

25th Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental
Toxicology and Chemistry April 19th & 20th, 2012



**25th Annual Meeting of the
Rocky Mountain Chapter of the
Society of Environmental Toxicology and
Chemistry**

April 19th & 20th, 2012

**Fort Collins Science Center
2150 Centre Ave, Bldg C
Fort Collins, Colorado 80526-8118**

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25th Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry April 19th & 20th, 2012

Please join us for the 25th Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry.

Meeting Dates: April 19th and 20th, 2012

Meeting Place: Fort Collins Science Center Fort Collins, Colorado.

Agenda:

Thursday, April 19th, 2012

Short Course: we will offer a half-day short course with USGS scientists entitled *"Ecological Sleuths: Using Stable Isotopes to Decipher Physical and Biological Processes in Environmental Studies."* This half-day course will cover analytical instrumentation and methods, stable isotope fundamentals, applications, and case studies, including use in environmental contaminant studies.

Lunch: Over lunch, we will be presenting the movie *"RiverWebs"*. This movie is a documentary style environmental film about the life and relationship of two ecologists, how their collaboration changed ecology, personal tragedy, and the legacy of science and friendship. Lunch will be provided free for registrants.

Afternoon Social: Following the movie we will have a social at a local eating establishment to be announced to celebrate our 25th anniversary.

Friday, April 20th, 2012:

Meeting: we will host a full day of scientific platform presentations and a poster session. We invite presentations of all research related to environmental toxicology and chemistry issues.

Abstracts of presentations and posters are due March 30th, 2012. Register by sending a completed registration form (see attached) and payment to Lareina Guenzel, as instructed on the form. Send Abstracts to Travis Schmidt, tschmidt@usgs.gov

Please register by April 6th, 2012. If you have any questions concerning registration, contact Lareina at 303-312-6610 or guenzel.lareina@epa.gov.

See attached logistics sheet for details on lodging, dining, transportation and parking.

2012 SHORT COURSE Thursday April 19th Ecological Sleuths: Using isotopes to decipher physical and biological processes in environmental studies.

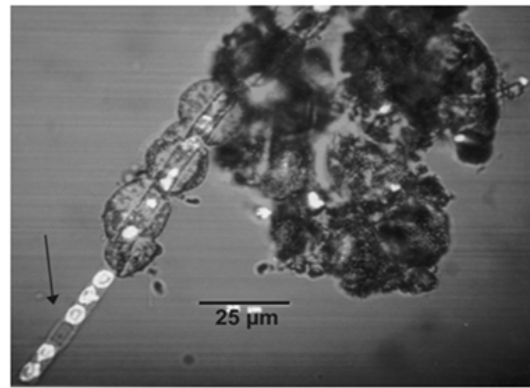
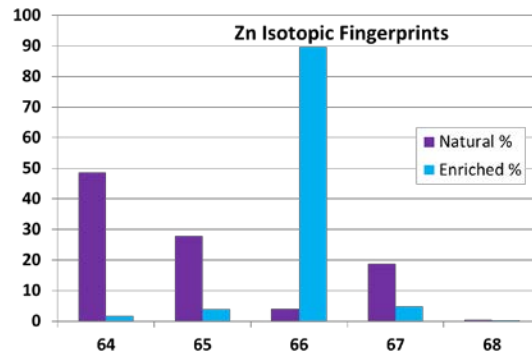


Figure caption: Left- the Naracauli Stream in Sardinia, Italy, is a neutral-pH, high-Zn stream that originates with drainages from several mines. In Spring, conditions favor bioprecipitation of hydrozincite $\{Zn_5(CO_3)_2(OH)_6\}$, the white precipitate in the streambed. Upper Right – plot showing different isotopic fingerprint of naturally occurring Zn vs. ^{66}Zn -enriched Zn. Lower Right- SEM photo of a bacterial filament that serves as a substrate for hydrozincite. Zn isotopes of the biomineralized hydrozincite are consistently heavier than the Zn in the water from which the hydrozincite forms, indicating a role of bacteria in isotopic fractionation.

