

# **45th Annual Waste Management Conference (WM2019)**

Encouraging Young Men & Women  
to Achieve Their Goals in  
Radwaste Management

Papers Only

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Volume 1 of 7

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## **Session 004B - Panel: Best Practices in Project Communication Involving Stakeholders**

**Session Co-Chairs:** Alexandra Gilliland (USA)  
Jeannette Hyatt (USA)

**Lead Organizer:** Jeannette Hyatt (USA)

**Additional Organizer(s):** Evelyn Dawson (USA)  
Alexandra Gilliland (USA)

**Paper Reviewer:** Rachel West (USA)

**Panel Reporter:** Evelyn Dawson (USA)

### **Papers**

[The Site Specific Advisory Board Experience - A Members Perspective - 19069](#)

**Belinda Price**, Oak Ridge Site Specific Advisory Board (USA)

[Preserving the Mound Laboratory Legacy—The Mound Cold War Discovery Center - 19550](#)

**Susan Smiley**, US DOE Office of Legacy Management (USA); Melissa Lutz, Navarro (USA)

## **Session 005 - Stakeholder Involvement in Consolidated ISFSI and SNF/UNF Transportation Initiatives**

### **Session Co-Chairs:**

Natalia Saraeva (USA)

Rachel West (USA)

### **Lead Organizer:**

Natalia Saraeva (USA)

### **Additional Organizer(s):**

Sonny Goldston (USA)

### **Paper Reviewer:**

Natalia Saraeva (USA)

### **Paper Title**

[The Role of Indian Tribes in the Safe, Secure, and Routine Transportation of SNF and HLW](#) - 19463

**Francis Cameron**, Tribal Strategies LLC (USA); Heather Westra, Prairie Island Indian Community (USA); Ron Johnson, Prairie Island Indian Community (USA); Richard Arnold, Navarro, Inc/Nevada National Security Site (USA)

[Perspectives on Previous DOE Transportation Acquisition Efforts](#) - 19049

**Lauren Rodman**, Pacific Northwest National Laboratory (USA); Elizabeth Helvey, North Wind Infrastructure and Technology (USA); Steven Maheras, Pacific Northwest National Laboratory (USA)

[Understanding Public Support for Transportation of CSNF](#) - 19205

**Kuhika Gupta**, University of Oklahoma (USA); Hank Jenkins-Smith, University of Oklahoma (USA); Carol Silva, University of Oklahoma (USA)

[External Engagement During Evaluations of Shutdown Nuclear Power Plant Sites](#) - 19221

**Steven Maheras**, Pacific Northwest National Laboratory (USA); Erica Bickford, US DOE (USA)

## **Session 007 - Project Management Improvements: Planning through Completion- Scope, Cost, & Schedule Control**

### **Session Co-Chairs:**

Terry Jennings (USA)

Charles Waggoner (USA)

### **Lead Organizer:**

Charles Waggoner (USA)

### **Paper Reviewer:**

Charles Waggoner (USA)

### **Paper Title**

[Career Development Through Discreet Simulation Modeling](#) - 19009

**Brandon Loveless**, Washington River Protection Solutions (USA);

Cyrus Anderson, Washington River Protection Solutions (USA);

Jared Templeton, Washington River Protection Solutions (USA);

Brennan Angevine, Washington River Protection Solutions (USA)

[Improving Effectiveness of Waste Management Processes with  
Information & Communications Technology](#) - 19524

**Adam Haines**, PTAG (Canada); Jeremy Rasmussen, PTAG  
(Canada)

[Sustainable Security through International Source Repatriation](#) -  
19659

**Charles Streeper**, Los Alamos National Laboratory (USA)

## Session 008 - Spent/Used Nuclear Fuels: Management & Concerns

### Session Co-Chairs:

Edward Ketusky (USA)

Terry Sams (USA)

### Lead Organizer:

John Gregory (USA)

### Paper Reviewer:

John Gregory (USA)

### Paper Title

[Management and Disposal of U.S. Department of Energy Spent Nuclear Fuel](#) - 19133

**Bret Leslie**, US Nuclear Waste Technical Review Board (USA)

[Aluminum Clad SNF: Technical Considerations and Challenges for Extended \(>50 years\) Dry Storage](#) - 19527

**Michael Connolly**, Idaho National Laboratory (USA); Lance Lacroix, US DOE Idaho Operations Office (USA); Robert Sindelar, Savannah River National Laboratory (USA); Maxcine Maxted, US DOE (USA); Josh Jarrell, Idaho National Laboratory (USA)

[Chemistry and Reactivity of Oxide Films on Aluminum Clad Test Reactor Fuels](#) - 19294

**Tedd Lister**, Idaho National Laboratory (USA); Michael Glazoff, Idaho National Laboratory (USA)

**Session 009 - Radioactive Waste Management in Mining, Uranium Industry, Oil and Gas and Non-Nuclear Sectors**

**Session Co-Chairs:**

Larry Camper (USA)

John Coffman (USA)

**Lead Organizer:**

Erich Tiepel (USA)

**Additional Organizer(s):**

Kapila Fernando (Australia)

Linda Suttora (USA)

**Paper Reviewer:**

Erich Tiepel (USA)

**Paper Title**

[Understanding Lead-210-Mediated Neutron Radiation from TENORM Can Maximize Worker Safety](#) – 19321

*Donald Carpenter, Thomas Fischer, Les Skoski,*

*Allison Wilding, ARCADIS US, Inc.; William Thompson, NorthWestern Energy*

[Decommissioning, Decontamination, and Disposal of LLW-LL, and ILW-LL at a Former Rare Earths Processing Facility in Malaysia](#) - 19087

**Robert Bruce**, Geosyntec Consultants, Inc. (USA); **Stefanie Fountain**, Geosyntec Consultants, Inc. (USA); **Jay Beech**, Geosyntec Consultants, Inc. (USA)

[Initial Assessment of Cover Degradation Features at the Mexican Hat, Utah, UMTRCA Disposal Site](#) - 19556

**Angelita Denny**, US DOE Office of LM (USA); **John Manée**, Navarro Research and Engineering, Inc. (USA); **Evan Tyrrell**, Navarro Research and Engineering, Inc. (USA); **Michael Morse**, Navarro Research and Engineering, Inc. (USA); **Jeff Carman**, Navarro Research and Engineering, Inc. (USA); **Dan Brennecke**, Navarro Research and Engineering, Inc. (USA)

[Recent Regulatory Challenges Associated with Managing NORM & TENORM Waste Streams in the U.S.](#) - 19609

**Alex Lopez**, Perma-Fix Environmental Services, Inc. (USA)

## **Session 010A - ER Post Closure Challenges and Long-Term Stewardship/Legacy Management**

### **Session Co-Chairs:**

Mark Kautsky (USA)

Joy Shoemake (USA)

### **Lead Organizer:**

Dale Bignell (USA)

### **Additional Organizer(s):**

Mark Kautsky (USA)

Joy Shoemake (USA)

### **Paper Reviewer:**

Mark Kautsky (USA)

### **Paper Title**

#### [Designing a Site Closure Strategy for Uranium in Groundwater and Surface Water](#) - 19534

**Kenneth Karp**, Navarro Research and Engineering, Inc. (USA); Jason Nguyen, US DOE Office of LM (USA); Elisabeth Hawley, Geosyntec Consultants, Inc. (USA); Rula Deeb, Geosyntec Consultants, Inc. (USA); Amoret Bunn, Pacific Northwest National Laboratory (USA); Jennifer Nyman, Geosyntec Consultants, Inc. (USA); Fred Smith, Navarro Research and Engineering, Inc. (USA)

#### [Wastewater Treatment at the Fernald Preserve—Past, Present, and Future](#) - 19555

**William Hertel**, Navarro Research and Engineering, Inc. (USA); Susan Smiley, US DOE Office of LM (USA); Cathy Glassmeyer, Navarro Research and Engineering, Inc. (USA)

#### [Managing an Aging Pump-and-Treat Groundwater Remediation System at the Fernald Preserve](#) - 19557

**Ken Broberg**, Navarro Research and Engineering, Inc. (USA); Susan Smiley, US DOE Office of LM (USA); William Hertel, Navarro Research and Engineering, Inc. (USA)



## Session 010B - Robotics and Remote Systems in D&D and the Nuclear Industry (1/5)

### Session Co-Chairs:

Paul Dixon (USA)

Young Soo Park (USA)

### Lead Organizer:

Rodrigo Rimando (USA)

### Additional Organizer(s):

Kim "KD" Auclair (USA)

Jean Plummer (USA)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Paper Title

[Keep It Smart and Simple - Henriette - The Advanced Designed Drum Gripper for Remote Handling Tasks](#) - 19327

**Luisa Bucher**, Walischmiller Engineering GmbH (Germany); Hubert Hafen, Wälischmiller Engineering GmbH (Germany); Joe Dixon, NuVision Engineering (USA)

[Commissioning of Robotic Inspection and Automated Analysis System for Assay of Gas Diffusion Piping](#) - 19500

**Siri Maley**, Carnegie Mellon University (USA); Heather Jones, Carnegie Mellon University (USA); Warren Whittaker, Carnegie Mellon University (USA); David Kohanbash, Carnegie Mellon University (USA); Joshua Spisak, Carnegie Mellon University (USA); Ralph Boirum, Carnegie Mellon University (USA); Andrew Zhang, Carnegie Mellon University (USA); J. David Yesso, Independent Contractor (USA); Russell Joseph Riddle, Carnegie Mellon University (USA); William Whittaker, Carnegie Mellon University (USA)

[Robotics on KM-IT Platform](#) - 19107

**Walter Quintero**, Applied Research Center - FIU (USA); Himanshu Upadhyay, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Peggy Shoffner, Applied Research Center - FIU (USA)

[Novel Radiometry for In-Pipe Robotic Inspection of Holdup Deposits in Gaseous Diffusion Piping](#) - 19503

**Siri Maley**, Carnegie Mellon University (USA); Heather Jones, Carnegie Mellon University (USA); William Whittaker, Carnegie Mellon University (USA)

## **Session 015 - Scientific, Strategic and Conceptual Contributions to Deep Geological Repository Siting Process**

### **Session Co-Chairs:**

Patrick Landais (France)

Thilo von Berlepsch (Germany)

### **Lead Organizer:**

Thilo von Berlepsch (Germany)

### **Paper Reviewer:**

Thilo von Berlepsch (Germany)

### **Paper Title**

[French Geological Disposal Project: From Siting to Permitting](#) - 19018

**Patrick Landais**, CEA (France)

[Scenario Development: Proposal of a Methodology for Different Host Rocks and Disposal Concepts](#) - 19007

**Guido Bracke**, GRS gGmbH (Germany); Kim-Marisa Mayer, GRS gGmbH (Germany); Thomas Beuth, GRS gGmbH (Germany)

[Site Selection Criteria for Deep Borehole Disposal of Intermediate Level Waste in Australia](#) - 19615

**Dirk Mallants**, CSIRO (Australia); Vincent Crombez, CSIRO (Australia); John Phalen, CSIRO (Australia)

[Experiments and Simulation of a Borehole in Salt to Understand Heat, Brine and Vapor Migration](#) - 19192

**Suzanne Bourret**, Los Alamos National Laboratory (USA); Eric Guiltinan, Los Alamos National Laboratory (USA); Peter Johnson, GNS Science (New Zealand); Shawn Otto, Los Alamos National Laboratory (USA); Douglas Weaver, Los Alamos National Laboratory (USA); Brian Dozier, Los Alamos National Laboratory (USA); Hakim Boukhalfa, Los Alamos National Laboratory (USA); Philip Stauffer, Los Alamos National Laboratory (USA); Terry Miller, Los Alamos National Laboratory (USA)

[Subsurface Radionuclide Transport: Northeastern Negev Desert Vadose Zone Model Development](#) - 19285

**Gilles Bussod**, Los Alamos National Laboratory (USA); Ravid Rosenzweig, The Geological Survey of Israel (Israel); Paul Reimus, Los Alamos National Laboratory (USA); Philip Stauffer, Los Alamos National Laboratory (USA); Martin Dangelmayr, Los Alamos National Laboratory (USA); Rani Calvo, Geological Survey of Israel (Israel); Nathan Hayes-Rich, Los Alamos National Laboratory (USA); Ofra Klein-Ben David, NRCN (Israel); Avraham Dody, NRCN (Israel); Noa Balaban, NRCN (Israel); Paul Dixon, Los Alamos National Laboratory (USA); Rose Harris, Los Alamos National Laboratory

(USA); Doug Ware, Los Alamos National Laboratory (USA); Hannah Behar, Los Alamos National Laboratory (USA)

[Development of an Experimental Approach for Thermal Testing in Bedded Salt](#) - 19431

**Hakim Boukhalfa**, Los Alamos National Laboratory (USA); Doug Ware, Los Alamos National Laboratory (USA); Peter Johnson, GNS Science (New Zealand); Shawn Otto, Los Alamos National Laboratory (USA); Douglas Weaver, Los Alamos National Laboratory (USA); Brian Dozier, Los Alamos National Laboratory (USA); Philip Stauffer, Los Alamos National Laboratory (USA); Melissa Mills, Sandia National Laboratories (USA); Courtney Herrick, Sandia National Laboratories (USA); Kristopher Kuhlman, Sandia National Laboratories (USA)

## Session 017 - Selected Key Topics in US Commercial LLW Management (2/2)

### Session Co-Chairs:

Ted Buckner (USA)

J. Scott Kirk (USA)

### Lead Organizer:

Colleen Owens (USA)

### Additional Organizer(s):

J. Scott Kirk (USA)

Christopher Shaw (USA)

### Paper Reviewer:

Colleen Owens (USA)

The Richard S. Hodes M.D. Honor Award will be presented by the LLW Forum, Inc. to Coleman Clint Miller, Principal Radwaste Engineer at Pacific Gas and Electric Company. The awards ceremony is followed by the WM2019 Honors Award Lecture by Mr. Miller. After the awards ceremony and lecture paper #19697, two additional selected key presentations will follow on LLW management.

