

NAMP Radiochemistry Webinars: Past, Present and Future

Berta Oates, Portage, Inc.

A decorative graphic consisting of a solid green horizontal bar, followed by a white horizontal bar, and then a series of three thin, parallel green horizontal lines of varying lengths extending to the right.



National Analytical Management Program (NAMP)
U.S. Department of Energy Carlsbad Field Office



NAMP Radiochemistry Webinars: Past, Present and Future

Berta Oates, Portage, Inc.

Patricia Paviet, Mansour Akbarzadeh, John Griggs



Idaho National Laboratory



In Cooperation with our University Partners



ILLINOIS INSTITUTE
OF TECHNOLOGY



THE UNIVERSITY
OF IOWA



UNLV



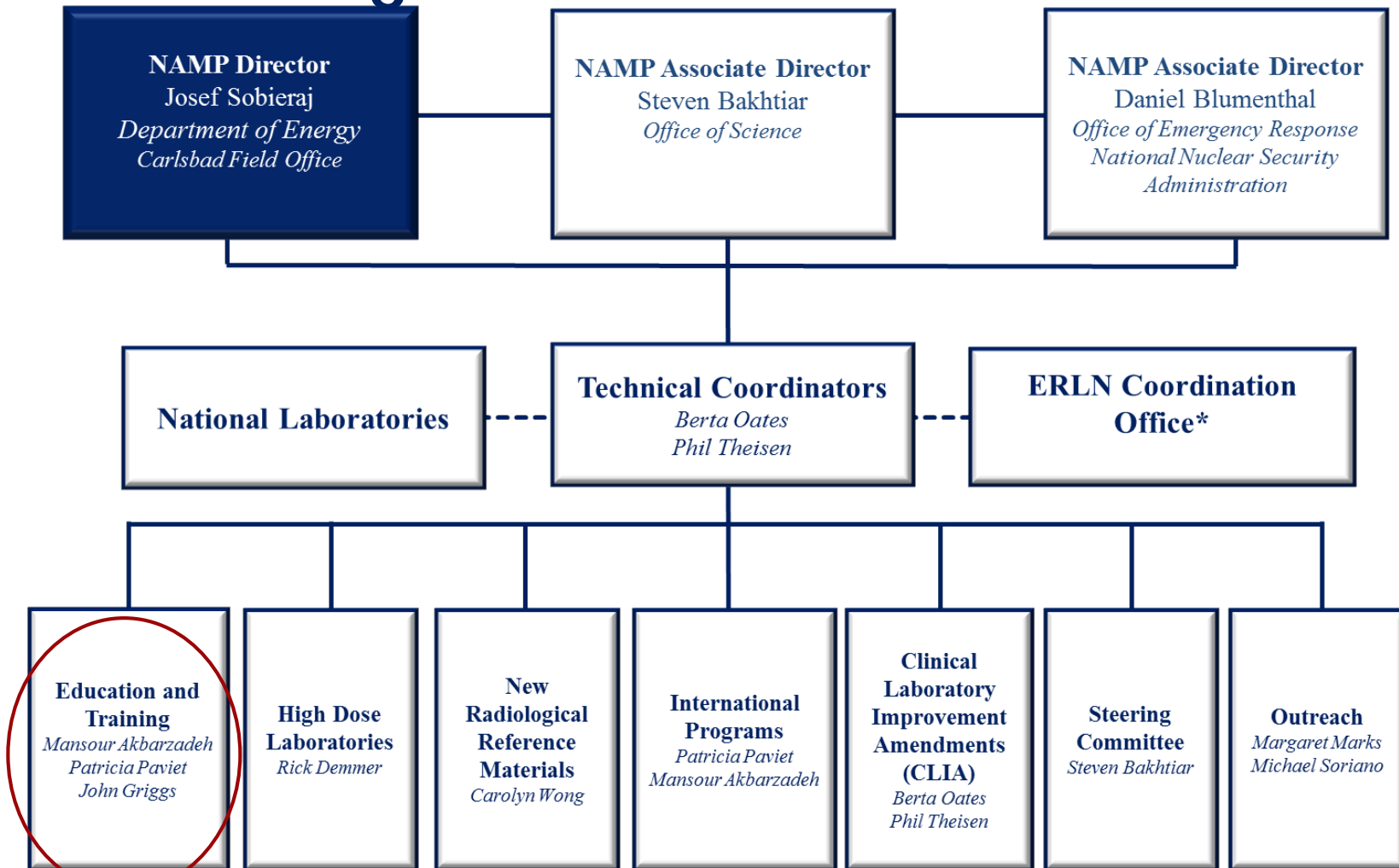
UNIVERSITY of CALIFORNIA • IRVINE



NAMP Mission

- The U.S. Department of Energy Office of Environmental Management (DOE-EM) authorized the Carlsbad Field Office to reestablish the National Analytical Management Program (NAMP) and to create a DOE Environmental Response Laboratory Network Coordination Office in support of the Integrated Consortium of Laboratory Networks (ICLN) effort to establish an effective, integrated response in a national emergency.
- NAMP serves as a central focal point to coordinate analytical resources within the DOE complex and to help other federal agencies or organizations, both national and international, gain access to the analytical capabilities and expertise within the participating laboratories.
- NAMP addresses national technological and resource needs and promotes training and education.