Increasingly, stable isotopes are being used to study physical and biological processes in the environmental sciences. Light isotopes (Hydrogen, Carbon, Nitrogen, Oxygen, and Sulfur) and heavy stable isotopes (Copper, Zinc, Iron, etc.) have properties that afford opportunities to trace the flux of elements through catchments and food webs. Although some isotope approaches are well established, recent methodological advances offer new opportunities to learn about the abiotic and biotic processes of ecosystems. In this half-day workshop, USGS scientists provide a practical guide on isotope geochemistry in environmental science. Topics to be covered include: analytical instrumentation and methods, stable isotope fundamentals, applications, and case studies, including use in environmental contaminant studies.

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Rich Wanty

B.A., geochemistry, State University of New York at Binghamton
M.S., geochemistry, Colorado School of Mines
Ph.D., geochemistry, Colorado School of Mines



Rich has been a research chemist with USGS since 1981. Research interests center around environmental geochemistry, and coupling of geologic, hydrologic, and geochemical processes. Current research topics include: landscape geochemistry and the relation between soil and ground-water geochemistry; geochemistry of mined or un-mined mineral deposits and natural background geochemistry; geochemistry of non-traditional stable isotopes, especially those of iron, copper, and zinc. Another current project is examining the usefulness of data mined from large online databases to evaluate regional geochemical baselines. Previous research focused on brines produced with hydrocarbon resource extraction, geochemistry of natural radionuclides in ground-water supplies, ground-water geochemistry in agricultural areas, and geochemistry of sandstone-hosted vanadium-uranium deposits.

Contact Information: Email: rwanty@usgs.gov, Phone: 303-236-1819

Craig Stricker

Ph.D., limnology, Michigan State University
M.S., biology, Central Michigan University
B.S., biology, Central Michigan University



Craig is a research biologist that studies the biogeochemistry of ecosystems, with an emphasis on the application of stable isotope techniques. His research interests are broad and fall within four focal areas: 1) *nutritional ecology*, where isotopic data are the primary source of inference on dietary resource use by study species; 2) *contaminant biology*, where stable isotopes are used to constrain trace metal biogeochemistry, bioaccumulation and biomagnification pathways; 3) *biogeochemistry*, where isotopes and traditional geochemical techniques are employed to better understand patterns, processes, fluxes, and fates; and 4) *development of novel isotope applications*, where the goal is to make these tools more widely available to a broader range of research areas.

Contact Information: Email: cstricker@usgs.gov, Phone: 303-236-7908

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Ruth Wolf

Ph. D., Chemistry, Colorado State University
B. S., Chemistry, Colorado State University
M. B. A., Marketing, University of Connecticut



Ruth Wolf has over 20 years of experience working as an analytical chemist in a variety of fields, including environmental and geochemical analysis, analytical methods development, instrumentation development, and technical sales and marketing. Ruth joined the USGS in 2004 as a Research Chemist after spending 10 years working for a leading manufacturer of analytical instrumentation in a variety of roles, including marketing manager, product manager, and applications specialist. She has also worked in both commercial environmental and national laboratories. Currently at USGS, she performs research in the area of new analytical method development and her areas of expertise include ICP-OES and ICP-MS instrumentation. Recent research topics include the development of analytical methods for speciation analysis of toxic metals in waters, soils, and simulated bio-fluid extracts, use of stable isotopes in aquatic toxicity studies, and new analytical methods development using dynamic reaction cell (DRC) and high resolution (HR) ICP-MS.

