

## Technical and Analytical Support for Water Research

Specialized analyses are performed by highly skilled staff using advanced instrumentation and techniques.

Student training in advanced laboratory methods and validation

The expertise and equipment to help with today's water and environmental research needs.



Other methods are available and new methods are always under development. Contact Dan Snow at [dsnow1@unl.edu](mailto:dsnow1@unl.edu) or 402.472.7539 for more information.



The University of Nebraska is an Affirmative Action/Equal Opportunity institution

## Supporting Water Research

State-of-the-art instrumentation, specialized preparation equipment and a skilled professional staff provide high quality analyses for water and environmental research needs.

### Pricing

Current pricing can be found online at

<http://waterscience.unl.edu/>

Phone: 402.472.7539

Email: [dsnow1@unl.edu](mailto:dsnow1@unl.edu)

- 20% discount for University clients
- 10% discount when more than 50 samples are submitted for each method
- Additional discounts for client-prepared samples
- Sample containers provided at no extra charge

### Contact Us

NU Water Sciences Laboratory  
202 Water Sciences Laboratory Bldg.  
University of Nebraska-Lincoln  
Lincoln, NE 68583-0844

Phone: 402-472-7539

Fax: 402-472-9599

Email: [dsnow1@unl.edu](mailto:dsnow1@unl.edu)

<http://waterscience.unl.edu>



UNIVERSITY OF  
**Nebraska** Water Center  
Rm 202 Water Sciences Laboratory  
University of Nebraska-Lincoln  
Lincoln, NE 68583-0844  
Phone: 402-472-7539

Non Profit  
US Postage  
PAID  
Permit 46  
Lincoln, NE

University of Nebraska-Lincoln  
**WATER SCIENCES LABORATORY**



## Analytical Services for Water Research



The University of Nebraska is an affirmative action/equal opportunity institution

© University of Nebraska Board of Regents

[waterscience.unl.edu](http://waterscience.unl.edu)

## Who We Are

NU's Water Sciences Laboratory (WSL) is a research core facility established in 1990 as part of the Nebraska Water Center to enhance and support NU water research.

This state-of-the-art laboratory provides technical services and expertise in analytical and isotopic methods. Specialized instrumentation and methods are available for organic contaminants, heavy metals, and stable isotopes in water and environmental samples.

Few university laboratories in the U.S. offer the extent of advanced analytical services, ability to develop new methods, and level of quality control demanded by researchers planning to publish their work.

## Our Focus

New methods focus on emerging contaminants, explosives, new pesticides and metabolites, pharmaceuticals and steroid hormones in water, tissues, sediments, and wastewater; cyanotoxins in lake environments; and new tools for isotope fingerprinting and geochemical tracers.

It also is known for cutting edge capabilities for a variety of regularly

monitored water contaminants, volatile organic compounds, pesticides, trace elements, nutrients and for its' rigorous quality assurance program.

Thousands of samples have been analyzed supporting a myriad of NU water and environmental research since the facility was established in 1990.

## Instrumentation

### Stable Isotope and Noble Gas Mass Spectrometry

- Thermo Helix SFT Noble Gas Mass Spectrometer
- Hiden Analytical Residual Gas Analyzer (RGA) and Cryogenic Gas Extraction System
- GV Isoprime Dual Inlet-Multiprep
- GV Isoprime – EA Continuous Flow
- GV2003 Continuous Flow Isoprep/Isocarb
- Micromass Optima Dual Inlet
- Offline high-vacuum prep systems
- GV Isoprime – EA Continuous Flow
- GV2003 Continuous Flow Isoprep/Isocarb
- Micromass Optima Dual Inlet
- Offline high-vacuum prep systems

### Trace Element Analysis:

- GV Platform XS Inductively Coupled Plasma Mass Spectrometer (ICP-MS)
- SSI Liquid chromatography pump and autosampler for speciation methods
- CEM MARS Xpress Microwave Digester
- Cleanroom and acid handling lab

### Environmental Analysis:

- Agilent 5973 GC/MS
- Agilent 5972 GC/MS
- CombiPAL automated extraction system
- Thermo LCQ Ion Trap LC/MS

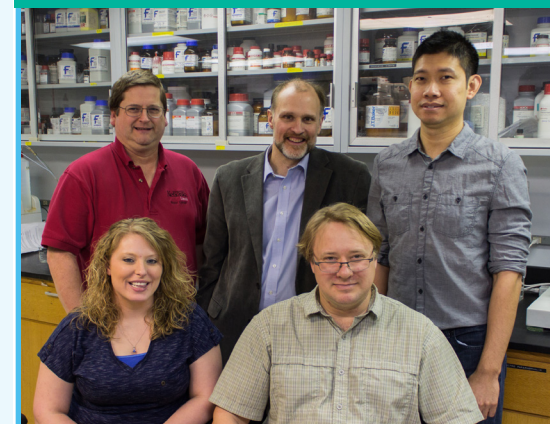
- Quattro Micro Triple Quadrupole LC/MS
- Spark Holland Symbiosis Environ on-line extraction system
- Waters 2695 HPLC with Photodiode array and Fluorescence detectors
- IN/US Radioactivity Detector (<sup>14</sup>C-labelled compounds)

### Equipment for Standard Water Quality Methods:

- Seal AQ2 Discrete Chemistry Autoanalyzer
- Lachat QuikChem 8500 Autoanalyzer
- Dionex ICS-90 Ion Chromatography system
- OI Analytical Model 1010 TOC Analyzer
- Perkin Elmer Lambda 25 Spectrophotometer
- Perkin Elmer AAnalyst 400 Spectrophotometer

## Recent Methods

- Steroid hormones and mycotoxins – LC/MS/MS - APPI
- Pharmaceuticals and antibiotics – LC/MS/MS – ESI
- Microcystins and algal neurotoxins – HPLC-FL and LC/MS/MS w/ AQC derivatization
- RDX, TNT and nitroso-RDX degradation products – LC/MS/MS – ESI
- Acetamide herbicide degradates – LC/MS/MS - ESI
- Nebraska herbicide scan – 16 residues w/ atrazine degradates – GC/MS
- Gasoline additives in water – ethers/alcohols – SPME- GC/MS
- Algal pigment characterization – HPLC-PDA & FL
- Isotopes of nitrate & phosphate – IRMS
- Water Isotopes – Two confirmatory methods IRMS
- Inorganic/organic forms of arsenic – IC-ICP-MS



## Developing New Methodologies

In addition to contaminant characterization, the facility supports new methods for water resource characterization using new instrumentation for noble gas analysis for advanced groundwater age dating and renewable aquifer analysis.

The WSL hosts approximately \$2.5 million worth of analytical equipment that is operated and maintained by four full-time technical staff.

The current director of laboratory services, Dr. Daniel Snow, and separations chemist, David Cassada, have been with the facility since it was established.

The lab supports student researchers from a wide variety of disciplines focused on all aspects of water resources research, training new scientists and engineers who will solve tomorrow's critical water problems.