NAMP Organizational Structure

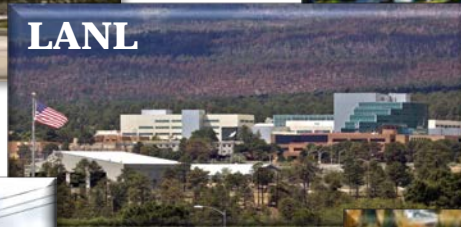


*NAMP Laboratories participating in ERLN

INL Idaho National Laboratory
ORISE Oak Ridge Institute for Science and Education
SNL Sandia National Laboratories

SRS Savannah River Site
WIPP Waste Isolation Pilot Plant
Y-12 Y-12 Plant, Oak Ridge, TN

NAMP Partners



Advantages to Webinars

Issues and Challenges

- Aging facilities within the DOE complex
- Declining workforce
- Few universities teaching radiochemistry
- Lack of professors
- Lack of facilities for training

Radiochemistry Webinars

- Promote radiochemistry education
- Introduce radiochemistry to a new audience
- Advance the knowledge of personnel in the discipline

Audience

- Managers
- Technicians
- Students
- Regulators
- Health Physicists
- Quality Assurance Officers
- Chemists

Declining Workforce in Radiochemistry

In May 2012, the National Academy of Sciences issued a report on the demand for and supply of nuclear and radiochemistry experts, a major component of the workforce in such areas as nuclear waste management, the nuclear fuel cycle, nuclear medicine, safeguards, and nuclear forensics.



