

Lab Manager John Keith Overcomes Big Challenges with Limited Manpower

Staff of Four Ensures Clean Drinking Water for Thousands of People

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Residents of the city of Lincoln, Nebraska, rely on one man and his small staff for quality drinking water. John Keith is the manager of laboratory services for Lincoln Water Systems, a division of the city's public utilities department. Inside a 2300-square-foot lab, he and his staff test the city's water supply to ensure it meets the safe drinking water standards and is in tip-top condition when it reaches the mouths of Lincoln's citizens.

"We do both sampling for compliance, as regulated by the Safe Drinking Water Act in association with Nebraska Health and Human Services and the state of Nebraska, and all the water quality testing," Keith explains. "We collect and analyze over 8500 samples a year for various water-quality parameters like residual chlorine, total coliform and E. coli."

Keith and his associates also support the operations department with well-field management. Many municipalities rely on ground water for additional water supply, which is collected through wells. By helping the utilities department make decisions on which wells to run, and ensuring the wells are within compliance, Keith's team makes certain the well waters meet regulatory standards.

"We also deal with customer complaints when a customer in the city calls and says, 'My water tastes funny,' or things like that. We'll go down to their home, do some testing for them and make sure the chlorine levels are there for disinfection," Keith says.

Maximizing Resources

Keith has been the lab manager for three and a half years and brings with him more than 20 years of experience in the environmental field. The biggest challenge for this manager is getting all the proper testing done with limited manpower—just three chemists on staff—and on tight city budgets.

"We're short staffed, so we're continually coming up with new ways to streamline testing and analysis," Keith explains. "We have some extractors and some dry evaporators that basically run automatically for us. That allows us to do other things while those instruments are running."

Recently, Keith brought onboard a "helping hand." A new, automated sample preparation system takes the water sample, adds the proper solvents needed, and extracts out the pesticides and herbicides, replacing a previously labor-intensive method that the staff had to manually perform. Staff time spent on this chore has been reduced by up to 70 percent thanks to this automated extraction system, he adds.

Also, the once laborious task of drying, evaporating and concentrating organic extracts from a water sample has transformed into one in which Keith literally pushes "go" and a new DryVap machine spins the sample from 40 milliliters down to about 1 milliliter, getting the sample ready for further analysis.

"Both of these help save the staff time," he says. "I am very lucky to have a dedicated, hard-working staff that has done everything asked of them, especially at this time when we are short staffed due to budget constraints."

All Work and Lots of Fun

When Keith is not analyzing samples and overseeing the day-to-day operations, he is scanning the lab to make sure all the instruments are running properly. If he spots an on-the-blink instrument, he makes certain someone comes immediately to fix the problem.

All the instruments in the lab have service contracts that Keith takes advantage of when help is required. If a machine needs to be replaced, or added to the inventory, he weighs in heavily on the choice. "We have a purchasing department, but I write the request for proposals and do the recommendations for new instruments," Keith explains.

While there is a lot to be done and the work is demanding, there's not a day that Keith doesn't feel rewarded. "It's fun. It's challenging. And I get to work with the public and know that the end product affects their lives."

John D. Keith
Manager of Laboratory Services, Lincoln Water System Ashland, NE

Qualifications:

- B.S. - Chemistry, Fort Lewis College, Durango, CO
- Certified Hazardous Materials Manager (CHMM), Masters Level
- Certified Electroplater Finisher (CEF)
- Thirteen years of applied chemical laboratory experience
- Five years of environmental consulting experience

Industry Served:

- Public works and utilities

Equipment Used:

- Shimadzu QP-5000 GC-MS
- Varian 220G GFAA
- **Horizon Technology SPE-DEX 4790 extractor**
- **Horizon Technology DryVap**
- Various Hach field instruments
- Pocket colorimeters
- DR-890 colorimeter
- HydroLab MS5 multiparameter probe