Contact Information: Email: rwolf@usgs.gov, Phone: 303-236-2470

Johanna Kraus

Ph.D., Biology, University of Virginia
B.A., Biology, Brown University

Johanna Kraus is a community ecologist whose research focuses on the ecological implications of organismal movement across ecosystem boundaries. She uses field experiments, surveys, light stable isotopes and GIS to address questions about how the movement of organisms across the freshwater-terrestrial interface affects food web dynamics, community assembly and contaminant transfer. Currently, she is studying the flux of trace metals from streams to riparian food webs by emerging aquatic insects in the central Colorado Rocky Mountains as part of a Mendenhall Fellowship with the USGS. Her dissertation research examined reciprocal prey subsidies at a pond-forest boundary, using stable isotopes as a food web tracer. She has since studied effects of habitat selection on aquatic-terrestrial linkages in experimental pond systems and collaborated internationally to study effects of dams on downstream spider communities.

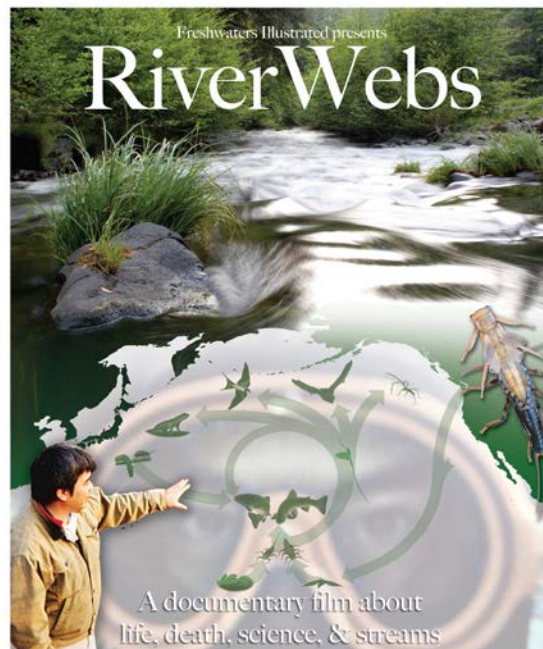


Contact Information: Email: jkraus@usgs.gov, Phone: 970-226-9436

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**Rocky Mountain SETAC Presents:
RIVERWEBS
By Freshwater Illustrated
Screened at 1230 April 19th, 2012**

Free with registration, donation at door to see film. Donations will go to Freshwater Illustrated and student awards.



www.riverwebs.org

<http://www.riverwebs.org/>

RiverWebs takes a close look at an international group of river ecologists who share a story of tragedy, growth, and recovery. Across Eastern and Western cultures, this unlikely circle of friends shows us a very human side of science, while demonstrating how the process of discovery works. The inspiring lives and experiences of these scientists build a rich story of hope and interconnectedness, while providing a personal window through which to view rivers, ecology, and conservation. Running Time 57 min.

**FEATURED PRESENTATION Friday April 20th:
MiniSipper: a new, high-capacity, long-duration, *in situ* sampler for aquatic monitoring
by Chapin, T.P. and Todd, A.S**

Aquatic ecosystems respond to changes in aquatic chemistry parameters on time scales ranging from seconds to years. However, our understanding of the effects of these ecosystem changes is often limited by a lack of water quality data, especially in remote or difficult to access locations. Currently available automated water samplers are typically large, heavy, collect 24 one liter size samples and cannot operate in freezing conditions. The USGS has developed a new, low-cost instrument, the MiniSipper, to overcome the limitations of current water samplers. The MiniSipper provides long-duration, high-capacity, *in situ* water sampling and is especially useful in remote or difficult to access areas. Applications of MiniSipper technology to automated water sampling in acid mine drainage systems and post-wildfire watersheds will illustrate some of the unique advantages of this approach.

Thomas Chapin

Thomas Chapin is a Research Chemist at the USGS in Denver, CO. His research focuses on the design, development, and application of new, low cost, instrumentation for high-resolution, long-duration water sampling and chemical analysis. Thomas has developed a number of new instruments at the USGS including an in-situ Zinc analyzer, the MiniSipper, the Event Response MiniSipper, and the Borehole Sipper. These instruments have been used for long-term, high-resolution monitoring of metals in watersheds impacted by abandoned mines and watersheds burned by wildfire.

