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WKU lab safeguards water with data

By CAROLINE EGGERS ceggers@bgdailynews.com Sep 27, 2019



When people walk through the doors of Western Kentucky University's HydroAnalytical Lab, they usually want a simple answer to a complicated question:

Is my water safe?

For nearly two decades, the HydroAnalytical Lab – formerly an environmental lab that later transformed into a water lab – has been working to help individuals and communities feel safe and secure about the water they drink, swim in or grow food with.

The nonprofit lab facilitates research, tests regional drinking water, wastewater, stormwater and groundwater and works with government agencies, public industries, researchers and private clients, such as people who get their drinking water from wells.

“Just about any type of analysis or test or research related to water, the lab can provide service,” said Jason Polk, WKU professor and director of the HydroAnalytical Lab.

The lab operates Monday through Friday from 8 a.m. to 4:30 p.m., but it’s also “on call” for the area’s frequent boil alerts or the less common major storm events. Sometimes that entails driving to a site at 2 a.m. to collect samples, and sometimes it means collecting samples every 10 minutes for several hours during heavy rainfall.

There’s also the occasional environmental disaster. “We’ve had everything from gas leaks to bourbon spills to agricultural runoff,” Polk said. “We’re testing regularly for these types of things.”

For the general community, the health threat tends to be a virus or bacteria, such as fecal coliform or E. Coli. Every contaminant is tested for separately, so the lab works with people to help determine their biggest risks and needed sampling – it’s a delicate process.

“We can at least lead people in the right direction,” said Ethan Givan, the lab manager at HydroAnalytical Lab. “Water quality is really a definition that changes depending on what that water is going to be used for.”

In addition to water quality and quantity testing, the lab also serves as a training facility for WKU students.

“It provides a mechanism for students to get trained in the community and move on from there into a water profession,” Polk said. “They get hands-on experience (and) a technical skill that translates to jobs.”

Students undergo rigorous training for drinking water, wastewater and stormwater certification through the Kentucky Division of Water. They have to take a certification exam every semester, whether they're a freshman in college or they're a graduate student that's been working in the lab for four years in a row.

Students who work in the lab tend to study biology, biochemistry, public health and environmental science, and they're not casual students. With well water testing, for example, the results represent the health of someone's family – so analysis has to be transcribed precisely.

“The difference between 0 and 9 is the difference between drinking water and not,” Polk said, so “we keep really high standards for students.”

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JT Troxell, a WKU geoscience graduate student studying groundwater quality, has been working with the HydroAnalytical Lab for over a year. He spends about 20 hours each week collecting water samples outdoors and performing data analysis indoors.



“I’m an outdoorsy person. I like coming outside and gathering stuff,” he said. “When I was first starting out, there was a learning curve. At this point, it’s pretty routine.”

On Friday, Troxell collected samples from an underground stream in Carver Well Cave, a fairly hidden cave near the hustle and bustle of Scottsville Road and one of Bowling Green’s five continuously-monitored water quality sites.

The Carver Well Cave stream’s connection to the Barren River and proximity to businesses and oily parking lots makes it a good site for testing ambient water quality.

There’s a black metal cage circling the station to prevent the visibly numerous bits of litter from entering the 1,000-foot cave system. There’s also a water sonde, a water quality monitoring fixture, that remains in the well for real-time monitoring.

Troxell removes a metal grate cover and slides in a skinny plastic tube attached to a rope 40 feet below the well entrance. He pulls it back up with water, fills a clear sample tube labeled “oil and grease” and repeats the process for other water quality indicators.

Between this real-time monitoring and weekly sampling, the data accumulation helps the lab identify water quality threats.

And that should make us all sleep a little better at night.

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VIDEO: WKU students help city, locals maintain clean water at HydroAnalytical lab

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