### Paper Title

[Progress in L/ILW Management at Operating NPP in the USA](#) -  
19697

**Coleman Clint Miller**, Pacific Gas & Electric Co (USA)

[Implementation of a Dose-based Compliance System for WCS](#) -  
19178

**Emily Caffrey**, Risk Assessment Corporation (USA); Colby Mangini, Risk Assessment Corporation (USA); Arthur Rood, K-Spar Inc (USA); Helen Grogan, Risk Assessment Corporation (USA); Justin Mohler, Risk Assessment Corporation (USA); James Rocco, Risk Assessment Corporation (USA); John Till, Risk Assessment Corporation (USA); Jay Cartwright, Waste Control Specialists LLC (USA); Christopher Shaw, Waste Control Specialists LLC (USA); Travis Matthews, Waste Control Specialists LLC (USA)

[Development of Waste Inventory for Probabilistic Performance Assessment Modeling](#) - 19361

**Leslie Gains-Germain**, Neptune and Company, Inc. (USA); Sean McCandless, Neptune and Company, Inc. (USA); Doug Anderson, Neptune and Company, Inc. (USA); Hayley Brittingham, Neptune and Company, Inc. (USA); Tom Stockton, Neptune and Company, Inc. (USA); Paul Black, Neptune and Company, Inc. (USA)

## Session 018 - Global Use of Cementitious Waste Forms for LLW/ILW

### Session Co-Chairs:

Christine Langton (USA)

Kent Rosenberger (USA)

### Lead Organizer:

Kapila Fernando (Australia)

### Additional Organizer(s):

Felix Himmerkus (Germany)

### Paper Reviewer:

Christine Langton (USA)

### Paper Title

[Solidification of LLW and ILW – A Comparison Between Different Methods](#) - 19584

**Gabriele Bandt**, TÜV NORD EnSys GmbH & Co. KG (Germany);  
Heinz Kroeger, Consultant (Germany)

[Solid Secondary Waste Immobilization in Cementitious Waste Forms at the Hanford Site](#) - 19081

**Matthew Asmussen**, Pacific Northwest National Laboratory (USA);  
Jim Neeway, Pacific Northwest National Laboratory (USA); Sarah  
Saslow, Pacific Northwest National Laboratory (USA); Gary L. Smith,  
Pacific Northwest National Laboratory (USA); Joseph Westsik,  
Pacific Northwest National Laboratory (USA); Bradley Johnson,  
Pacific Northwest National Laboratory (USA); Tamas Varga, Pacific  
Northwest National Laboratory (USA); David J Swanberg,  
Washington River Protection Solutions (USA); Elvie Brown,  
Washington River Protection Solutions (USA)

[Mercury Speciation and Stabilization in Saltstone](#) - 19103

**Christine Langton**, Savannah River National Laboratory (USA);  
Larry Oji, Savannah River National Laboratory (USA); Bill Wilmarth,  
Savannah River National Laboratory (USA)

[Immobilization of Radioactive Wastes Using Geopolymers](#) - 19483

**Ryan Morco**, The University of Western Ontario (Canada); Jiju  
Joseph, The University of Western Ontario (Canada); Giles Whitaker,  
The University of Western Ontario (Canada); Barb Noye, Ontario  
Power Generation (Canada); Vasile Bostan, Ontario Power  
Generation (Canada); Don Jarron, Ontario Power Generation  
(Canada); J. Clara Wren, The University of Western Ontario  
(Canada)

[How do Early Age Geopolymers Respond to Gamma Irradiation Exposure?](#) - 19515

**Daniel Geddes**, University of Sheffield (United Kingdom); John  
Provis, University of Sheffield (United Kingdom); Susan A. Bernal,  
University of Leeds (United Kingdom); Martin Hayes, National  
Nuclear Laboratory (United Kingdom)

## Session 022 - Environmental Remediation of Abandoned Uranium Mines

### Session Co-Chairs:

Mark Frei (USA)

Richard Murphy (USA)

### Lead Organizer:

Stuart Walker (USA)

### Additional Organizer(s):

Richard Murphy (USA)

Tjalle ("Chuck") Vandergraaf (Canada)

### Paper Reviewer:

Richard Murphy (USA)

### Paper Title

[Using Superfund Guidance and Tools for the Remediation of Uranium Mine Sites](#) - 19056

**Stuart Walker**, Office of Remediation & Technology Innovation (OSRTI), US EPA (USA)

[Geochemical Reactions Controlling Contaminant Transport in Groundwater at a Former Uranium Mill Site](#) - 19576

**Raymond H. Johnson**, Navarro Research and Engineering, Inc. (USA); **Ronald Kent**, Navarro Research and Engineering, Inc. (USA); **Jeff Carman**, Navarro Research and Engineering, Inc. (USA); **Mark Kautsky**, US DOE (USA)

[Integration of Local Knowledge is a Key for the Remediation Success of Legacy Uranium Mine Sites](#) - 19564

**Ian Wilson**, Saskatchewan Research Council (Canada); **Joe Muldoon**, Saskatchewan Research Council (Canada)

[Cost-effective Remediation of Legacy Uranium Mines in Canada](#) - 19279

**Tom Calvert**, Natural Resources Canada (Canada)

[Integrated Methodology for the Impact Assessment of a Uranium Mill Contaminated Site](#) - 19031

**Maria de Lurdes Dinis**, Porto University, CERENA-Polo FEUP (Portugal); **Antonio Fiuza**, Porto University, CERENA-Polo FEUP (Portugal)

[Constraints in the Remediation of Uranium Former Uranium Mining Sites](#) - 19586

**Horst Monken Fernandes**, IAEA (Austria); **Maria Luiza Pungs**, IAEA (Austria)

## **Session 023 - Global Experience of Records, Knowledge and Memory (RK&M): Global Marker Systems**

### **Session Co-Chairs:**

Thomas Klein (USA)

Russell Patterson (USA)

### **Lead Organizer:**

Russell Patterson (USA)

### **Additional Organizer(s):**

Stephan Hotzel (Germany)

Thomas Klein (USA)

Anderson Ward (USA)

### **Paper Reviewer:**

Thomas Klein (USA)

### **Paper Title**

[The OECD-NEA RK&M Initiative \(2011–2018\) – a 7-year Step in a 10,000-year Journey: What Next?](#) - 19432

**Stephan Hotzel**, GRS gGmbH (Germany); Arne Berckmans, ONDRAF/NIRAS (Belgium); Anne Claudel, NAGRA (Switzerland); Jean-Noël Dumont, Andra (France); Jantine Schröder, SCK-CEN (Belgium); Sofie Tunbrant, SKB (Sweden)

[Challenges in Long-Term Records Preservation and Access](#) - 19549  
**Ed Parks**, US DOE (USA)

[Nuclear Crisis Communication in an Era of Fake News and Media Overload](#) - 19414

**Punam Thakur**, Carlsbad Environmental Monitoring & Research Center (USA); Anderson Ward, US DOE (USA)

[Oblivion Landscapes](#) - 19008

**Carla Leitao**, Rensselaer Polytechnic Institute (USA)

[Managing Knowledge Over Time for Supporting Radioactive Waste Geological Disposal Project Development](#) - 19028

**Patrick Landais**, CEA (France); Vincent Maugis, Andra (France)

[Scientists and Reporters Can be Friends](#) - 19509

**Laura Hermann**, Potomac Communications Group (USA)

[Why Cleanup Acceptance Is Running into Conflicts - Off-site Disposal Versus On Site Disposal](#) - 19068

**Amy Fitzgerald**, City of Oak Ridge (USA)

## **Session 024 - Nuclear and Industrial Robotics, Remote Systems and Emerging Technology (2/5)**

### **Session Co-Chairs:**

Kim "KD" Auclair (USA)

Jean Plummer (USA)

### **Lead Organizer:**

Kim "KD" Auclair (USA)

### **Additional Organizer(s):**

Rodrigo Rimando (USA)

### **Paper Reviewer:**

Kim "KD" Auclair (USA)

### **Paper Title**

[Analysis of the Impact of Radiation on Cameras and Robotic Perception](#) - 19242

**Richard Garcia**, Southwest Research Institute (USA); David Anthony, Southwest Research Institute (USA); Marc Brooks, Southwest Research Institute (USA); Monica Garcia, Southwest Research Institute (USA)

[Remote Collection of Radioactive Waste at Canadian Nuclear Laboratories](#) - 19425

**Mitch King**, Canadian Nuclear Laboratories (Canada); Jaleh Semmler, Canadian Nuclear Laboratories (Canada); Patrick Degagne, Canadian Nuclear Laboratories (Canada); Greg Hersak, Canadian Nuclear Laboratories (Canada); Darren Radford, Canadian Nuclear Laboratories (Canada); Andrew Kittmer, Canadian Nuclear Laboratories (Canada)

[Robotic Solutions for Remote Access and Retrieval of High-Level Radioactive Waste](#) - 19544

**Christopher Graham**, Fluor Idaho, LLC (USA)



## **Session 025 - Crosscutting Subsurface Mass Transport and Environmental Assessment of Geological Disposal Systems**

### **Session Co-Chairs:**

Terry Jennings (USA)

Tjalle ("Chuck") Vandergraaf (Canada)

### **Lead Organizer:**

Simon Kwong (United Kingdom)

### **Additional Organizer(s):**

Terry Jennings (USA)

Tjalle ("Chuck") Vandergraaf (Canada)

Ming Zhu (USA)

### **Paper Reviewer:**

Simon Kwong (United Kingdom)

### **Paper Title**

[Analytical Approach to Evaluate Uncertainty in Discharged Inventory Estimates at the Hanford Site - 19012](#)

**Usama Zaher**, INTERA, Inc. (USA); Sunil Mehta, INTERA, Inc. (USA); Michael Lord, INTERA, Inc. (USA); Stephen Agnew, Columbia Energy & Environmental Services, Inc. (USA)

[DOC-WMF – A Generic Model for Assessment of Waste Disposal Facilities - 19278](#)

**Shizhong Lei**, Canadian Nuclear Safety Commission (Canada); Adelene Gaw, Canadian Nuclear Safety Commission (Canada); Paula Osborne, Research Consultant (Canada)

[Development of Concentration Ratios and Transfer Factors for Human and Ecological Probabilistic Performance Assessments - 19781](#)

**Aharon Fleury**, Neptune and Company, Inc. (USA); Doug Anderson, Neptune and Company, Inc. (USA); Hayley Brittingham, Neptune and Company, Inc. (USA); Paul Duffy, Neptune and Company, Inc. (USA); Robert Lee, Neptune and Company, Inc. (USA); Ralph Perona, Neptune and Company, Inc. (USA)

## Session 027 - Application of Innovative D&D Technologies Including Application of Virtual Reality

### Session Co-Chairs:

Con Lyras (Australia)  
Aaron Washington (USA)

