ENVIRONMENTAL RESOURCE ANALYSTS, INC.

ERA Newsletter

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SPECIAL POINTS OF INTEREST:

- We have a new client data system! Read about the changes!
- Had a change in your DBP collection schedule, let us know!
- Learn about storm water collection!
- Molecule answers a question about VOC testing.
- Learn about our contaminant of the month: BOD

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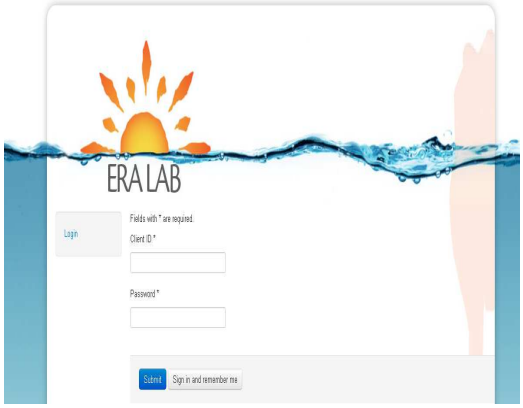
New Client Data System

Happy New Year from ERA! We hope that this new year has gotten off to a good start for everyone. This year we are introducing our new Client Data System. It works similarly to our older system where you can log-on securely from our website and view your results online. However, there are a few differences between the two systems. In the old system, you could only view your results in an excel spreadsheet view and there was no way to differentiate whether the results were preliminary or final. With the new system, preliminary results will be viewed the same as they previously were (excel spreadsheet format). However, reviewed data will appear as a pdf file in the final report format. These print-offs will remain online and can be printed off as needed in the future. This way, you will have access to your final results in the standard reporting format as fast as data is approved. We do want to remind you that preliminary data is shown as a service to you so you can see your results in "real-time". In the preliminary phase, these results have not been reviewed by our Quality Assurance manager and should not be used for reporting purposes. Only report data from the final reports for regulatory purposes. The website will be live in February, and we ask that you please be patient as we will have to work out any problems we may discover along the way. One problem we are already aware of is that with this new system, your user name and password have been reset. The first time you log-on to our new system you will need to use your client ID as your user name and password. We are working on a way for you to be able to create your own unique user name and password. If you have any questions about our new log on system or are experiencing any problems, please contact Staci Hickman at (334) 502-3444.



Contaminant of the Month: BOD

BOD, categorized as a conventional pollutant in the Clean Water Act, stands for Biological Oxygen Demand. This is a measurement of the amount of dissolved oxygen that biological organisms use to break down organic material in the water sample. Although this measurement isn't exact, it can be used as an indicator of water purity and can help operators gage the efficiency of their wastewater plants.

BOD measurements are dependent on a number of factors including temperature, nutrient concentrations, enzymes, and length of time. Today, BOD measurements are reported as mg of oxygen consumed per liter of sample. The test is conducted over a 5 day period maintained at 20°C in dark conditions.

The history of the BOD measurement stretches all the way back to the early 1900's in London. The length of 5 days was determined by studying the time it took river water to travel to it's Estuary. The specifications of this test have been reviewed and tested throughout the years resulting in the standardized testing method we use today. (continued on back page)

Storm Water Collection

Storm water run-off is regulated under the Clean Water Act through the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES storm water program has been in place since 1990 and regulates storm water run-off from a variety of sources such as storm sewers, construction activities, and industrial activities.

Storm water needs to be managed because of it's ability to pick up debris, chemicals, dirt, and other pollutants from the ground then flow directly into a stream, river, or municipal sewer system. Pollution caused from storm water run-off can adversely effect many aspects of the ecosystem including plants, fish, animals, and people.

If you have a storm water permit, there are a few items you should be aware of. Most permits have specific requirements as to what qualifies as acceptable conditions under which to collect your storm water. For instance, most permits designate that there must have been no rain for the 3 consecutive days prior to the storm water event, the rain gauge must read at least 1/10th of an inch, and the sample must be collected in the first 30 minutes of the storm. These criteria need to be documented to verify that you collected the sample properly when audited.