May 2012
NAS Meeting in Washington DC
Report published



http://books.nap.edu/catalog.php?record_id=13308#toc

**Assuring a Future U.S.-Based
Nuclear and Radiochemistry Expertise**

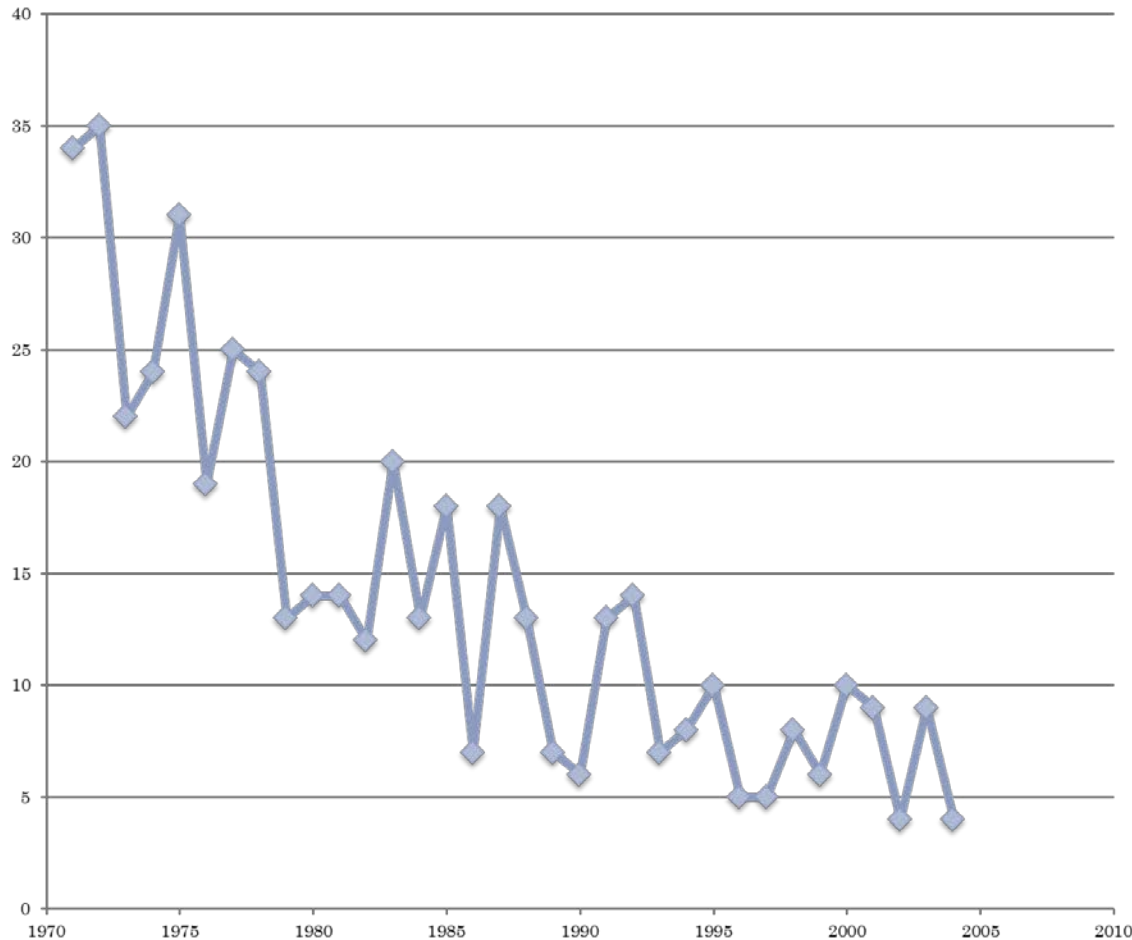


Declining Workforce in Radiochemistry (Cont.)

- The report noted that while many in the current workforce are approaching retirement age, the number of students opting for careers in nuclear and radiochemistry has decreased dramatically over the past few decades.
- To avoid a shortage of trained personnel, it is necessary to increase student interest in careers in these critical fields, improve the research and educational capacity of universities and colleges, and offer sector-specific on-the-job training.



Declining PhD Degrees in Nuclear Chemistry in the United States



- U.S. granted PhD degrees in Nuclear Chemistry from 1970 to 2004
- Range from 35 to 4

Adapted from NAS report, 2011

Example of Flyer


- Same format
- Title of presentation
- Lecture overview
- Learning objectives
- Who should attend
- Registration link
- Bio of the presenter
- Future presentations

Free attendance registration at:

<https://foodshield.connectsolutions.com/spectrometry1/event/registration.html>

National Analytical Management Program (NAMP)
U.S. Department of Energy Carlsbad Field Office

TRAINING AND EDUCATION SUBCOMMITTEE



Radiochemistry Webinars

Environmental & Bioassay Radiochemistry Series

NAMP cordially invites you to attend web-based lectures on specific radiochemistry topics developed in cooperation with the EPA and other Federal agencies, and our university partners. The selected topics are designed to strengthen the participant in areas of professional engineering practice identified by the nuclear industry or national laboratories, including but not limited to actinide chemistry in the environment and in the nuclear fuel cycle. Short (1 1/2- to 2-hour) webinars on specific radiochemistry topics are presented by renowned university professors and leading scientists in radiochemistry.

Please join us for Part 1 of Gamma Spectrometry

Who Should Attend: Chemists Laboratory Technicians Radiation Safety Personnel
Regulators Emergency Preparedness Personnel Managers

Lecture Overview: When compared to other forms of radiometric analyses, gamma spectrometry is sometimes considered "easy." However, complications of numerous nuclides present in the sample, overlapping peaks, ingrowth and decay, and a plethora of software settings can make even "easy" analyses go wrong. This webinar will focus on practical considerations to ensure reliable, defensible analytic results. The webinar format will focus on gamma spectrometry fundamentals, process knowledge, decay and ingrowth, libraries, calibrations, spectral artifacts, software settings, manual spectrum and results review and interpretation, and results validation.

Free Webcast: Thursday, September 19, 2013, at 1:00 pm Eastern Time, 12:00 pm Central Time


Register NOW at: <https://foodshield.connectsolutions.com/spectrometry1/event/registration.html>

For more information, please contact: Berta Oates at boates@portageinc.com or visit the NAMP website at www.wipp.energy.gov/namp


Meet the Presenters...

Bob Shannon


For over 20 years, Mr. Bob Shannon has supported government and independent commercial testing laboratory radiochemistry needs. He currently performs consulting work through Quality Radioanalytical Support, LLC. His recent work has included projects such as drafting revision 2 of the NRC RG 4.13 to incorporate MARLAP principals, developing and teaching basic radiochemistry training for State and Federal lab radiochemists, performing audits for the EPA and DOE, and helping author laboratory guidance documents and develop Rapid Radioanalytical Methods for the EPA. Mr. Shannon chairs The NELAC Institute Radiochemistry Expert Committee and the ASTM D19.04 Fission and Activation Products Task Group, and is the Radiochemistry Part Coordinator for Standard Methods for the Examination of Water and Wastewater.



David C. Burns



Mr. David Burns has been a radiochemist and nuclear measurements analyst for 20 years. He has managed a variety of radioanalytical laboratories in the private sector, as well as state- and federal-level government laboratories. Mr. Burns has provided radiochemistry consulting services in the areas of rapid method development, incident response, laboratory contamination control, and performance- and compliance-based laboratory assessments. Mr. Burns' other areas of expertise include radiation safety and industrial hygiene. Mr. Burns is currently the Radioanalytical Laboratory Measurements Branch Chief at the U.S. Air Force Technical Applications Center at Patrick Air Force Base.