### Lead Organizer:

Rick Demmer (USA)

### Additional Organizer(s):

Bernard Poncet (France)  
Aaron Washington (USA)

### Paper Reviewer:

Aaron Washington (USA)

### Paper Title

[International Standards as Critical Enablers to Development and Diffusion of D&D Technologies](#) - 19372

**Joseph Sinicrope**, Applied Research Center - FIU (USA); Peggy Shoffner, Applied Research Center - FIU (USA); Andrew Szilagyi, US DOE (USA); James Nicholson, Savannah River National Laboratory (USA); Leonel Lagos, Applied Research Center - FIU (USA)

[Evaluating Quantity of Decommissioning Waste by Cutting Virtual 3D Objects in Large Equipment](#) - 19111

**Hiroshi Seki**, Hitachi, Ltd. (Japan); Junya Tahata, Hitachi-GE Nuclear Energy (Japan); Mitsukta Imamura, Hitachi-GE Nuclear Energy (Japan); Hiroshi Nagase, Hitachi-GE Nuclear Energy (Japan)

[A Picture Speaks 360,000 Words – Virtual Reality as a Decommissioning Planning Tool](#) - 19364

**Jeffrey Miller**, Canadian Nuclear Laboratories (Canada); Paul Schmidt, Canadian Nuclear Laboratories (Canada)

[Enhanced Techniques for Concrete Decontamination During Decommissioning](#) - 19005

**Richard Reid**, EPRI (USA); Richard McGrath, EPRI (USA)

[Evaluation of Low-cost, Full HD, CMOS Cameras for Use in the Calcine Retrieval Project](#) - 19530

**Kevin Young**, Fluor Idaho, LLC (USA); Mike Smith, Idaho Accelerator Center (USA)

[Application of a Deep Learning Network to 3D Modeling of Nuclear Facilities](#) - 19614

**Sungmoon Joo**, Korea Atomic Energy Research Institute (South Korea); Jonghwan Lee, Korea Atomic Energy Research Institute (South Korea); Dongjune Hyun, Korea Atomic Energy Research Institute (South Korea); Ikjune Kim, Korea Atomic Energy Research Institute (South Korea)

## **Session 028 - Success Stories and Lessons Learned in Transportation Worldwide**

### **Session Co-Chairs:**

Paul Jones (USA)

Kent McDonald (USA)

### **Lead Organizer:**

Olaf Oldiges (Germany)

### **Additional Organizer(s):**

Jeff England (USA)

### **Paper Reviewer:**

Olaf Oldiges (Germany)

### **Paper Title**

[Transportation of Radioactive Waste in Support of Ontario Power Generation's Darlington Nuclear Generating Station Refurbishment Project](#) - 19384

**David Van Ooteghem**, Ontario Power Generation (Canada)

[Support of UJV Rez, a. s. for Shipments of Spent Nuclear Fuel within the M3 Program](#) - 19035

**Josef Podlaha**, UJV Rez, a. s. (Czech Republic)

[First Road/River Barge Security Transport of SNF under the new German Transport Security Guidelines](#) - 19102

**Oliver Paetzold**, DAHER Nuclear Technologies GmbH (Germany);  
**Christiane Koebel**, DAHER Nuclear Technologies GmbH (Germany)

## **Session 029a - Spent / Used Nuclear Fuel - Posters**

**Session Co-Chairs:**

John Gregory (USA)

Edward Ketusky (USA)

**Lead Organizer:**

Jonathan Bricker (USA)

**Paper Reviewer:**

John Gregory (USA)

**Poster Judge:**

Sharon Robinson (USA)

**Paper Title**

[A Thermal Model for the Performance Analysis of Large Scale Spent Nuclear Fuel Cooling Pond](#) - 19173

**Reaz Hasan**, Birmingham City University (United Kingdom); Ahmed Ramadan, Northumbria University (United Kingdom)

## Session 029b - High Level Waste Processing – Posters

### Session Co-Chairs:

Jonathan Bricker (USA)

Matthew S. Fountain (USA)

### Lead Organizer:

Jonathan Bricker (USA)

### Paper Reviewer:

Jonathan Bricker (USA)

### Poster Judge:

Sharon Robinson (USA)

### Paper Title

[Using the Diffusion Equation to Predict CST Resin Breakthroughs – 19051](#)

**Stephen Agnew**, Columbia Energy & Environmental Services, Inc. (USA); Evgeny Kolev, Honeywell (USA)

[Repurposing of a Double-Shell Waste Tank to Support Interim Storage of Treated Low- Activity Waste - 19307](#)

Todd Wagnon, Marissa Ammer, Washington River

Protection Solutions

[Solving Operational Challenges with INL's Integrated Waste Treatment Unit \(IWTU\) - 19003](#)

**Craig Porter**, Fluor Idaho, LLC (USA); Richard Farnsworth, Fluor Idaho, LLC (USA); Stephen King, Fluor Idaho, LLC (USA); James Law, Fluor Idaho, LLC (USA); Brad Eldredge, Eldredge Engineering (USA)

[In-can Melter for Fukushima Waste: From Laboratory Scale Tests to the Industrial Design Definition - 19021](#)

**Régis Didierlaurent**, Orano (France); Christophe Girold, CEA (France); Thierry Prevost, Orano (France); Stéphane Lemonnier, CEA (France); Isabelle Hugon, CEA (France); Laurent David, Orano (France); Kohei Shibata, ATOX Co., Ltd. (Japan)

[Revisit of Phase Separation of Borosilicate Glass for Vitrification of High Level Radioactive Waste - 19166](#)

**Youichi Enokida**, Nagoya University (Japan); Kayo Sawada, Institute of Materials and Systems for Sustainability, Nagoya University (Japan); Seo Uchimura, Graduate School of Engineering, Nagoya University (Japan); Naoki Tsukiyama, School of Engineering,

Nagoya University (Japan)

[Development of a Testbed for Pipeline Flushing](#) - 19409

**Ahmadreza Abbasi Baharanchi**, Applied Research Center - FIU (USA); Dwayne McDaniel, Applied Research Center - FIU (USA); Joseph Coverston, Applied Research Center - FIU (USA)

[Melter Modeling over a Range of Scales to Support Vitrification at the WTP](#) - 19664

**Alexander Abboud**, Idaho National Laboratory (USA); Donna Guillen, Idaho National Laboratory (USA); Derek Dixon, Pacific Northwest National Laboratory (USA); William Eaton, Pacific Northwest National Laboratory (USA); Steven Luksic, Pacific Northwest National Laboratory (USA); Kevin Fox, Savannah River National Laboratory (USA); Richard Pokorny, University of Chemistry and Technology Prague (Czech Republic); Albert Kruger, US DOE ORP (USA)

## Session 029c - Analytical & Characterization Techniques in HLW - Posters

### Session Co-Chairs:

Jonathan Bricker (USA)

Kayte Denslow (USA)

### Lead Organizer:

Jonathan Bricker (USA)

### Paper Reviewer:

Paul Bredt (USA)

### Poster Judge:

Sharon Robinson (USA)

### Paper Title

[Radionuclide Inventory Calculations for the Calcined Solid Storage Facility Performance Assessment](#) - 19292

**James M. McCarthy**, Fluor Idaho, LLC (USA); David J. Thorne, North Wind Portage, Inc. (USA); Alva M. Parsons, Fluor Idaho, LLC (USA)

[Estimation of Sorption Behavior of Europium onto Ca-Al-Si Hydrate by Fluorescence Analysis](#) - 19222

**Yayoi Taneichi**, Tohoku University (Japan); Taiji Chida, Tohoku University (Japan); Yuichi Niibori, Tohoku University (Japan)

[A Python Package for Fuel Cycle and Waste Management Analysis](#) - 19545

**Milos Atz**, University of California, Berkeley (USA); Massimiliano Fratoni, University of California, Berkeley (USA)

## Session 029d - HLW and SNF Repositories - Posters

### Session Co-Chairs:

Jonathan Bricker (USA)

Sharon Robinson (USA)

### Lead Organizer:

Jonathan Bricker (USA)

### Paper Reviewer:

Jonathan Bricker (USA)

### Poster Judge:

Sharon Robinson (USA)

### Paper Title

[Fundamental Study on Sorption Behavior of Europium to Mica Flakes](#) - 19116

**Masaya Ishijima**, Tohoku University (Japan); Taiji Chida, Tohoku University (Japan); Yuichi Niibori, Tohoku University (Japan)

[Estimation of Deposition Behavior of Supersaturated Silicic Acid Around Geological Disposal Facility](#) - 19137

**Shogo Tanaka**, Tohoku University (Japan); Yuichi Niibori, Tohoku University (Japan); Taiji Chida, Tohoku University (Japan)

[Alteration of Granite Surface with the Formation of Calcium-Silicate-Hydrate by Alkaline Groundwater](#) - 19165

**Taiji Chida**, Tohoku University (Japan); Masayuki Hayashi, Tohoku University (Japan); Yuichi Niibori, Tohoku University (Japan)

[Emplacement Room Mock-up Structure for Testing the Placement of Nuclear Waste within a Deep Geologic Repository](#) - 19271

**Ed Veckie**, Unified Engineering (Canada)

[Spatiotemporal Distribution of <sup>241</sup>Am in the Vicinity of the Waste Isolation Pilot Plant](#) - 19543

**Anderson Ward**, US DOE (USA); Punam Thakur, Carlsbad Environmental Monitoring & Research Center (USA)

[Preliminary Study on Sorption Behavior of Iodine on Ca-Al-Si Hydrate](#) - 19310

**Rintaro Nagahora**, Tohoku University (Japan); Yuichi Niibori, Tohoku University (Japan); Taiji Chida, Tohoku University (Japan)



## **Session 030A - Student Posters: The Next Generation - Industry Leaders of Tomorrow**

### **Session Co-Chairs:**

Robert Berry (United Kingdom)

Leonel Lagos (USA)

### **Lead Organizer:**

Robert Berry (United Kingdom)

### **Additional Organizer(s):**

Leonel Lagos (USA)

### **Paper Reviewer:**

Robert Berry (United Kingdom)

### **Paper Title**

[Use of Ionizing Radiation for Treatment and Extraction of Organic Compounds from Petroleum Sludge](#) - 19403

**Ana Paula Gimenes Tessaro**, Nuclear & Energy Research Institute (Brazil); **Natalie Costa Rolindo**, Nuclear & Energy Research Institute (Brazil); **Júlio Takehiro Marumo**, Nuclear & Energy Research Institute, IPEN-CNEN/SP (Brazil); **Roberto Vicente**, Nuclear & Energy Research Institute (Brazil); **Alexandre Las Casas**, Nuclear & Energy Research Institute (Brazil)

[A Study on the Comparison of International WTS for Integrated Management of Radioactive Waste](#) - 19034

**Sun Il Kim**, Chosun University (South Korea); **Ki Tae Yang**, Chosun University (South Korea); **Jong Soon Song**, Chosun University (South Korea)

[Analysis of Radiation Damage in Electronics of Unmanned Aerial and Ground Robotic Platforms](#) – 19470

**Monia Kazemeini**, University of Nevada, Las Vegas (USA); **Alexander Barzilov**, University of Nevada, Las Vegas (USA); **Woosoon Yim**, University of Nevada, Las Vegas (USA); **Jean Chagas Vaz**, University of Nevada, Las Vegas (USA)

[Inventory and Characterization of Categories 3-5 Disused](#)

[Sealed Radioactive Sources](#) - 19284

**Natalie Costa Rolindo**, Nuclear & Energy Research Institute (Brazil); Ana Paula Gimenes Tessaro, Nuclear & Energy Research Institute (Brazil); Ricardo Bastos Smith, Nuclear & Energy Research Institute (Brazil); Cesar Campos, Nuclear & Energy Research Institute (Brazil); Yasser Said, Nuclear & Energy Research Institute (Brazil); Júlio Takehiro Marumo, Nuclear & Energy Research Institute, IPEN-CNEN/SP (Brazil); Roberto Vicente, Nuclear & Energy Research Institute (Brazil)

## **Session 039 - Advances in the Management of Nuclear Power Plant Dry Waste from Around the World**

### **Session Co-Chairs:**

Mark Kirshe (USA)

Andreas Roth (Germany)

### **Lead Organizer:**

Mark Kirshe (USA)

### **Additional Organizer(s):**

Andreas Roth (Germany)

