tanks.

Vishay Siliconix, a semiconductor manufacturing facility in Santa Clara, has developed several successful projects during the past few years that directly benefit the region's water and wastewater programs.

In the late 1990s, the facility was using more than 400,000 gallons of water per day (gpd). Semiconductor fabrication requires ultra pure water, so more than half of this water supply was being used to produce deionized (DI) water. DI water is created using a reverse osmosis/deionized water (RO/DI) process. For every 100 gallons of city water treated, approximately 70 gallons of DI water is

continued on next page

Did You Know?

Plant Master Plan explores new technologies

A three-year master plan process is underway to guide the San Jose/Santa Clara Water Pollution Control Plant's future. With help from consultants and industry experts, the plan will address operational improvements in the following areas:

- **Liquids treatment** will include switching from chlorination to UV disinfection of the effluent, which is being piloted. The primary tanks will also be rehabilitated, and finer upfront screening of incoming wastewater may be implemented. Secondary diffusers that are more energy-efficient will be installed.
- **Solids treatment** will include rebuilding several digesters, as five of the Plant's 11 digesters are out of service. One of the biggest operational changes may be moving the sludge drying process from the outdoor lagoons to an indoor greenhouse approach. Thermal drying options are also being explored.
- **Energy and carbon reduction** are drivers of the project. Specifically, the master plan is looking at new processes that use less energy and reduce carbon emissions while concurrently producing more methane. Methane production already meets two-thirds of the Plant's energy needs, and could potentially be increased to the level where the Plant can fully meet its own energy needs.

Other planning issues include doing more to manage wastewater upstream — closer to where it's generated.

The Plant Master Plan also has a land use component, as new technologies enable consideration of new uses for the Plant's 2,600 acres of lands. Visit ***www.sanjoseca.gov/esd/plantmasterplan*** for more information, to sign up for a tour of the facility, and to submit your ideas.

Plant Master Plan

San Jose/Santa Clara Water Pollution Control Plant

Greenhouse systems are a possible replacement for sludge lagoons.

"Our Plant is on its way to becoming a world-class facility using a mix of new technologies, process improvements, and site enhancements."

— Dale Ihrke, Plant Manager

produced while 30 gallons is rejected. During the 1990s, the 30 percent of RO reject from this process was sent directly to the sanitary sewer, equivalent to more than 60,000 gpd.

In 2004, Vishay Siliconix reduced its wastewater discharge by more than 47,000 gpd by installing a reclaim system to reuse RO reject and RO/DI in six of its air scrubbers. The reclaim system consisted of a 31,000-gallon storage tank and associated piping and controls. The company did most of the installation work in-house and has maintained the system successfully for the past five years.

In 2005, the facility added plating to pursue research and development; however, the new process threatened to negatively impact the wastewater discharge. In searching for a solution, Vishay Siliconix analyzed the operation and then designed an abatement system to control heavy metal discharge to the sanitary sewer. At the time, due to the low flows associated with the system, it was not cost-effective to reclaim the plating line wastewater for reuse.

In early 2007, an opportunity opened to upsize the plating line for more production, both increasing flows and introducing a cyanide-based process. The increased flows justified the installation of a treatment system to capture heavy metals and cyanide ions. The abatement system's increased capacity called for new controllers, a tank system, and a series of ion exchange vessels. The total cost of the project was about $200,000, including design work, purchase and installation of the tanks, piping, and controls.

Analyses of wastewater from the heavy metal abatement unit show that it meets the quality standard for reuse. Vishay Siliconix is now able to reclaim approximately 300,000 gallons a month, or 10,000 gpd, to help supply the facility's air scrubbers if needed.

Ask Your Inspector

Q: Why is my inspector checking my pH roll?

A: This is a good question, probably coming from someone who recently stood by while an inspector opened a pH chart recorder and meticulously unrolled the record of pH readings.

The fact is, inspectors are required to inspect pH rolls, beginning from the date of their previous inspection. For this reason, dating and maintaining filled rolls is very important. Additionally, permit requirements mandate keeping records such as filled rolls on site for three years. State and federal staff conducting inspections have requested documentation as far back as 10 years.