Watch for these Upcoming Webinars

- Part 2 of Gamma Spectrometry (September 26)
- Overview of EPA Rapid Methods (October 24)
- Subsampling (November 14)

File Edit View Favorites Tools Help

Convert Select

https://foodshield.connectsolutions.com/actinideseminar/?launcher=false

An Overview of Actinide Che... An Overview of Actinide ...

Meeting Help

Chat (Q & A)

Jennifer Pierquet: Please turn on your computer speakers

Jennifer Pierquet: for sound

Jennifer Pierquet: Slides should be viewable

Jennifer Pierquet: Audio will vary a bit by speakers

Jennifer Pierquet: I have asked the

To: Submit

Note 3

Audio will be provided via computer speakers only.


Presenters please put your computers on mute.

Alena Paulenova_Actinides Chemistry.ppt

1951- Nobel Prize in Chemistry

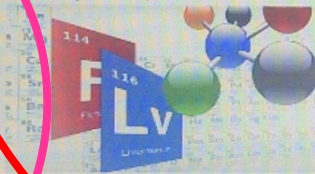
Seaborg and McMillan

Awarded for "their discoveries in the chemistry of the first transuranium elements."



(http://rsoa.bnl.gov/photo/gallery/LLNL_NobelLaureates/index-f.html)

2011 (60 year later):



The Super Heavy Element Research Group, currently led by Seaborg Scientists, Dawn Shaughnessy and Kenton Moody, focuses on investigating the chemical and physical properties of the heaviest elements made by man.

The international team LLNL (Lawrence Livermore National Lab)-JINR (Joint Institute for Nuclear Research, Dubna, Russia) has discovered up to 6 new elements – 113, 114, 115, 116, 117, and 118. Name "Flerovium" (Flerov) was proposed for element 114 and "Livermorium" for element 116.

[LLNL: News Releases 12/01/2011]

Share Stop Sharing Full Screen Sync

Attendee List (10/27/2011)

My Status: Active

- Christine Egnatuk
- Christopher Strickland
- Clark Eldredge
- Claudia Joseph
- Corey White
- Craig Maddigan
- Yynthia Niver
- Daniel LaBrier
- Daniel Oancea
- David Ikeda
- David Saunders
- David Stephens

Web Links

Browse To

Presenter Chat

Also we need the host to call in.

Jennifer Pierquet: just dialed-in

Jennifer Pierquet: Please make sure speakers speak close to their phones

Kristin Pasternak: I am stepping away from my computer for a little while. I will have my blackberry with me if there are any problems.

Everyone

Q & A linked to Chat

Show All Questions

Charlotte Sisk-Scott: Thank You!!

Charlotte Sisk-Scott: I have it to highest level. I can hear everyone but Alena

Thank You

Barb Sannan

Internet

Patricia D Paviet-Hartma... Internet Explorer cannot... An Overview of Actini...

Webinar Series Participation

Series 1-Actinide Chemistry April 2012 to April 2013

Series 2-Environmental Radiochemistry / Bioassay May 2013 to May 2014

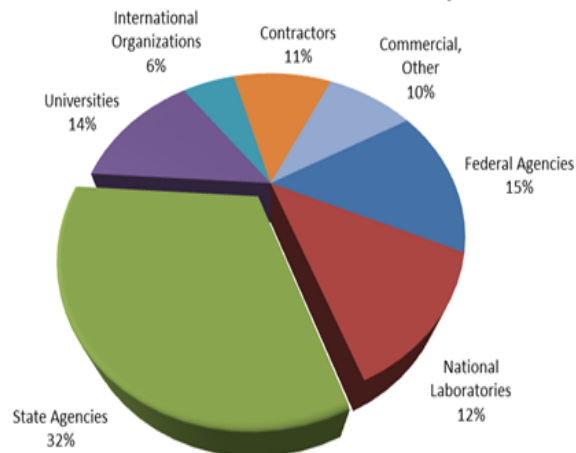
Webinar Topic	Attendance	Archived Viewings	Webinar Topic	Attendance	Archived Viewings
An Overview of Actinide Chemistry	165	642	Radiological Data Validation and Verification	205	142
Uranium Chemistry	183	247	Traceability and Uncertainty	260	70
Plutonium Chemistry – General Properties of Plutonium	142	182	Bioassay	182	86
Environmental Behavior of Plutonium	136	159	Gamma Spectrometry (Part 1)	273	207
Environmental Behavior of Uranium	164	88	Gamma Spectrometry (Part 2)	184	68
Analytical Chemistry of Plutonium and Uranium	210	182	Overview of EPA Incident Response Guides and Rapid Methods	182	106
Source Preparation for Alpha Spectroscopy	153	214	Detection Decisions and Detection Limits	234	80
Sample Dissolution	186	84	Guide to Uncertainty in Measurement	226	54
Neptunium Chemistry	157	65	Mass Spectrometry	235	50
Trivalent Actinides	151	61	Alpha Spectroscopy	237	84
Transplutonium Actinides	115	28	Applications in Liquid Scintillation Counting	236	84
Radium Chemistry	235	144	Unconventional Drilling/Hydraulic Fracturing and Natural Radioactivity	269	107