### **Paper Reviewer:**

Mark Kirshe (USA)

### **Paper Title**

[International Low Level Waste Management Practices and Technical Bases for Very Low Level Waste Classification](#) - 19415

**Lisa Edwards**, EPRI (USA); Karen Kim, EPRI (USA); Richard McGrath, EPRI (USA)

[Taking in Nuclear Operation of the Plasma Facility for Treatment Industrial Radioactive Waste](#) - 19346

**Jan Deckers**, Belgoprocess (Belgium)

[First Step in Validating the Radiological Inventories of the Current French Nuclear Fleet](#) - 19000

**Sylvain Janski**, EDF DP2D (France)

[Overview of Novel Canadian Approaches for Decontamination of Solid Radioactive and Mixed Waste](#) - 19476

**Sriram Suryanarayan**, Kinectrics Inc. (Canada); Huw David, Kinectrics Inc. (Canada)

## Session 040 - D&D of Nuclear and Non-Power Generating Facilities Both Large and Small

### Session Co-Chairs:

Joe Dixon (USA)

Fred Sheil (United Kingdom)

### Lead Organizer:

Fred Sheil (United Kingdom)

### Additional Organizer(s):

Anthony Banford (United Kingdom)

### Paper Reviewer:

Fred Sheil (United Kingdom)

### Paper Title

[Unlocking the Vault – Accelerated Delivery Through the Application of Innovation and Collaboration](#) - 19011

**Sebastian Proctor**, Cavendish Nuclear (United Kingdom); Derek Carlisle, Sellafield Ltd (United Kingdom); Ken Harrawood, Bechtel (United Kingdom)

[Dissolved Air Flotation for Rapid Dewatering and Separation of Legacy Sludge Wastes](#) - 19065

**Alexander Lockwood**, University of Leeds (United Kingdom); Philip Kok Shun, University of Leeds (United Kingdom); Nicholas Warren, University of Leeds (United Kingdom); Jeff Peakall, University of Leeds (United Kingdom); Martyn Barnes, Sellafield Ltd (United Kingdom); Geoff Randall, Sellafield Ltd (United Kingdom); David Harbottle, University of Leeds (United Kingdom); Timothy Hunter, University of Leeds (United Kingdom)

[Successes and Lessons Learned in the Design, Construction and Use of a Tool for Sampling the WR-1 Reactor Core](#) - 19360

**Jeffrey Miller**, Canadian Nuclear Laboratories (Canada); Brian Wilcox, Canadian Nuclear Laboratories (Canada)

[Decommissioning of a Historic Waste Storage Facility in Austria](#) - 19059

**Norbert Zoeger**, Nuclear Engineering Seibersdorf (Austria); Roman Beyercknecht, Nuclear Engineering Seibersdorf (Austria)

[Decommissioning of Obsolete Nuclear Facilities in the ÚJV ?ež, a. s.](#) - 19027

**Karel Svoboda**, UJV Rez, a. s. (Czech Republic); Josef Podlaha, UJV Rez, a. s. (Czech Republic); Milan Tous, UJV Rez, a. s. (Czech Republic)

[Legacy Waste Removal from Standpipes and Bunkers at Whiteshell Laboratories, Canada](#) - 19040

**Matthew Cole**, Veolia Nuclear Solutions (USA); Tatyana Chshyolkova, Canadian Nuclear Laboratories (Canada); Terence Stepanik, Canadian Nuclear Laboratories (Canada); Ritch Nally, Canadian Nuclear Laboratories (Canada)

## Session 041 - Strategies for Deep Geological Repository Development

### Session Co-Chairs:

Jean-Michel Bosgiraud (France)

Volker Kunze (Germany)

### Lead Organizer:

Patrick Landais (France)

### Additional Organizer(s):

Thilo von Berlepsch (Germany)

### Paper Reviewer:

Jean-Michel Bosgiraud (France)

### Paper Title

[The Cigéo Pilot Phase](#) - 19024

**Patrick Landais**, CEA (France); Frederic Launeau, Andra (France);  
Pascal Leverd, Andra (France)

[Lessons Learned from the Development of the DGR Konrad](#) - 19619

**Christian Gosberg**, BGE (Germany)

[Conceptual Design of the Belgian Geological Disposal Facility for Category B and C Waste](#) - 19341

**Didier Leonard**, ONDRAF/NIRAS (Belgium); Didier Raymaekers, ONDRAF/NIRAS (Belgium); William Wacquier, ONDRAF/NIRAS (Belgium); Rik Vanbrabant, Tractebel Engineering (Belgium); Daniel Delort, Andra (France)

[Overview of Canada's Plan for the Long-Term Management of Used Nuclear Fuel](#) - 19537

**Christopher Lawrence**, Nuclear Waste Management Organization (Canada); Chris Boyle, Nuclear Waste Management Organization (Canada); David Doyle, Nuclear Waste Management Organization (Canada); Alan Murchison, Nuclear Waste Management Organization (Canada)

[Derivation of Monitoring Parameters based on the Long-term Safety Assessment](#) - 19529

**Bernd Frieg**, NAGRA (Switzerland); Irina Gaus, NAGRA (Switzerland); Paul Smith, Safety Assessment Management (Switzerland) GmbH (Switzerland); Oliver Leupin, NAGRA (Switzerland); Paul Marschall, NAGRA (Switzerland)

[Concept for Operation of the Belgian Geological Disposal Facility for Category B and C Wastes](#) - 19247

**Didier Leonard**, ONDRAF/NIRAS (Belgium); Didier Raymaekers, ONDRAF/NIRAS (Belgium); William Wacquier, ONDRAF/NIRAS

(Belgium); Bernt Haverkamp, BGE TECHNOLOGY GmbH  
(Germany); Philipp Herold, BGE TECHNOLOGY GmbH (Germany)

[Challenges in Interim and Final Storage of HLW in Germany](#) - 19060

**Frank Charlier**, RWTH Aachen University, NET (Germany); Bruno  
Thomauske, RWTH Aachen University, NET (Germany); Axel  
Preusse, RWTH Aachen University, NET (Germany)

[A Generic Study of High Level Radioactive Waste Repository in  
Crystalline Rock](#) - 19633

**Zorica Radakovic-Guzina**, Itasca Consulting Group (USA); Branko  
Damjanac, Itasca Consulting Group (USA); Tom Lam, NWMO  
(Canada)

## Session 042 - Advances in HLW Storage & Retrieval

### Session Co-Chairs:

Dwayne McDaniel (USA)

Bruce Wiersma (USA)

### Lead Organizer:

Bill Wilmarth (USA)

### Additional Organizer(s):

Steven Thomson (United Kingdom)

### Paper Reviewer:

Vijay Jain (USA)

### Paper Title

#### [Progress on Advancing Robotic Ultrasonic Volumetric Inspection Technology for Hanford Under-tank Inspection](#) - 19474

**Kayte Denslow**, Pacific Northwest National Laboratory (USA); Traci Moran, Pacific Northwest National Laboratory (USA); Michael Larche, Pacific Northwest National Laboratory (USA); Samuel Glass, Pacific Northwest National Laboratory (USA); Kayle Boomer, Washington River Protection Solutions (USA); Steven Kelly, Washington River Protection Solutions (USA); Theodore (Ted) Wooley, Washington River Protection Solutions (USA); Jason Gunter, Washington River Protection Solutions (USA); Joseph Rice, Washington River Protection Solutions (USA); Dustin Stewart, US DOE ORP (USA); Cody Borigo, Guidedwave (USA); Russell Love, Guidedwave (USA); Alex Reese, Guidedwave (USA); Gabriel Hamilton, Inuktun Services Ltd. (Canada); Changki Mo, Washington State University (USA); Eric Loeffler, Washington State University (USA); Andrew Porter, Washington State University (USA); David Garcia, Washington State University (USA); Mohamed Osman, Washington State University (USA); Francisco Chavarria, Washington State University (USA)

#### [Full-Scale Retrieval and Transfer System Mockup for Pneumatic Conveyance of High-Level Calcine Waste](#) - 19563

**Troy Burnett**, Fluor Idaho, LLC (USA); Timothy O'Connor, Fluor Idaho, LLC (USA); Matthew Ramirez, Fluor Idaho, LLC (USA)

#### [Finite Element Structural Analysis Evaluating New Retrieval Strategies in the Hanford Waste Tanks](#) - 19125

**Ken Johnson**, Pacific Northwest National Laboratory (USA); Naveen Karri, Pacific Northwest National Laboratory (USA); John Deibler, Pacific Northwest National Laboratory (USA); F George Abatt, Becht Engineering Co., Inc. (USA); Ken Stoops, Becht Engineering Co., Inc. (USA); Larry Julyk, Becht Engineering Co., Inc. (USA); Brian Larsen, Becht Engineering Co., Inc. (USA)

[Erosion and Mobilisation of Highly Active Simulant Suspensions using Impinging Vertical Jets](#) - 19378

**Josh Croft**, The University of Leeds (United Kingdom); Timothy Hunter, University of Leeds (United Kingdom); Jeff Peakall, University of Leeds (United Kingdom); Hugh Rice, University of Leeds (United Kingdom)



## Session 043 - Approaches to HLW Tank Modular Salt Processing

### Session Co-Chairs:

Connie Herman (USA)

Linda Suttora (USA)

### Lead Organizer:

Bill Wilmarth (USA)

### Additional Organizer(s):

Vijay Jain (USA)

### Paper Reviewer:

Bill Wilmarth (USA)

### Paper Title

[Tank Closure Cesium Removal at Savannah River Site](#) - 19604

**Mark Keefer**, Savannah River Remediation (USA); Gregory Arthur, Savannah River Remediation (USA); Terri Fellingner, Savannah River Remediation (USA); Pen Mayson, Savannah River Remediation (USA)

[Tank Side Cesium Removal System Project and Technology](#)

[Maturation Program](#) - 19519

**Matt Landon**, Washington River Protection Solutions (USA); Kevin Ard, Washington River Protection Solutions (USA); Blake Chamberlain, Washington River Protection Solutions (USA); David Herman, Savannah River National Laboratory (USA); Daniel McCabe, Savannah River National Laboratory (USA); Reid Peterson, Pacific Northwest National Laboratory (USA); Philip Schonewill, Pacific Northwest National Laboratory (USA); Ian Pegg, Catholic University of America (USA); Sahid Smith, US DOE (USA); Robert Wilson, AVANTech, Inc. (USA)

[Hanford Tank Side Cesium Removal System: Process Description and Performance Metrics](#) - 19613

**Tracy Barker**, AVANTech, Inc. (USA); Kevin Ard, Washington River Protection Solutions (USA); Blake Chamberlain, Washington River Protection Solutions (USA)

[Flowsheet Definition for the Tank Side Cesium Removal Unit and the Importance of Early Communication](#) - 19142

**Kyle Anderson**, Washington River Protection Solutions (USA)

## Session 044 - Assessment of Disposal Systems, Facilities and Sites for LLW/ILW

### Session Co-Chairs:

Marcel Bergeron (USA)  
Kent Rosenberger (USA)

### Lead Organizer:

Linda Suttora (USA)

### Additional Organizer(s):

Marcel Bergeron (USA)  
Kent Rosenberger (USA)  
Sherri Ross (USA)

### Paper Reviewer:

Kent Rosenberger (USA)

### Paper Title

[A Multiple Lines of Evidence Approach for Conceptual Site Models in Performance Assessments](#) - 19070

**Marcel Bergeron**, Washington River Protection Solutions (USA); Michael Connelly, TecGeo, Inc. (USA); Vicky Freedman, Pacific Northwest National Laboratory (USA); Sunil Mehta, INTERA, Inc. (USA); Mark Rockhold, Pacific Northwest National Laboratory (USA); Nazmul Hasan, INTERA, Inc. (USA); William McMahon, CH2M HILL PRC (USA); Matthew Kozak, INTERA, Inc. (USA); Jan Bovier, US DOE ORP (USA)

[Natural and Engineered Features Supporting Environmental Performance of Idaho National Laboratory's Remote-Handled Low-Level Waste Disposal Facility](#) - 19436

**A. Jeffrey Sondrup**, Idaho National Laboratory (USA); Annette Schafer, Idaho National Laboratory (USA); Brady Orchard, Idaho National Laboratory (USA); Brett Welty, Idaho National Laboratory (USA); Arthur Rood, K-Spar Inc (USA)

[Laying a Foundation for Performance Assessment \(PA\) Model Development](#) - 19267