Thomas Chapin
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U.S. Geological Survey
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Denver, CO 80225
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tchapin@usgs.gov



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Thursday, April 19th

- 8:00 – 9:00 Registration and Coffee
- 9:00 – 10:30 Ecological Sleuths: Using isotopes to decipher physical and biological processes in environmental studies. Part I – focus on heavy isotopes
- 10:30 – 10:45 Coffee Break
- 10:45 – 12:15 Ecological Sleuths: Using isotopes to decipher physical and biological processes in environmental studies. Part I – focus on light isotopes
- 12:30 – 1:30 Screening of the movie Riverwebs (Lunch Provided)
- 2:00 - Social at Café Vino 1200 South College Ave, Fort Collins

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Friday, April 20th

- | | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:00 – 9:00 | Registration and Coffee |
| 9:00 – 9:10 | Greeting from USGS |
| 9:10 – 9:30 | Greeting from Executive director of SETAC NA, Greg E. Schiefer |
| 9:30 – 10:00 | <i>Featured presentation:</i> Chapin, T., USGS - MiniSipper: a new, high-capacity, long-duration, <i>in situ</i> sampler for aquatic monitoring |
| 10:00 – 11:00 | Poster Social I |
| 11:00 – 11:15 | *Stucker, V.K. Colorado School of Mines - Biostimulation at Rifle, CO: Impacts on aqueous arsenic geochemistry |
| 11:15 – 11:30 | Pillard, D.A. AECOM - Critical factors affecting the toxicity of sodium bromide to <i>Artemia salina</i> (Brine Shrimp) |
| 11:30 – 11:45 | Bern, C. R. USGS - Natural salinity fluctuations in a snowmelt dominated watershed undergoing energy development |
| 11:45 – 12:00 | Parrish, G. US EPA - Technical considerations and research needs in regulating CBM discharge waters |
| 12:00 – 1:30 | Lunch (provided or on your own) and Board of Directors Meeting |
| 1:30 – 1:45 | Mitra N. Jha, US EPA - Reducing Suspended and Bedded Sediment Using Vegetative Filter-Strips: A Literature Review |
| 1:45 – 2:00 | *Reed, R.B. Colorado School of Mines- Obtaining accurate size distributions of engineered nanoparticles by single particle – inductively coupled plasma – mass spectrometry |
| 2:00 – 2:15 | Montano, M. Colorado School of Mines - Heteroaggregation between quantum dots and natural colloids: implications for nanomaterial fate and transport |
| 2:15 – 2:30 | *Williamson, J. Colorado School of Mines - Geochemical characteristics of the North Fork of Clear Creek and implications for metal mixture toxicity |
| 2:30 – 2:45 | Fulton, B.A. ARCADIS - Water-effect ratio model to support site-specific copper criteria across multiple drainages in an arid landscape |

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- 2:45 – 3:00 Meyer, J.S ARCADIS - A unified freshwater-saltwater biotic ligand model of Cu-induced olfactory impairment to salmonid fishes
- 3:00 – 3:30 Coffee and Poster Social II
- 3:30 – 3:45 Wesner, J. USGS/CSU - Resolving mechanisms for metal uptake and trophic transfer in stream and riparian food webs in mineralized landscapes
- 3:45 – 4:00 Kraus, J.M. USGS - Increased metal bioavailability in streams reduces aquatic subsidies and contaminant flux to terrestrial ecosystems
- 4:00 – 4:15 Walters, D. USGS – Spiders, sediments, and sources: Pre-remediation characterization of PCB contamination at a Great Lakes Area of Concern
- 4:15 – 4:30 *Schwint, A. US EPA - Response of fathead minnow (*Pimephales promelas*) populations to an exogenous estrogen
- 4:30 – 4:45 Vajda, A.M. University of Colorado - Fish endocrine disruption responses to a major wastewater treatment facility upgrade
- 4:45 - Student Awards and Raffle
- Social at El Monte 1611 South College # 100, Fort Collins

Posters

Sanchez, B.C. US Fish and Wildlife - Emerging contaminants on the Baca National Wildlife Refuge: presence and effects on native fish.