Since storm water is not on a schedule, we often provide you with your storm water kit at the beginning of the year. It is up to you to realize that a storm water event has occurred and properly collect your sample. Each year, we see where client's put off their storm water collection until the last month and hope for a storm water event to occur so they don't go into violation. We recommend that you collect your storm water kits early to avoid this problem. If you have questions concerning storm water permits, you can find more information by visiting EPA's website at www.epa.gov or calling our office at (334) 502-3444.

Changes to DBP Scheduling

With the new year ahead of us, there are many things that might have changed since last year. One thing we have seen is changes in our clients' DBP schedules. If your DBP collection schedule has changed, we require that you send us this information in writing. We are not automatically informed when a change is made to your schedule, and need you to keep us updated to ensure that we can provide the proper service. Please send all DBP changes to Debbie Dobbins at ddobbins@eralab.com. She will gladly update our records, make you the appropriate kit, and get everything in order to ensure proper sampling and lab service.

Contact **Debbie Dobbins** at **ddobbins@eralab.com** to update your DBP schedule today.

Ask Molecule—

Operator : I am collecting a VOC sample, how important is it to have the vial filled to the top?

Molecule: Hi operator! VOC stands for Volatile Organic Compound. These compounds have high vapor pressure and low boiling points. This means the compound is not stable in the water sample, but rather evaporates into the surrounding air. If you have an air bubble, some of those pesky VOC compounds will evaporate into that air bubble and be lost. This gives you inaccurate readings on the concentrations of those compounds in the water. Take it from me, filling the vials up to the top gives you the best results and keeps you within your regulatory requirements!

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Environmental Resource Analysts (ERA) was founded in 1991 by Dr. Joseph Freda. The company's initial focus was ecological field studies, but expanded into the areas of aquatic toxicology and analytical chemistry. Our primary motivation for expansion has always been, and will continue to be, meeting the needs of our valued clients. This commitment to service has allowed us to obtain many diverse capabilities such as toxicology studies, bacteriological analysis, inorganic and organic testing, and hazardous waste identification.

We are on the Web!
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Contaminant of the Quarter:

Measuring BOD involves many steps. First, you have to conduct a series of dilutions using buffered water that brackets your expected BOD measurement. This process usually involves trial and error. Several factors can help you select which dilutions to run, such as source of sample, turbidity, smell, and color of sample. To ensure uniformity between samples and dilutions, samples are normally seeded. Seeding a BOD sample involves adding microbiological organisms to each sample. The amount of oxygen depleted by the seed needs to measured and accounted for to accurately determine the BOD of the sample. After the sample is diluted and seeded, an initial dissolved oxygen (DO) reading is taken. DO readings are taken by probes. There are a number of different probes on the market. Some probes rely on transfer of oxygen across a membrane while the newer probes rely on luminescence emissions. Following the DO reading, samples are sealed with no open air space and kept in a temperature controlled incubator in the dark (to prevent algae growth) for 5 days. Following this incubation a final DO reading is taken and the BOD is calculated based on the following equation: ((Initial DO - Final DO) - BOD of seed) x dilution factor.

"Even though the BOD analysis isn't an exact science, the results can prove useful in gaining knowledge about the quality of the water"

Sometimes regulatory agencies require a CBOD, or carbonaceous BOD. To measure a CBOD, the set up is the same, however, an additional step is added. For a CBOD sample, nitrification inhibitor is added to eliminate oxidation of nitrogen in the form of ammonia. By eliminating nitrogen oxidation you are only measuring the demand for oxygen created by the oxidation of carbon. Therefore, a CBOD measurement is a sub-set of a BOD measurement.

BOD values differ between water sources. According to the *Streamkeepers Field Guide*, unpolluted natural waters should have a BOD value of 5mg/L or less, while raw sewage can have BOD values ranging from 150-300mg/L.

Even though the BOD analysis isn't an exact science, the results can prove useful in gaining knowledge about the quality of the water and the amount of bacterial pollution. These measurements are especially important for operators of wastewater plants who want to ensure that high numbers of potentially harmful microbial organisms in raw sewage have been removed through the treatment process, and that a less polluted water is being released into the natural environment.

Sources:

1. *Streamkeeper's Field Guide: Watershed Inventory and Stream Monitoring Methods*, 1991
2. Missouri Department of Natural Resources, Water Quality Parameters Webpage
3. *Ecology of Inland Waters and Estuaries,* Reid, George K. 1961