**Steven Hommel**, Savannah River Remediation (USA)

[Performance Assessment Results for the Hanford Integrated Disposal Facility](#) - 19134

**Kearn Lee**, Orano Federal Services (USA)

[Postclosure Safety Assessment for the Nuclear Power Demonstration Closure Project](#) - 19158

**Nava Garisto**, ARCADIS Canada Inc. (Canada); James Penfold, Quintessa Ltd (United Kingdom); Kate Thatcher, Quintessa Ltd (United Kingdom); Meggan Vickerd, Canadian Nuclear Laboratories

(Canada); Ryan Kovacs, ARCADIS Canada Inc. (Canada); John Avis, Geofirma Engineering (Canada); Nicola Calder, Geofirma Engineering (Canada)

[Performance and Compliance Monitoring - Different Objectives and Different Interpretation](#) - 19109

**Roger Seitz**, IEI (USA)

[Implementation of a Risk-Informed Monitoring Program for the Saltstone Disposal Facility](#) - 19374

**A. Christianne Ridge**, US NRC (USA); Karen Pinkston, US NRC (USA); George Alexander, US NRC (USA); Hans Arlt, US NRC (USA); Harry Felsher, US NRC (USA); Lloyd Desotell, US NRC (USA)

[An Approach for Setting Priorities for Experimental Studies in Support of Safety Assessments](#) - 19393

**Janice Kenney**, Wood (United Kingdom); David Holton, Wood (United Kingdom); Martin Kelly, Wood (United Kingdom)

## Session 045 - ILW / HLW Sludge Retrieval and Management Challenges in the US and UK

### Session Co-Chairs:

Laurie Judd (USA)

Jason Vitali (USA)

### Lead Organizer:

Kent Rosenberger (USA)

### Additional Organizer(s):

Laurie Judd (USA)

Fred Sheil (United Kingdom)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Paper Title

[Deployment of a 3D SONAR System at Savannah River: Results, Implications and Next Steps](#) - 19718

**Erich Keszler**, NuVision Engineering (USA); Martin Williams, NuVision Engineering (USA); Laurie Judd, Longenecker & Associates (USA); Stephen Lainson, Fortis Remote Technology (United Kingdom)

[In Situ Gas Generation and Its Impact on Decommissioning Nuclear Legacy Waste Facilities](#) - 19416

**Sean Morgan**, Sellafield Ltd (United Kingdom); Martyn Barnes, Sellafield Ltd (United Kingdom); Geoff Randall, Sellafield Ltd (United Kingdom); Michael Johnson, University of Leeds (United Kingdom); Timothy Hunter, University of Leeds (United Kingdom); Sushma Davison, Sellafield Ltd. (United Kingdom)

[Advanced Retrieval Demonstrations of the Hanford Waste End Effector](#) - 19383

**Carl Enderlin**, Pacific Northwest National Laboratory (USA); Brian Hatchell, Pacific Northwest National Laboratory (USA); Eric Berglin, Pacific Northwest National Laboratory (USA); Beric Wells, Pacific Northwest National Laboratory (USA); Jason Mount, Pacific Northwest National Laboratory (USA); Carolyn Burns, Pacific Northwest National Laboratory (USA); Theodore (Ted) Wooley, Washington River Protection Solutions (USA); Jeffrey Rambo, US DOE ORP (USA)

[Progress Towards Treating the Sludges Produced During Spent Fuel Processing](#) - 19546

**Derek Carlisle**, Sellafield Ltd (United Kingdom); Martyn Barnes, Sellafield Ltd (United Kingdom); Geoff Randall, Sellafield Ltd (United Kingdom); Sean Morgan, Sellafield Ltd (United Kingdom)

[Mechanical Waste Gathering System \(MWGS\), Alternate Retrieval of Hanford Tank Waste](#) - 19188

**Douglas Reid**, Washington River Protection Solutions (USA); Kayle Boomer, Washington River Protection Solutions (USA); Thom Myer, Washington River Protection Solutions (USA); Jeffrey Rambo, US DOE ORP (USA); Gordon Crawford, Atkins (USA); Andrew Barr, Barrnon Ltd (United Kingdom)

[Retrieval and Management of TRU Sludge at Hanford K-Basin](#) - 19641

**Mark French**, US DOE (USA); Roger Quintero, US DOE (USA); Richard Raymond, Jacobs Engineering (USA)

[The Use of Geopolymers to Immobilise Sellafield Historic, Intermediate Level Wastes](#) - 19547

**Sean Morgan**, Sellafield Ltd (United Kingdom)

[Use of In Situ Acoustic Backscatter Systems to Characterize SNF and its Separation in a Thickener](#) - 19288

**Alastair Tonge**, University of Leeds (United Kingdom); Shane Usher, University of Melbourne (Australia); Jeff Peakall, University of Leeds (United Kingdom); Steven Freear, University of Leeds (United Kingdom); David Cowell, University of Leeds (United Kingdom); George Franks, University of Melbourne (Australia); Krishna Mohanarangam, CSIRO (Australia); Vivek Ravisankar, CSIRO (Australia); Timothy Hunter, University of Leeds (United Kingdom); Martyn Barnes, Sellafield Ltd (United Kingdom)

## Session 046 - Formerly Utilized Sites Remedial Action Program (FUSRAP) and US Army Corps of Engineers Projects

### Session Co-Chairs:

Helen Edge (USA)

Margaret MacDonell (USA)

### Lead Organizer:

Helen Edge (USA)

### Additional Organizer(s):

Margaret MacDonell (USA)

### Paper Reviewer:

Helen Edge (USA)

### Paper Title

[A GIS-Based Suitability Analysis of a Phytomanagment Strategy for TCE in Groundwater and Soil Niagara Falls Storage Site, New York](#) - 19385

**Shawn McCabe**, USACE Buffalo District (USA); William Frederick, USACE (USA)

[Assessment of Rare Earth Element Fingerprints for Distinguishing Between Site-Related Wastes and Background](#) - 19441

**Brian Tucker**, Cabrera Services, Inc. (USA); David Hays, USACE (USA); Michael Winters, Cabrera Services, Inc. (USA); Christopher Kennedy, USACE (USA)

[Preparing the FUSRAP Colonie Interim Storage Site for Transfer Back to the US Department of Energy Office of Legacy Management](#) - 19215

**James Moore**, USACE (USA); Phyllis Della Camera, USACE (USA); William Kollar, APTIM (USA)

[Colonie, NY FUSRAP Site: Pathway from Remediation to Redevelopment](#) - 19465

**Darina Castillo**, US DOE (USA); Jill Bennet, Navarro Research and Engineering, Inc. (USA); Carl Young, Navarro Research and Engineering, Inc. (USA); James Moore, USACE (USA); John Abunaw, New York State Department of Environmental Conservation - Division of Materials Management, Bureau of Hazardous Waste and Radiation Management Radioactive Materials Management Section (USA); David McNiel, US DOE Office of LM (USA)

[Occurrence of Radiological Contamination in Urban Parks Established over Former Landfill Sites](#) - 19433

**Ryan Wensink**, Tidewater, Inc. (USA); Dave Watters, USACE (USA); Kathleen Cuzzolino, USACE (USA); Christian Gandy, USACE (USA); James Reese, Tidewater, Inc. (USA); Clif Gray, Tidewater, Inc. (USA); John Wyckoff, Tidewater, Inc. (USA)

[Radiological Soil Sorting Considerations and Applications](#) - 19363

**Ann Ewy**, USACE (USA); David Hays, USACE (USA)

[Final Status Surveys of Subsurface Contaminated Areas](#) - 19473

**David Whitfill**, USACE (USA); David Hays, USACE (USA);

Jonathan Rankins, USACE (USA); Shawn Andrews, USACE (USA);

Neil Miller, USACE (USA); Harold Spector, USACE (USA)

[Pilot Test Remediation of a Fractured Bedrock Aquifer at the](#)

[Maywood Superfund Site, Maywood, New Jersey](#) - 19217

**James Moore**, USACE (USA); Christopher Beres, Cabrera Services, Inc. (USA); Robert DeMott, APTIM (USA)

## Session 047 - Sustainable Remediation Processes - Global Insights or Applications

### Session Co-Chairs:

Stefanie Fountain (USA)

Stuart Walker (USA)

### Lead Organizer:

Susan A Walter (USA)

### Additional Organizer(s):

Moses Jaraysi (USA)

Nelson Walter (USA)

### Paper Reviewer:

Stuart Walker (USA)

### Paper Title

[Oxidative Degradation of Organic Compounds from Oil Sludge by Ozonation: Study of Process](#) - 19191

**Leandro Goulart de Araujo**, Nuclear & Energy Research Institute (Brazil); Naomi Watanabe, Nuclear & Energy Research Institute (Brazil); Thalita Tiekko Silva, Nuclear & Energy Research Institute (Brazil); Antonio Carlos Silva Costa Teixeira, Department of Chemical Engineering/University of São Paulo (Brazil); Adriana Correia de Velosa, Palacký University (Czech Republic); Júlio Takehiro Marumo, Nuclear & Energy Research Institute, IPEN-CNEN/SP (Brazil)

[Hydrological Controls on Residual Contaminants Under Sustainable Remediation](#) - 19287

**Arianna Libera**, University of Southern California (USA); Felipe P. J. de Barros, University of Southern California (USA); Boris Faybishenko, Lawrence Berkeley National Laboratory (USA); Carol Eddy-Dilek, Savannah River National Laboratory (USA); Miles Denham, Retired (USA); Konstantin Lipnikov, Los Alamos National Laboratory (USA); David Moulton, Los Alamos National Laboratory (USA); Barbara Maco, Wactor & Wick LLP (USA); Haruko Wainwright, Lawrence Berkeley National Laboratory (USA)

[Simulation of In Situ Bioremediation of Chromium \(VI\) Using Consortium Cultures and Column Studies](#) - 19357

**Nondumiso Mbonambi**, University of Pretoria (South Africa); Evans Chirwa, University of Pretoria (South Africa)



## Session 049a - LLW/ILW Facility Safety Assessment and Monitoring - Posters

### Session Co-Chairs:

Stephen Halliwell (USA)

Justin Marble (USA)

### Lead Organizer:

Bob Hiergesell (USA)

### Paper Reviewer:

Marcel Bergeron (USA)

### Poster Judge:

Justin Marble (USA)

### Paper Title

[Review Guidelines for Biosphere Safety Assessment of Low-Level Waste Disposal Repository in Taiwan](#) - 19606

**Wen-Sheng Lin**, National Taiwan University (Taiwan); Yen-Liang Lee, Fuel Cycle and Materials Administration, Atomic Energy Council (Taiwan); Ming-Hsu Li, National Central University (Republic of China); Chen-Wuing Liu, National Taiwan University (Taiwan)

[Development of a Preliminary Performance Assessment to Support Single-Shell Tank Waste Retrieval](#) - 19446

**Sunil Mehta**, INTERA, Inc. (USA); Ryan Childress, Washington River Protection Solutions (USA); Bob Hiergesell, Washington River Protection Solutions (USA); Kristin Singleton, Washington River Protection Solutions (USA); Glenn Taylor, Washington River Protection Solutions (USA); David J. Watson, Pacific Northwest National Laboratory (USA); Nazmul Hasan, INTERA, Inc. (USA); Matthew Kozak, INTERA, Inc. (USA); William McMahan, CH2M HILL PRC (USA); Michael Connelly, TecGeo, Inc. (USA)

[A Comparison of GoldSim, RESRAD-Onsite, and NORMALYSA Modeling Tools at Radioactive Waste Sites](#) - 19480

**Paul Black**, Neptune and Company, Inc. (USA); Katie Catlett, Neptune and Company, Inc. (USA); Sam Van Sickle, Neptune and Company, Inc. (USA); Ralph Perona, Neptune and Company, Inc. (USA); Christopher Schaupp, Neptune and Company, Inc. (USA)

## Session 049b - LLW/ILW Characterization - Posters

### Session Co-Chairs:

Fabienne Anton (Germany)

Kent Rosenberger (USA)

### Lead Organizer:

Kapila Fernando (Australia)

### Additional Organizer(s):

Fabienne Anton (Germany)

Felix Himmerkus (Germany)

### Paper Reviewer:

Felix Himmerkus (Germany)

### Poster Judge:

Stephen Halliwell (USA)

### Paper Title

[Measurements of Hydrogen Generation Rates using a Sealed Reactor System](#) - 19428