Series 3 Nuclear Fuel Cycle

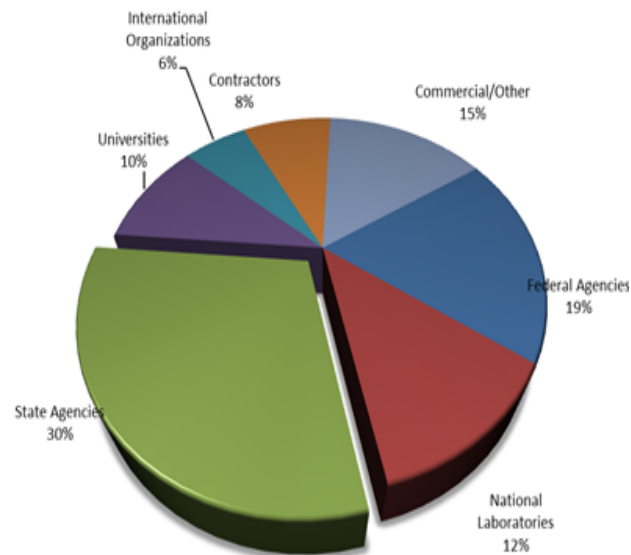
Webinar Title	Presenter	Date	Attendance
Introduction to the Fuel Cycle	Stephanie Cornet, NEA/OECD	June 26, 2014	151/158
Front End--Uranium Mining, Milling, Enrichment and UO ₂ production	Mikael Nilsson, UC-Irvine	July 24, 2014	211/95
Environmental and human contamination in the Front End of the Fuel Cycle for Uranium Mining and Milling	Kenya de Almeida, UNM	August 21, 2014	133/44
Nuclear Fuels and Fuel Fabrication	Thomas Hartmann, UNLV	September 25, 2014	146/43
Overview of Nuclear Reactors	Roger Blomquist, ANL	October 23, 2014	
Chemistry and radiochemistry of the reactor coolant system	Dr. Robert Litman, EMS	November 20, 2014	
The PUREX Process	Dr. Jimmy Bell, Bell Consultants	December 11, 2014	
Advanced Partitioning Technologies in the U.S.	Jennifer Braley, Colorado School of Mines	January 22, 2015	
Advanced Partitioning Technologies in Europe	Dr. Dominique Warin, Commissariat a l'Energie Atomique (CEA)	February 26, 2015	
Radiation Chemistry at the Back End of the Nuclear Fuel Cycle	Bruce Mincher, INL Steve Mezyk, California State University Long Beach	March 26, 2015	
Pyroprocessing Technology	Supathorn Phongikaroon Virginia Common-Wealth University	April 23, 2015	
Nuclear Waste Management-Application to Technetium	Edward Mausolf, PNNL	May 28, 2015	
Nuclear Repository Science and the Waste Isolation Pilot Plant	Lindsay Shuller-Nickles, Clemson University	June 25, 2015	
High Level Waste	Rick Demmer, INL	July 30, 2015	
Average >190/webinar	Total Attendance 5126 Total Archived Viewings 3574		

Webinar Attendance Distribution

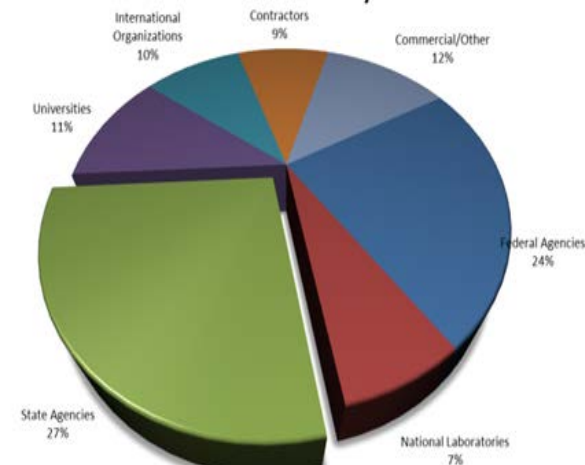
**Participants by Organization Type
for Series 1: Actinide Chemistry**