Examining pH rolls may be time-consuming, but will be performed on all inspections. Why? Industrial wastewater discharge permits issued by the San Jose/Santa Clara Water Pollution Control Plant include specific limits and requirements for monitoring the pH of industrial process water discharged. The pH limits serve to protect sewer lines, pump stations, sewer system workers, the wastewater treatment processes, and the environment in which we all live.

Following suggested practices — such as keeping your pH equipment operational at all times, keeping the pH probe in the sample point at all times, inspecting pH equipment daily, keeping equipment properly calibrated, documenting malfunctioning equipment, and reporting all violations within 24 hours of discovery — can help you maintain compliance. Document these practices directly on your pH chart rolls. They stand as a record of your pH limits and are an excellent way to prove to anyone inspecting your facility that you are maintaining compliance.

Do you have a question? Submit it for future publication consideration to ***tributary.tribune@sanjoseca.gov***.

Watershed Workforce

Sudhir Singh

Sudhir Singh joined the City of San José's workforce more than 17 years ago, in August 1991. He works as an Environmental Inspector in the Industrial Pretreatment Program, which is mandated by the federal Environmental Protection Agency. Sudhir's main responsibilities include inspecting and monitoring industrial and commercial facilities to ensure compliance with federal, state, and local environmental codes and regulations. He also evaluates industrial waste discharges to determine industrial classifications and permit requirements. In addition, Sudhir is the Enforcement Coordinator Assistant, responsible for administrating compliance meetings and managing enforcement action compliance timelines.

TributaryTribune

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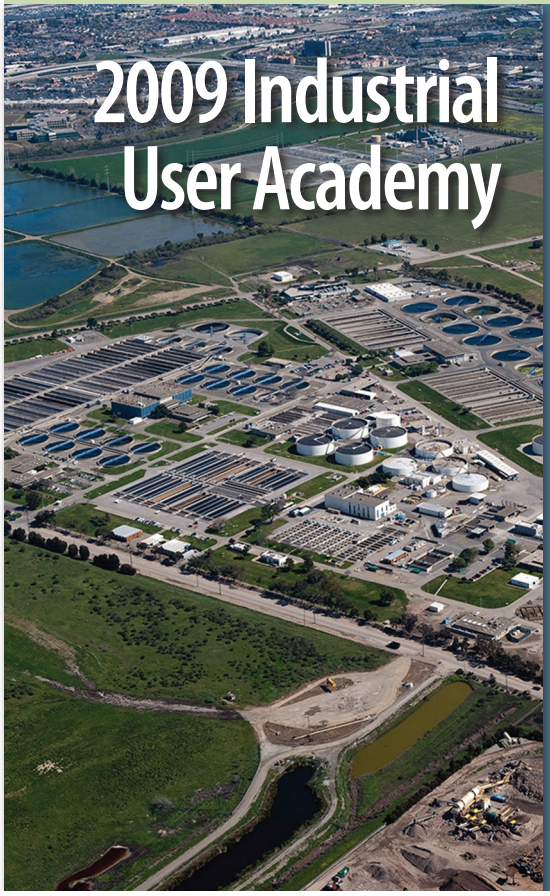

2009 Industrial User Academy

Thanks to you, the 2009 Industrial User Academy was once again a great success!

More than 34 representatives from 26 different Industrial User groups participated in the annual Academy held May 13 at the San Jose/Santa Clara Water Pollution Control Plant. Attendees received information about important regulatory and compliance issues, prepared and delivered by the same inspectors who work with their companies. They also reviewed the wastewater permit application process and inspection program, and learned how their companies could receive up to $50,000 in rebates from the Water Efficient Technologies Program. The day concluded with a tour of the Plant facilities and operations.

Topics for the presentations were selected in part from comments collected at last year's Academy. If there are subjects you would like to see addressed at next year's Academy, please let us know. We welcome your feedback and suggestions. Contact José Anaya at ***jose.anaya@sanjoseca.gov*** or ***(408) 277-4574***.

Congratulations to all who attended this year's Academy!

In accordance with the Americans with Disabilities Act, City of San José Environmental Services Department materials can be made available upon request in alternative formats, such as Braille, large print, audio-tape or computer disk. Requests may be made by calling (408) 945-3000 (Voice) or (800) 735-2929 (CRS).

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