**Wesley Woodham**, Savannah River National Laboratory (USA); Mark Duignan, Savannah River National Laboratory (USA); Charles Nash, Savannah River National Laboratory (USA); Charles Crawford, Savannah River National Laboratory (USA); Michael Restivo, Savannah River National Laboratory (USA); John Pareizs, Savannah River National Laboratory (USA); Thomas Edwards, Savannah River National Laboratory (USA)

[Overview of Kinectrics' Experience in Characterization of Low and Intermediate Level Waste \(L&ILW\)](#) - 19144

**Sriram Suryanarayan**, Kinectrics Inc. (Canada); Natalija Mirilovic, Kinectrics Inc. (Canada)

[Effect of Temperature on Electrochemical Properties of Zircaloy-4 by AC Impedance Spectroscopy](#) - 19305

**Yoko Ikeda**, Nippon Steel Technology (Japan); Tomofumi Sakuragi, Radioactive Waste Management Funding and Research Center (Japan); Satoshi Yoshida, Radioactive Waste Management Funding and Research Center (Japan)

[Autoclave Corrosion Experiment of Zircaloy-4 at Temperatures Between 180°C to 270°C](#) - 19167

**Tomofumi Sakuragi**, Radioactive Waste Management Funding and Research Center (Japan); Yoko Ikeda, Nippon Steel Technology (Japan); Satoshi Yoshida, Radioactive Waste Management Funding and Research Center (Japan)

[Method for Measuring Dry Density of Compacted Bentonite Mixture Soil Using 3D Laser Scanner data](#) - 19119

**Atsuo Yamada**, Hazama Ando Corporation (Japan); Masakazu Chijimatsu, Hazama Ando Corporation (Japan); Hideo Komine, Waseda University (Japan)

[Waste Information Management System with 2018-19 Waste Streams](#) - 19106

**Walter Quintero**, Applied Research Center - FIU (USA); Himanshu Upadhyay, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Peggy Shoffner, Applied Research Center - FIU (USA)

[Characterization of Tc-99 Speciation and Chemical Composition of 241-AN-102 Tank Waste Supernatant](#) - 19201

**Tatiana Levitskaia**, Pacific Northwest National Laboratory (USA); Syandev Chatterjee, Pacific Northwest National Laboratory (USA); Gabriel Hall, Pacific Northwest National Laboratory (USA); Vanessa Holfeltz, Pacific Northwest National Laboratory (USA); Brian Rapko, Pacific Northwest National Laboratory (USA)

## Session 049c - LLW/ILW Treatment and Facility Design - Posters

### Session Co-Chairs:

Marcel Bergeron (USA)

### Lead Organizer:

Linda Suttora (USA)

### Paper Reviewer:

Bob Hiergesell (USA)

### Poster Judge:

Justin Marble (USA)

### Paper Title

[Treatment of Uranium Catalyst Waste for High Volume Reduction of the Final Waste to be Disposed](#) - 19023

**Kwang-Wook Kim**, Korea Atomic Energy Research Institute (South Korea); Maeng-Kyo Oh, Korea Atomic Energy Research Institute (South Korea); Woo-Jung Shon, Korea Atomic Energy Research Institute (South Korea); Richard I. Foster, Korea Atomic Energy Research Institute (South Korea); Keun-Young Lee, Korea Atomic Energy Research Institute (South Korea)

[Current Status of Low-and-Intermediate Level Waste Management in Korea](#) - 19100

**Jongbaek Oh**, Jong-Won Lee, Korea Radioactive Waste Agency (South Korea)

[The Status and Introduction of LILW 2nd Phase Disposal Facility Construction in Korea](#) - 19230

Youngseok Jung, Korea Radioactive Waste Agency

(South Korea)

[Development of Waste Disposal Strategy for RH LLW Stored in the ATR Canal](#) - 19453

**Reese Gannon**, Idaho National Laboratory (USA); Heath Buckland, Idaho National Laboratory (USA)

[The Effect of Glass Chemistry on Caesium Volatility in Iron Phosphate Glass Systems](#) - 19344

**Josh Radford**, University of Sheffield (United Kingdom); Russell Hand, University of Sheffield (United Kingdom); Claire Corkhill, University of Sheffield (United Kingdom); Lisa Hollands, University of Sheffield (United Kingdom); Charlie Scales, National Nuclear Laboratory (United Kingdom)

[Performance Test and Evaluation on Polymer Form of Carbonized Waste](#) - 19164

**Sung Paal Yim**, Korea Atomic Energy Research Institute (South Korea); Yunjeong Hong, Korea Atomic Energy Research Institute (South Korea); Cheo Kyung Lee, Handong Global University (South Korea); Jong Won Choi, Korea Atomic Energy Research Institute (South Korea); Ki-Won Moon, Korea Nuclear Engineering Co. (South Korea); Se Yup Lee, Korea Nuclear Engineering Co. (South Korea); Ik-hwan Na, Hankook Technology (South Korea); Nak-kyun Kim, Hankook Technology (South Korea)

[Fortifying Environmental Compliance Strategies at Hanford](#) - 19541

**Steve Szendre**, Mission Support Alliance (USA); Rylie Winters, Mission Support Alliance (USA)

## Session 050 - Nuclear Power Plant Waste Management and On-Site SNF/USF Storage - Posters

### Session Co-Chairs:

Leena Malinen (Finland)

Andreas Roth (Germany)

### Lead Organizer:

Mark Lewis (USA)

### Paper Reviewer:

Mark Lewis (USA)

### Poster Judge:

Mark Lewis (USA)

### Paper Title

[Estimation of Radiation Source Terms of Hanbit Unit3 Spent Fuel with Realistic Spent Fuel Data](#) - 19043

**Ser Gi Hong**, Kyung Hee University (South Korea); GyeongMi Kim, Kyung Hee University, Department of Nuclear Engineering (South Korea); GeonHee Jung, Kyung Hee University, Department of Nuclear Engineering (South Korea); Daesik Yook, Korea Institute of Nuclear Safety (South Korea); Ara Go, Korea Institute of Nuclear Safety (South Korea)

[D2. Radioactive Waste Management for Rooppur Nuclear Power Plant in Bangladesh](#) - 19145

**Abdus Sattar Mollah**, Sabbir Ahmad, Military Institute of Science and Technology (Bangladesh)

[Influence of Na and Ca Concentrations on Sr Adsorption Performance of Cs-Sr Simultaneous Adsorbent](#) - 19315

**Akira Tsutsumiguchi**, Hitachi, Ltd. (Japan); Yuko Kani, Hitachi, Ltd. (Japan); Tsuyoshi Ito, Hitachi, Ltd. (Japan); Takashi Asano, Hitachi-GE Nuclear Energy, Ltd. (Japan); Takatoshi Hijikata, Central Research Institute of Electric Power Industry (Japan); Tadafumi Koyama, Central Research Institute of Electric Power Industry (Japan); Yasuhiro Suzuki, JGC Corporation (Japan)

[Subdrain Water Treatment Facility for Reduction of Waste Water Amount at the Fukushima NPS Site](#) - 19318

**Takako Sumiya**, Hitachi-GE Nuclear Energy, Ltd. (Japan); Yusuke Kitamoto, Hitachi-GE Nuclear Energy, Ltd. (Japan); Yasuo Yoshii, Hitachi, Ltd. (Japan); Toshimasa Ohashi, Hitachi, Ltd. (Japan); Yuta Mashiko, Tokyo Electric Power Company Holdings, Inc. (Japan); Tadashi Yamane, Tokyo Electric Power Company Holdings, Inc. (Japan); Koichi Shimada, Tokyo Electric Power Company Holdings, Inc. (Japan)

[Collaboration for the Management of the Bruce Power Major Component Replacement \(MCR\) Nuclear Waste - 19630](#)

**Tod Wilfong**, Bruce Power (Canada); Terry Dereski, Bruce Power (Canada); David Van Ooteghem, Ontario Power Generation (Canada); Bryan Yule, Ontario Power Generation (Canada)

## Session 055 - International Experience in Waste Optimization/Minimization, Recycling and Clearance

### Session Co-Chairs:

Mark Costella (USA)

Maria Lindberg (Sweden)

### Lead Organizer:

Maria Lindberg (Sweden)

### Additional Organizer(s):

Mark Costella (USA)

Bernard Poncet (France)

### Paper Reviewer:

Maria Lindberg (Sweden)

### Paper Title

[Waste is our Product! Developing, Implementing and Optimising Waste Management at Dounreay](#) - 19039

**Sam Usher**, AECOM/ Dounreay (United Kingdom); Alistair Coghill, DSRL (United Kingdom)

[Measurement Concept for a Possible Clearance of Mercury Waste from Nuclear Facilities](#) - 19138

**Larissa Klab**, Forschungszentrum Juelich GmbH (Germany); Philipp Ritz, Forschungszentrum Juelich GmbH (Germany); Natalia Daniels, Forschungszentrum Juelich GmbH (Germany); Andreas Wilden, Forschungszentrum Juelich GmbH (Germany); Giuseppe Modolo, Forschungszentrum Juelich GmbH (Germany); Marius Hirsch, Aachen Institute for Nuclear Training GmbH (Germany); John Kettler, Aachen Institute for Nuclear Training GmbH (Germany); Andreas Havenith, Aachen Institute for Nuclear Training GmbH (Germany)

[Integrated Waste Treatment Unit Plan for Vessel and Canister Decontamination](#) - 19283

**Larry Scheunemann**, Fluor Idaho, LLC (USA); Jordan Nahay, Fluor Idaho, LLC (USA); Seabury Zolman, Fluor Idaho, LLC (USA)

[Minimizing Transuranic Waste Generated in Hot Cells at Oak Ridge National Laboratory Through Use of a Non-Destructive CO2 Pellet Cleaning System](#) - 19577

**Mark Ford**, Oak Ridge National Laboratory (USA); Ryan Schultz, Oak Ridge National Laboratory (USA); Wesley Keeton, Oak Ridge National Laboratory (USA); Russ Smith, Oak Ridge National Laboratory (USA); Jeffrey Sharpe, Oak Ridge National Laboratory (USA)

[Rad Waste Cost/Volume Reduction Using New Monitoring/Decon Techniques, Launderable Items & Recycling](#) - 19297

**Kent Anderson**, UniTech Services Group Inc (USA)



## **Session 058 - Decision-making Tools and Frameworks that Enhance Communication for ER Cleanup Programs**

### **Session Co-Chairs:**

Alexandra Gilliland (USA)

Jeannette Hyatt (USA)

### **Lead Organizer:**

Jeannette Hyatt (USA)

### **Additional Organizer(s):**

Alexandra Gilliland (USA)

### **Paper Reviewer:**

Stefanie Fountain (USA)

### **Paper Title**

[Exploration and Analysis of Legacy Data at the Hanford Site using PHOENIX](#) - 19044

**Patrick Royer**, Pacific Northwest National Laboratory (USA); Alicia Gorton, Pacific Northwest National Laboratory (USA); Mark Eberlein, Pacific Northwest National Laboratory (USA); Brett Simpson, Pacific Northwest National Laboratory (USA); Mark Triplett, Pacific Northwest National Laboratory (USA); Mitch Pelton, Pacific Northwest National Laboratory (USA)

[Suite of Comprehensive Rapid Analysis Tools for Estimation \(SOCRATES\)](#) - 19076

**Patrick Royer**, Pacific Northwest National Laboratory (USA); Chris Johnson, Pacific Northwest National Laboratory (USA); Michael Truex, Pacific Northwest National Laboratory (USA)

[Management of Documents and Information on Radioactive Waste](#) - 19455

**Tereza Salvetti**, Nuclear & Energy Research Institute (Brazil); Júlio Takehiro Marumo, Nuclear & Energy Research Institute, IPEN-CNEN/SP (Brazil); Roberto Vicente, Nuclear & Energy Research Institute (Brazil); Ítalo Henrique Alves, Nuclear & Energy Research Institute (Brazil)

## Session 059 - Characterization and ER Technologies for Complex and Comingled Contaminants

### Session Co-Chairs:

Stefanie Fountain (USA)

Vicky Freedman (USA)

### Lead Organizer:

Stefanie Fountain (USA)

### Additional Organizer(s):

Latrincy Bates (USA)

Richard Murphy (USA)

### Paper Reviewer:

Stefanie Fountain (USA)