Baker, S, GEI Consultants - Biodynamic modeling to calculate protective water column selenium concentrations for fish and birds

Skigen, S.B., GEI Consultants - Use of Lachat for Detection of low-level Nutrients

*Herdrich, A.T. Colorado State University - Influence of iron oxides on copper and zinc toxicity to aquatic macroinvertebrate communities

*Mitrano, D.M., Colorado School of Mines - Tracking silver nanoparticle transformations using SP-ICP-MS

*- Consider for either best student poster or platform presentation

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*****Registration Deadline: April 6th, 2012 *****

Name: _____ **Affiliation:** _____

Mailing Address: _____

Phone: _____ **E-mail:** _____

Lunch preference for short course: ___ meat-eater or ___ vegetarian

Registrations Fees:

April 19th -- Short Course: Ecological Sleuths: Using isotopes to decipher physical and biological processes in environmental studies.

\$_____ - Non-student (\$40, including lunch)

\$_____ - Student (\$25, including lunch; must be currently enrolled as an undergraduate or graduate student)

April 20th -- Scientific Presentations and Business Meeting

\$_____ - Non-student (\$35)

\$_____ - Student (\$25; must be currently enrolled as an undergraduate or graduate student)

\$_____ - TOTAL

April 19th & 20th -- Short Course and Scientific conference

\$_____ - Non-student (\$60, including lunch on the 19th)

\$_____ - Student (\$35, including lunch on the 19th; must be currently enrolled as an undergraduate or graduate student)

Chapter Membership **Please complete official membership application form at meeting**

\$_____ - Non Student (\$10)

\$_____ - Student (\$5)

\$_____ - TOTAL

**Make check payable to: RMSETAC
Mail registration form and check to:
Lareina Guenzel (EPR-EP)
1595 Wynkoop St.
Denver, CO 80202.**

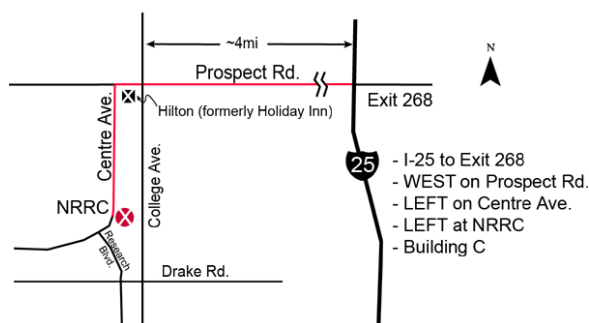
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LOGISTICS INFORMATION

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Transportation: The Fort Collins Science Center is located on the south of Colorado State University's main campus at the Natural Resources Research Center. It is located between Prospect Road to the north and Drake Road to the south and ½ mile west of College Avenue. From I-25 you can take Exit 268 and follow the directions below

Directions to NRRRC/Fort Collins Science Center from I-25



Parking: Parking at the Science Center is free, however, it can be difficult to find a parking spot if you arrive late. You will require a parking permit. Please arrange to car pool if you can and contact Travis for a free parking permit. If you cannot find a parking spot there is a pay parking lot at the corner of Centre Ave and Prospect road, just on CSU's campus. It is a few minutes' walk to the Science Center from there.

Security: The Fort Collins Science Center is a secure building. You will have to sign in and wear a visitor badge when you arrive.

Lodging: The Hilton is conveniently located just to the north of the Science Center and is just a few minutes' walk away. To book a room, go to <http://www.hilton.com>
For a hipper environment and closer proximity to the night life of Old Town Fort Collins, consider the Armstrong Hotel. To book a room, go to:
<http://www.thearmstronghotel.com/>

Dining: There are many great options for dining and entertainment throughout the city with the focus of nightlife located in Old Town Fort Collins. For information see:
<http://www.eatfortcollins.com/> or
<http://www.downtownfortcollins.com/members.php/category/11/>