**Participants by Organization Type
Series 2: Environmental Radiochemistry & Bioassay**

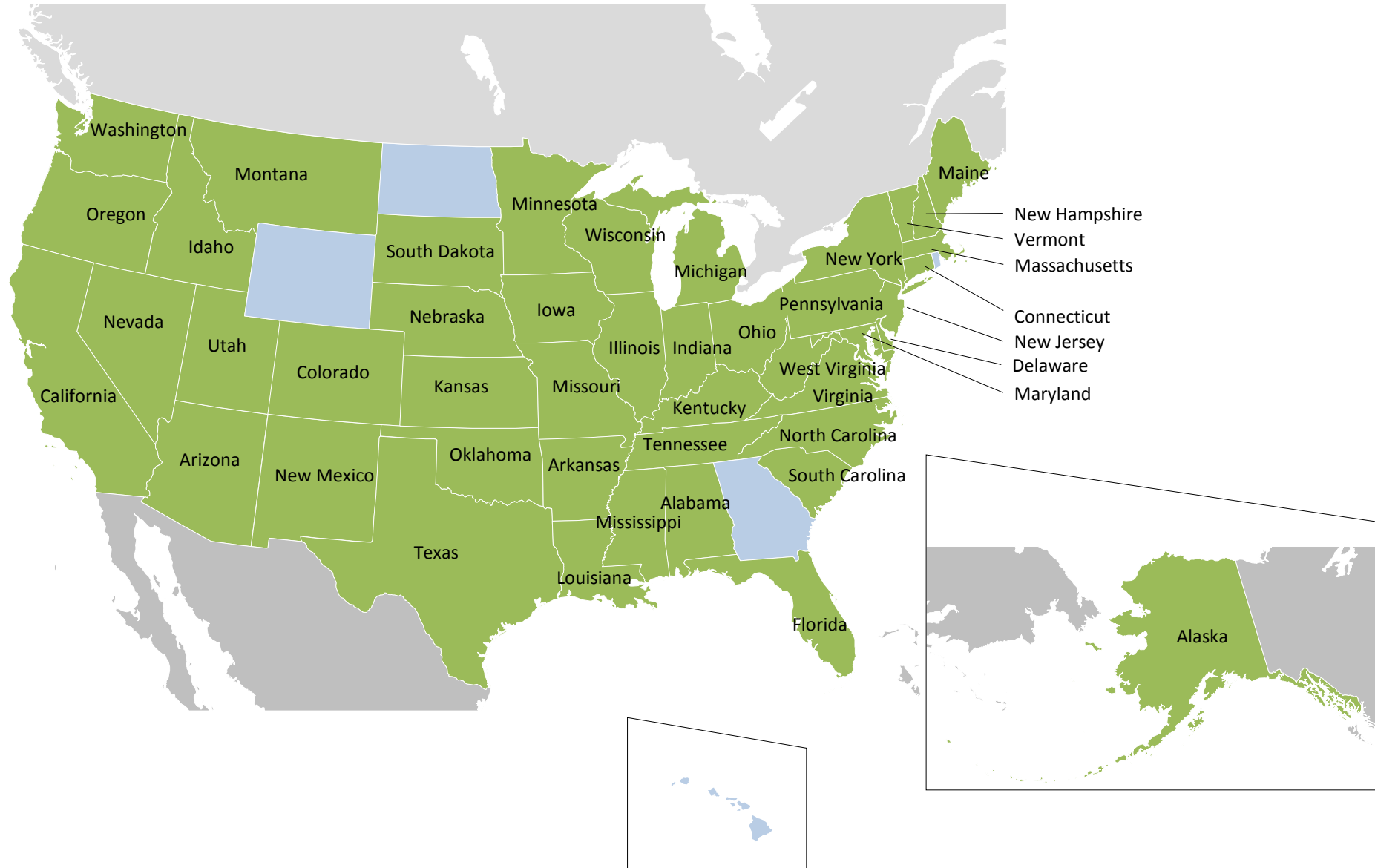


**Participants by Organization Type in
Series 3: Nuclear Fuel Cycle***



- ~30% State Agencies
- ~30% Federal Agencies and National Laboratories combined
- Balance: universities, international organizations, contractors, and commercial organizations

Webinar Attendance Includes 45 States Overall



Future Series—Nuclear Forensics

Webinar Title	Presenter	Tentative Date
Introduction	Dr. Brian Powell, Clemson University	August 2015
Nuclear Fission/Nuclear Devices	To Be Announced	September 2015
Thorium and Uranium Resources and Enrichment	Dr. Lindsay Shuller-Nickles, Clemson University	October 2015
Chronometry	Dr. Michael Schultz, University of Iowa	November 2015
Sample Matrices and Collection, Sample Preparation	Dr. Amy Hixon, University of Notre Dame	December 2015
Nuclear Materials Analysis — Physical and Spectroscopic Methods	Dr. Jeff Terry, Illinois Institute of Technology	January 2016
Nuclear Materials Analysis — Chemical Methods	Dr. Brian Powell, Clemson University	February 2016
Nuclear Materials Analysis — Non-Destructive Analysis	Dr. Azaree T. Lintereur, University of Utah	March 2016
Nuclear Materials Analysis — Radioanalytical Methods	Dr. Tim DeVol, Clemson University	April 2016
Nuclear Materials Analysis — Mass Spectroscopy	Dr. Ken Marcus, Clemson University	May 2016
Development of Signatures	Dr. Kiel Holliday and Dr. Leonard Grey, Lawrence Livermore National Laboratory	June 2016
Statistics in Nuclear Forensics	Dr. Luther McDonald, University of Utah	July 2016
Source and Route Attribution	Dr. Jenifer Braley, Colorado School of Mines	August 2016
Case Studies Part 1	Dr. Lindsay Shuller-Nickles, Clemson University	September 2016
Case Studies Part 2	To Be Announced	October 2016

Archived Webinars

- Accessible online
 - Audio-video recording
 - Slide deck
 - Presenter information
 - Keyword:
NAMP+Webinar

www.wipp.energy.gov/namp





NAMP

National Analytical Management Program



U.S. DEPARTMENT OF ENERGY

Join us at NAMP!
Learn more about collaboration with other laboratories to strengthen analytical chemistry response for the homeland security radiological needs of the EPA.