### Paper Title

[Complex Sources and Impacts on Remedial and Monitoring Approaches](#) - 19058

**Mark Rockhold**, Pacific Northwest National Laboratory (USA);

Xuehong Song, Pacific Northwest National Laboratory (USA);

Xingyuan Chen, Pacific Northwest National Laboratory (USA)

[Advances in Geophysical Monitoring Methods to Support Groundwater Remedies](#) - 19096

**Michael Truex**, Pacific Northwest National Laboratory (USA); Chris

Strickland, Pacific Northwest National Laboratory (USA); Tim

Johnson, Pacific Northwest National Laboratory (USA); Judith

Robinson, Pacific Northwest National Laboratory (USA)

[Speciation of Mercury and Heavy Metals in Hg-contaminated Soils from Oak Ridge TN](#) - 19426

**Zikri Arslan**, Jackson State University (USA); Ermira Begu, Jackson

State University (USA); Fengxiang Han, Jackson State University

(USA)

## **Session 060 - Environmental Remediation in Urban and Suburban Environments - Examples from Around the World (1/2)**

### **Session Co-Chairs:**

Christine Fahey (Canada)

Nelson Walter (USA)

### **Lead Organizer:**

Nelson Walter (USA)

### **Additional Organizer(s):**

Ella Feist (USA)

Robert Zelmer (Canada)

### **Paper Reviewer:**

Nelson Walter (USA)

### **Paper Title**

[Port Hope Area Initiative Project Update](#) - 19146

**Scott Parnell**, Canadian Nuclear Laboratories (Canada)

[Cameco Corporations Vision in Motion Project](#) - 19128

**Thomas Smith**, Cameco Corporation (Canada); Rebecca Peters, Cameco Corporation (Canada)

[Site Characterization and Adaptation – Lessons Learned from the Port Granby LLRW Project in Canada](#) - 19255

**Stuart Bailey**, Wood (Canada); Everett Wessner, Wood (USA); Blair Greenly, AECOM (Canada); Mark Galanter, Canadian Nuclear Laboratories (Canada); Eli Thompson, Wood (Canada)

[Removal of Historic Low-Level Radioactive Waste from Highland Drive South & Alexander Street Ravines](#) - 19155

**Andrea Ferguson Jones**, WSP Canada Group Limited (Canada); James Wraith, Canadian Nuclear Laboratories (Canada); Amanda Mock, WSP Canada Group Limited (Canada); Allison Read, WSP Canada Group Limited (Canada)

[Radiological Verification for the Remediation of LLRW at the Port Granby Project](#) - 19210

**Steve Rima**, Wood (USA); Brandyn Leaper, Wood (Canada); Blair Greenly, AECOM (Canada); Mark Galanter, Canadian Nuclear Laboratories (Canada)

[Characterizing 5,000 Properties to Determine which Require Radiological Remediation](#) - 19152

**Deirdre Laxton**, Canadian Nuclear Laboratories (Canada); Maura Brannigan, Canadian Nuclear Laboratories (Canada); Brandon Partridge, Canadian Nuclear Laboratories (Canada); James Wraith,

Canadian Nuclear Laboratories (Canada)

[Indoor Radon Measurements from Residential Buildings with Basements in a Community with Potential LLRW Contamination](#) - 19566

**Ron Stager**, ARCADIS Canada Inc. (Canada); Douglas Chambers, ARCADIS Canada Inc. (Canada); Jennifer Kirkaldy, ARCADIS Canada Inc. (Canada)

## Session 063 - Reprocessing/Recycling and Separation of HLW, SNF/UNF and Long-lived Alpha/TRU

### Session Co-Chairs:

Robert Jubin (USA)

Keith Quigley (USA)

### Lead Organizer:

Robert Jubin (USA)

### Paper Reviewer:

Robert Jubin (USA)

### Paper Title

[Cesium Ion Exchange Testing Using Crystalline Silicotitanate with Hanford Tank Waste 241-AP-107](#) - 19104

**Reid Peterson**, Pacific Northwest National Laboratory (USA); Amy Rovira, Pacific Northwest National Laboratory (USA); Sandra Fiskum, Pacific Northwest National Laboratory (USA); Jarrod Allred, Pacific Northwest National Laboratory (USA); Heather Colburn, Pacific Northwest National Laboratory (USA); Margaret Smoot, Pacific Northwest National Laboratory (USA); Kris Colosi, Washington River Protection Solutions (USA)

[Design Optimisation for Solvent Extraction in a Modified Agitated Tube Reactor](#) - 19400

**Jamie Miller**, University of Leeds (United Kingdom); Bruce Hanson, University of Leeds (United Kingdom); Frans Muller, University of Leeds (United Kingdom)

[Filtration Options for Hanford Tank Waste – Actual Waste Demonstrations](#) - 19105

**Reid Peterson**, Pacific Northwest National Laboratory (USA); John Geeting, Pacific Northwest National Laboratory (USA); Amy Rovira, Pacific Northwest National Laboratory (USA); Rick Shimskey, Pacific Northwest National Laboratory (USA); Kris Colosi, Washington River Protection Solutions (USA)

## Session 064 - TRU Waste Characterization, Storage, Retrieval & Treatment

### Session Co-Chairs:

Betty Humphrey (USA)

J.R. Stroble (USA)

### Lead Organizer:

J.R. Stroble (USA)

### Additional Organizer(s):

Kapil Goyal (USA)

Betty Humphrey (USA)

### Paper Reviewer:

Kapil Goyal (USA)

### Paper Title

[Alternate Packaging Options for Remote-Handled TRU Waste Disposal at WIPP - 19093](#)

**Betty Humphrey**, Weston Solutions, Inc. (USA); Michael Spoerner, Sandia National Laboratories (USA); Bryan Green, Sandia National Laboratories (USA); Michael Torneby, Sandia National Laboratories (USA); Dave Siddoway, Sandia National Laboratories (USA); Todd Erenstein, Tetra Tech HEI (USA)

[Fluor Idaho Technical Investigation-ARP V Lid Ejection Reactants and Mechanism - 19521](#)

**Rod Arbon**, Fluor Idaho, LLC (USA); Joseph Giebel, Fluor Idaho, LLC (USA); Greg Sprenger, Fluor Idaho, LLC (USA); Gary Groenewold, Idaho National Laboratory (USA); Tim Burns, LANL-Repository Science and Operations (USA); William Reed, Fluor Idaho, LLC (USA)

[Investigation and Recovery Following the Drum Event at INL's ARP-V Facility - 19517](#)

**Joseph Giebel**, Fluor Idaho, LLC (USA); Greg Sprenger, Fluor Idaho, LLC (USA)

[Characterization Techniques for TRU Waste from the Analytical Laboratory Hot Cells at INL - 19610](#)

**Carson McNair**, Idaho National Laboratory (USA); Russell Watson, Idaho National Laboratory (USA); Richard Farrar, Idaho National Laboratory (USA)

## Session 065 - Regulatory and Programmatic Issues and Solutions for VLLW, LLW and ILW Worldwide

### Session Co-Chairs:

Gabriele Bandt (Germany)

Justin Marble (USA)

### Lead Organizer:

Justin Marble (USA)

### Additional Organizer(s):

Fabienne Anton (Germany)

Gabriele Bandt (Germany)

### Paper Reviewer:

Gabriele Bandt (Germany)

### Paper Title

[Synroc Waste Treatment Facility for Fission-based Molybdenum-99 Production](#) - 19335

**Rohan Holmes**, ANSTO (Australia); Gerry Triani, ANSTO (Australia); Dan Gregg, ANSTO (Australia); Eric (Lou) Vance, ANSTO (Australia); Mitchell Smith, ANSTO (Australia)

[TableCalculator: A Transparent Public Tool to Duplicate US NRC LLW Classification Table Calculations](#) - 19395

**A. Christianne Ridge**, US NRC (USA); David Esh, US NRC (USA); Allen Gross, US NRC (USA)

[Design, Construction, and Commissioning of the RH LLW Disposal Facility at the INL](#) - 19445

**Brett Welty**, Idaho National Laboratory (USA); Brady Orchard, Idaho National Laboratory (USA); Sadie Butler, Idaho National Laboratory (USA); Reese Gannon, Idaho National Laboratory (USA)

[EM Program Expectations on Implementation of DOE O 458: Radiation Protection of Public/Environment](#) - 19553

**Amanda Anderson**, US DOE (USA); Sarah Roberts, Oak Ridge Associated Universities (USA)

[Development of an Assessment Method for Radiation Exposure from NORM in Construction Materials](#) - 19032

**Maria de Lurdes Dinis**, Porto University, CERENA-Polo FEUP (Portugal); Antonio Fiuza, Porto University, CERENA-Polo FEUP (Portugal)

[Environmental Remediation of Waste Management Areas at Chalk River Laboratories](#) - 19130

**Kate Stephenson**, Canadian Nuclear Laboratories (Canada)

## Session 066 - Emerging Treatment and Storage Technologies for LLW/ILW Worldwide

### Session Co-Chairs:

Stephen Halliwell (USA)

Linda Suttora (USA)

### Lead Organizer:

Colleen Owens (USA)

### Additional Organizer(s):

Kapila Fernando (Australia)

Christopher Shaw (USA)

Patricia Suggs (USA)

### Paper Reviewer:

Colleen Owens (USA)

### Paper Title

[Inspection Technologies for Waste Containers at Canadian Nuclear Laboratories](#) - 19429

**Katherine Davison**, Canadian Nuclear Laboratories (Canada);  
Jeremy Buck, Canadian Nuclear Laboratories (Canada); Dag Horn,  
Canadian Nuclear Laboratories (Canada); Eli Simova, Canadian  
Nuclear Laboratories (Canada)

[Applicability Evaluation of the In-can Vitrification to Fukushima Waste](#) - 19016

**Jean Francois Hollebecque**, CEA (France); Christophe Girold, CEA  
(France); Isabelle Hugon, CEA (France); Stéphane Lemonnier, CEA  
(France); Régis Didierlaurent, Orano (France); Thierry Prevost,  
Orano (France); Kohei Shibata, ATOX Co., Ltd. (Japan)

[Radionuclide Behaviour During Thermal Treatment of LLW and ILW Using In-Container Vitrification](#) - 19239

**Stephen Wickham**, Galson Sciences Ltd (United Kingdom); Jo  
Farrow, Galson Sciences Ltd (United Kingdom); Adam Fuller, Galson  
Sciences Ltd (United Kingdom); Julian Roe, National Nuclear  
Laboratory (United Kingdom); Kevin Finucane, Veolia Nuclear  
Solutions (USA); Matthew Buckley, Nuclear Decommissioning  
Authority (United Kingdom); Yvonne Morris, Nuclear  
Decommissioning Authority (United Kingdom)

[In-Can Melter for Vitrification of Waste Coming from Decommissioning and Dismantling Operations](#) - 19020

**Régis Didierlaurent**, Orano (France); Thierry Prevost, Orano  
(France); Christophe Girold, CEA (France); Stéphane Lemonnier,  
CEA (France); Isabelle Hugon, CEA (France); Guillaume Lecomte,  
ECM Technologies (France); Stephane Catherin, Andra (France)



[French Innovative Thermal Treatment Processes for The Management of Radioactive Organic Liquid Waste](#) - 19017

**Helene Nonnet**, CEA Marcoule (France); Florent Lemont, CEA (France); Majdi Mabrouk, CEA (France); Mickael Marchand, CEA Marcoule (France); Sophie Dezard, CEA Saclay (France); Stephane Catherin, Andra (France); Sebastien Lefevre, Inovertis (France)

[ANSTO Synroc Wasteforms for the Immobilization of a Range of Mo-99 Production Wastes](#) - 19326

**Dan Gregg**, ANSTO (Australia); Eric (Lou) Vance, ANSTO (Australia); Rohan Holmes, ANSTO (Australia); Gerry Triani, ANSTO (Australia); Willie Meyer, IAEA (Austria); Lize Stassen, NESCA (South Africa); Amelia Goede, NESCA (South Africa); Jacoba Johanna Badenhorst, NECSA (South Africa)

[Strategic Implications of Active In-Container Vitrification Trials for Treatment of UK LLW and ILW](#) - 19240

**Stephen Wickham**, Galson Sciences Ltd (United Kingdom); Jo Farrow, Galson Sciences Ltd (United Kingdom); Adam Fuller, Galson Sciences Ltd (United Kingdom); Liz Harvey, Galson Sciences Ltd (United Kingdom); Jenny Kent, Galson Sciences Ltd (United Kingdom); Matthew Buckley, Nuclear Decommissioning Authority (United Kingdom); Yvonne Morris, Nuclear Decommissioning Authority (United Kingdom); Julian Roe, National Nuclear Laboratory (United Kingdom)