NAMP

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Training and Education

■ **NAMP Radiochemistry Webinars**

NAMP offers web-based lectures on specific radiochemistry topics developed in cooperation with the EPA, other Federal agencies, and university partners. Each webinar series presents short (1 ½- to 2-hour) webinars on specific radiochemistry topics presented by renowned university professors and leading scientists in radiochemistry. The selected topics are designed to strengthen the participant in areas of professional engineering practice identified by the nuclear industry or national laboratories, including but not limited to actinide chemistry in the environment and in the nuclear fuel cycle.

Series 1: Actinide Chemistry Series

The Actinide Chemistry Series offers the participant a comprehensive overview on the different topics of interest and concern, and provides understanding of the advances and challenges that actinide chemistry faces today.

- An Overview of Actinide Chemistry**
Presenter: Dr. Alena Paulenova, Oregon State University
Webcast: Friday, April 20, 2012, at 1:00 pm Eastern Time
- Uranium Chemistry - General Properties of Uranium**
Presenter: Dr. Mikael Nilsson, University of California, Irvine
Webcast: Thursday, June 14, 2012, at 1:00 pm Eastern Time
- Plutonium Chemistry - General Properties of Plutonium**
Presenter: Dr. Patricia Paviet-Hartmann, Idaho National Laboratory
Webcast: Thursday, July 12, 2012, at 1:00 pm Eastern Time
- Environmental Chemistry of Uranium and Plutonium, Part 1 (Plutonium)**
Presenter: Dr. Brian Powell, Clemson University
Webcast: Tuesday, August 7, 2012, at 1:00 pm Eastern Time
- Environmental Chemistry of Uranium and Plutonium, Part 2 (Uranium)**
Presenter: Dr. Brian Powell, Clemson University
Webcast: Tuesday, August 14, 2012, at 1:00 pm Eastern Time
- Analytical Chemistry of Uranium and Plutonium**
Presenter: Dr. Ralf Sudowe, University of Nevada Las Vegas
Webcast: Thursday, October 11, 2012, at 1:00 pm Eastern Time
- Source Preparation for Alpha Spectroscopy - (2 CECs from AAHP, under ID 2012-11-005)**
Presenter: Dr. Michael K. Schultz, University of Iowa
Webcast: Thursday, November 15, 2012 at 1:00 pm Eastern Time
- Sample Dissolution**
Presenter: Dr. Ralf Sudowe, University of Nevada Las Vegas
Webcast: Thursday, December 13, 2012, at 1:00 pm Eastern Time
- Neptunium Chemistry**
Presenter: Dr. Alena Paulenova, Oregon State University
Webcast: Tuesday, February 5, 2013, at 1:00 pm Eastern Time
- The Trivalent Actinides**
Presenter: Dr. Alena Paulenova, Oregon State University
Webcast: Thursday, February 28, 2013, at 1:00 pm Eastern Time
- Transplutonium Elements: Ultramicrochemistry and Atom-at-a-time Chemistry**
Presenter: Dr. Lester Morss, Professorial Lecturer with the George Washington University
Webcast: Thursday, March 28, 2013
- Radium Chemistry**
Presenter: Dr. Bahman Parsa, New Jersey Department of Health
Webcast: Thursday, April 25, 2013

Series 2: Environmental Radiochemistry/Bioassay Series

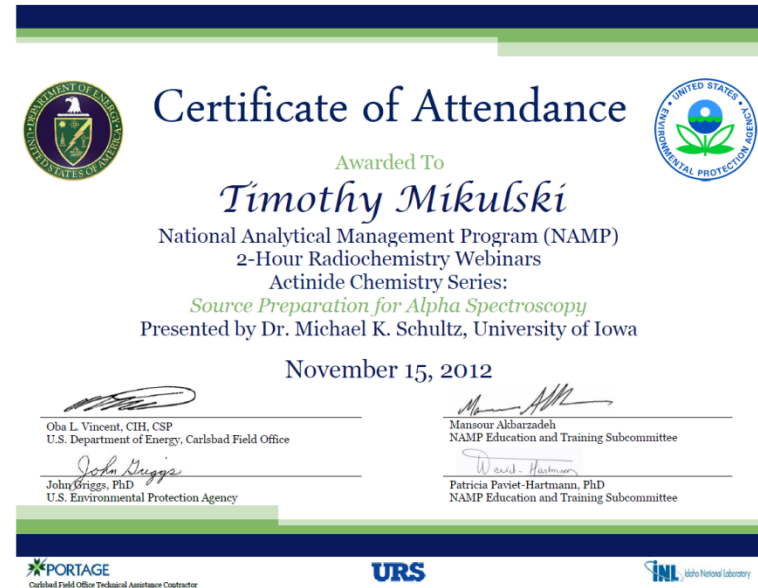
The second series of webinars focuses on topics fundamental to Environmental Radiochemistry and Bioassay.



New Brunswick Laboratory

American Academy of Health Physics Continuing Education Credits

- Source Preparation for Alpha Spectroscopy, Dr. Michael K. Schultz, University of Iowa
- Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation, Dr. Thomas Rucker, Leidos
- Alpha Spectroscopy, Dr. Ralf Sudowe, University of Nevada Las Vegas

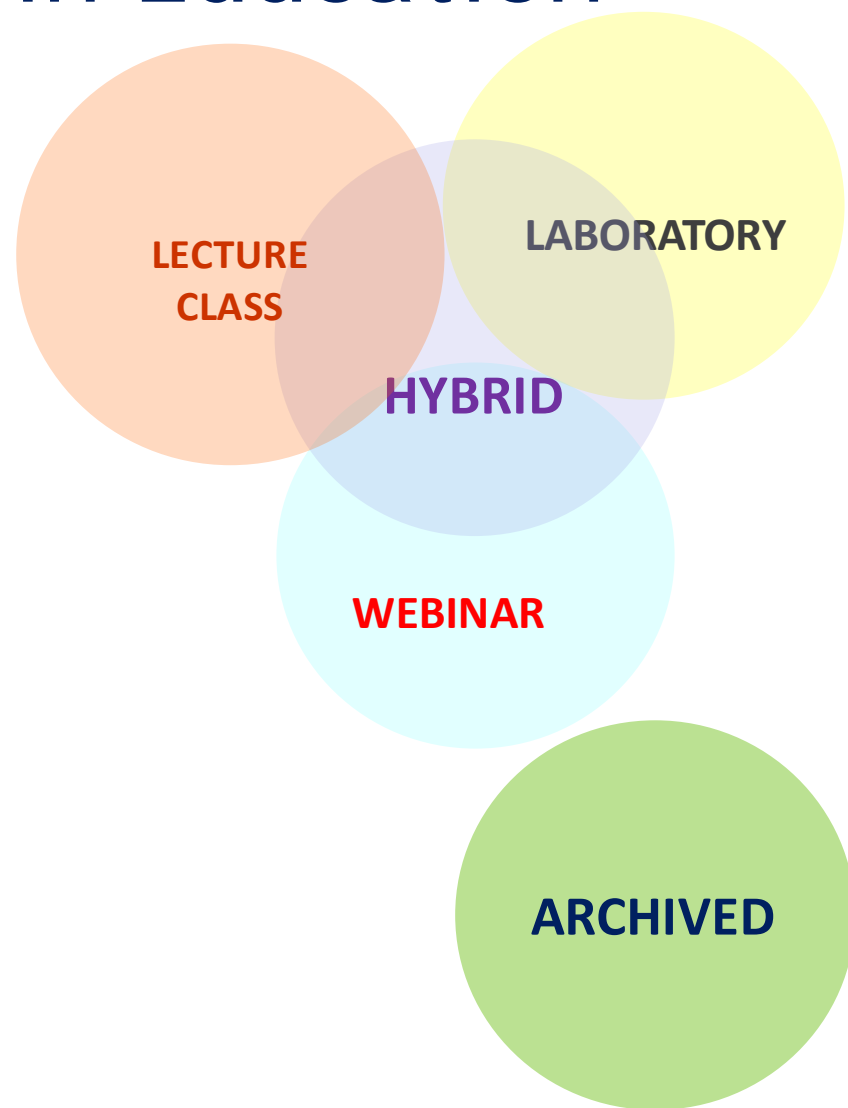


Webinar Attendee Comments

- “I thought it was very interesting. The material is not often presented in other than a graduate school setting so many of us don't have access to it; other than from books. Thank you for making it possible.”
- “Only criticism - too much info too fast! providing a copy of the presentation was the cure.”
- “I appreciate if you can send copy of the presentations as attached to the desired participants emails. It is good initiative to gather scientists from radiochemistry community world-wide to refresh their knowledge in such ease and advanced way.”

Conclusion: Future in Education

- Webinars are very successful and demonstrate the need for such resources to maintain the U.S. level of expertise in radiochemistry
- Attendance and positive feedback reflect a renewed interest in radiochemistry
- Archived webinars available to public online



Thank You

For more information, visit the NAMP
website at

www.wipp.energy.gov/namp