## **Session 067 - Integrated Performance and Risk Assessments, Decision Analyses and Risk Management**

### **Session Co-Chairs:**

Rateb (Boby) Abu Eid (USA)

Paul Black (USA)

### **Lead Organizer:**

Ming Zhu (USA)

### **Additional Organizer(s):**

Rateb (Boby) Abu Eid (USA)

Paul Black (USA)

### **Paper Reviewer:**

Terry Jennings (USA)

### **Paper Title**

[Status Update on IAEA MODARIA II Working Group 1 \(Assessment and Decision Making\)](#) - 19391

**Ming Zhu**, US DOE (USA); Tamara Yankovich, IAEA (Austria)

[A Method for Understanding the Behaviour of Radioactive Decay Chains in Radiological Assessments](#) - 19382

**Martin Kelly**, Wood (United Kingdom); David Holton, Wood (United Kingdom); David Roberts, Wood (United Kingdom)

[ES&H Risk Estimation from “Interim Storage” of SNF at the Beach: The San Onofre NPP](#) - 19309

Subrata Chakraborty, University of California, San

Diego; Thomas English, Samuel Lawrence Foundation

[Execution Strategy Analysis \(ESA\) Origin Sites Readiness Model](#) - 19073

**Ralph Stoll**, Predicus LLC (USA); Natalia Saraeva, Argonne National Laboratory (USA); John Greeves, Predicus LLC (USA); James Voss, The Terra Verde Group (USA); Ian Miller, Predicus LLC (USA); William Mazingo, Predicus LLC (USA); Alan Keizur, Golder Associates (USA); Alyssa Seal, Golder Associates (USA); Matt Feldman, Oak Ridge National Laboratory (USA); William Nutt, Pacific Northwest National Laboratory (USA); Steven Maheras, Pacific Northwest National Laboratory (USA)

[Qualitative Decision and Risk Assessment Approaches for Managing Nuclear Materials](#) - 19061

**Robert Jubin**, Oak Ridge National Laboratory (USA); Sharon Robinson, Oak Ridge National Laboratory (USA); Bradley Patton, Oak Ridge National Laboratory (USA)

[Quantitative Risk Management – Risk Informed Decision Making on High-Risk Waste Remediation Projects](#) - 19022

**Diana Shankle**, Pacific Northwest National Laboratory (USA); Ryan Welch, Pacific Northwest National Laboratory (USA); Duriem Calderin, Pacific Northwest National Laboratory (USA); Jason Gastelum, Pacific Northwest National Laboratory (USA)

[A Sensitivity-informed, Process Model Abstraction Implementation in GoldSim](#) - 19276

**Gregg Occhiogrosso**, Neptune and Company, Inc. (USA); Aaron Bandler, Neptune and Company, Inc (USA); Megan Higgs, Neptune and Company, Inc. (USA); William Barnett, Neptune and Company, Inc. (USA); Hayley Brittingham, Neptune and Company, Inc. (USA)

## **Session 069a - Environmental Remediation: Sorption Studies - Posters**

### **Session Co-Chairs:**

Margaret MacDonell (USA)

Tjalle ("Chuck") Vandergraaf (Canada)

### **Lead Organizer:**

Tjalle ("Chuck") Vandergraaf (Canada)

### **Paper Reviewer:**

Tjalle ("Chuck") Vandergraaf (Canada)

### **Poster Judge:**

Michelle Howard (USA)

### **Paper Title**

[Effect of Minerals on the Removal of Uranium \(VI\) in the Presence of Humic Acid and Colloidal Silica](#) - 19406

**Katherine Delarosa**, Applied Research Center - FIU (USA); Ravi Krishna Prasanth Gudavalli, Applied Research Center - FIU (USA); Yelena Katsenovich, Applied Research Center - FIU (USA)

[Investigating the Effect of Sorbed Humic Acid on the Mobility of Uranium](#) - 19461

**Ravi Krishna Prasanth Gudavalli**, Applied Research Center - FIU (USA); Ripley Raubenolt, Applied Research Center - FIU (USA); Brian Looney, Savannah River National Laboratory (USA)

## **Session 069b - Environmental Remediation: Strategies for Treating Organics and Addressing Radionuclides in Groundwater and Drinking Water - Posters**

### **Session Co-Chairs:**

Mark Frei (USA)

Kurt Gerdes (USA)

### **Lead Organizer:**

Ella Feist (USA)

### **Paper Reviewer:**

Ella Feist (USA)

### **Poster Judge:**

Michelle Howard (USA)

### **Paper Title**

[Long-Term Stewardship Optimization for a Decommissioned Nuclear Reactor](#) - 19579

**Andy Keim**, US DOE Office of LM (USA); Michele Miller, Navarro Research and Engineering, Inc. (USA)

[Rehabilitation of Westbay Wells with PCE Contaminated Tubing Fluid](#) - 19250

**Erik Whitmore**, Fluor Idaho, LLC (USA); Dave Hawley, Fluor Idaho, LLC (USA); Rob Aubrey, Fluor Idaho, LLC (USA); Jeff Forbes, Fluor Idaho, LLC (retired) (USA); Nicole Badrov, US DOE (USA)

[Peroxide Decomposer Module Catalyst Testing to Support Preparations for Increased Demand](#) - 19052

**Jennifer Kadinger, P.E.**, Washington River Protection Solutions (USA); Stacey Bolling, Washington River Protection Solutions (USA); Dale Halgren, PE, Washington River Protection Solutions (USA)

## **Session 069c - Environmental Remediation: Characterization and Management of Radioactively Contaminated Soil - Posters**

### **Session Co-Chairs:**

Ella Feist (USA)

Kurt Gerdes (USA)

### **Lead Organizer:**

Kurt Gerdes (USA)

### **Paper Reviewer:**

Kurt Gerdes (USA)

### **Poster Judge:**

Michelle Howard (USA)

### **Paper Title**

#### [Autonomous Radiological Survey Systems for Locating Fired Depleted Uranium Munitions](#) - 19212

**Ronald Unz**, Institute for Clean Energy Technology - Mississippi State University (USA); Jay McCown, Institute for Clean Energy Technology - Mississippi State University (USA); Devin Neal, Institute for Clean Energy Technology - Mississippi State University (USA); Jake Hartzburg, Institute for Clean Energy Technology - Mississippi State University (USA); Sam McDevitt, Institute for Clean Energy Technology - Mississippi State University (USA); Jimmy Pearson, Institute for Clean Energy Technology - Mississippi State University (USA); Joshua Randle, Institute for Clean Energy Technology - Mississippi State University (USA); Steve Larson, Environmental Laboratory - U.S. Army Engineer Research and Development Center (USA); John Ballard, Environmental Laboratory - U.S. Army Engineer Research and Development Center (USA); Charles Waggoner, Mississippi State University (USA)

#### [96 Park Way Vicinity Property Remediation Challenges at the FUSRAP Maywood Superfund Site, Maywood, New Jersey](#) - 19216

**Christopher Beres**, Cabrera Services, Inc. (USA); James Moore, USACE (USA); William Kollar, APTIM (USA)

#### [Radiological Soil Sorting Pilot Study Results - Middlesex Municipal Landfill](#) – 19394

**Dan Kennedy**, Ecology and Environment, Inc. (USA); David Hays, USACE (USA); Ann Ewy, USACE (USA)

#### [Radon Considerations at Environmental Remediation Sites](#) - 19469

**David Whitfill**, USACE (USA); David Hays, USACE (USA); Ann Ewy,

USACE (USA)

[Frisker Response to Soil Concentrations \(Bq/g\) Compared to NaI \(TI\)](#)

- 19338

**Billy Cox**, Cox Nuclear Consulting Services (USA); Tek Mishra,  
Canadian Nuclear Laboratories (Canada); Billy Kernisant, Canadian  
Nuclear Laboratories (Canada)

## **Session 069e - Environmental Remediation: Data and Information Systems, Communication and Managing Change - Posters**

### **Session Co-Chairs:**

Margaret MacDonell (USA)

Richard Murphy (USA)

### **Lead Organizer:**

Margaret MacDonell (USA)

### **Paper Reviewer:**

Margaret MacDonell (USA)

### **Poster Judge:**

Michelle Howard (USA)

### **Paper Title**

[MY EXES and EDM for Automated Remediation Data Quality Assessments](#) - 19053

**Kenneth Moura**, General Dynamics (USA); Nazy Perkins, General Dynamics (USA)



## Session 070 - Communications, Involvement, Education and Training - Posters

### Session Co-Chairs:

Evelyn Dawson (USA)

Jeannette Hyatt (USA)

### Lead Organizer:

Jeannette Hyatt (USA)

### Additional Organizer(s):

Rachel West (USA)

### Paper Reviewer:

Rachel West (USA)

### Poster Judge:

Evelyn Dawson (USA)

### Paper Title

[Refocusing an Employee Engagement Organization to Improve Participation, Member Benefits, and Impact](#) - 19036

**Jennifer Kadinger, P.E.**, Washington River Protection Solutions (USA); Katherine Klos, Washington River Protection Solutions (USA)

[Internship Programs - Mutual Benefits for Employers and Students](#) - 19074

**Chastity Bitters**, Washington River Protection Solutions (USA); Alma Leon, Washington River Protection Solutions (USA)

[The CNSC's Inspector Training and Qualification Program and its Importance to the Nuclear Industry](#) - 19370

**Shona Thompson**, Canadian Nuclear Safety Commission (Canada)

[Development of a Comprehensive and Centralized Waste Management System](#) - 19412

**Bryant Slater**, Information Systems Laboratories (USA)

[Integrating Mindfulness with Human Performance in High Complexity Environments](#) - 19498

**Rotjane Daphne Larsen**, US DOE Idaho Operations Office

[Handling and Treatment of Sodium-Potassium Alloy \(NaK\) after the Loss of Key Personnel](#) - 19002

**Ed Hart**, Idaho National Laboratory (USA)

## Session 071 - Special Topics and Track Cross Cutting Technology Topics - Posters

### Session Co-Chairs:

Kim "KD" Auclair (USA)

Ronald Pope (USA)

### Lead Organizer:

Kim "KD" Auclair (USA)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Poster Judge:

Kim "KD" Auclair (USA)

Ronald Pope (USA)

### Paper Title

[Savannah River Site H-Canyon Tunnel Inspection LiDAR Mapping Solution](#) - 19477

**Christopher Suarez**, University of Texas, Austin (USA); **Conor McMahon**, The University of Texas at Austin (USA); **Jean Plummer**, Savannah River National Laboratory (USA); **William Wells**, Savannah River National Laboratory (USA); **Manuel Losada**, Applied Research Center - FIU (USA); **Julian Benitez-Muniz**, University of Puerto Rico (USA)

[Safe and Secure Management of Disused Radioactive Sealed Sources in Egypt](#) - 19063

**Yasser Tawfik Mohamed Selim**, Egyptian Atomic Energy Authority (Egypt)

[Radiological Risk from Disused Radioactive Sealed Sources in Egypt](#) - 19083

**Mahmoud Hasan**, Egyptian Atomic Energy Authority (Egypt)

[Moisture Movement and Contaminant Transport in Unsaturated Soil with a Peak of Water Influx](#) - 19226

**Jong Won Choi**, Korea Atomic Energy Research Institute (South Korea); **Cheo Kyung Lee**, Handong Global University (South Korea)

[Permeability of a Porous Medium with Ellipsoidal Grains](#) - 19300

**Sung Paal Yim**, **Jong Won Choi**, Korea Atomic Energy Research Institute (South Korea); **Cheo Kyung Lee**, **Seang Se Be**, Handong Global University (Cambodia); **Cheo Kyung Lee**, **Seang Se Be**, Handong Global University (South

Korea)

[effective Elastic Moduli of a Composite Material with Reinforcement in the Lower Part](#) – 19225

Sung Paal Yim, Korea Atomic Energy Research Institute (South Korea); Cheo Kyung Lee,

Sothee Lun, Handong Global University (South Korea)

[Performance Evaluation of AG-1 FC Filters Under Upset Conditions and the Effects of Aging on Filters](#) - 19501

**Jaime Rickert**, Mississippi State University (USA); Charles Waggoner, Mississippi State University (USA); John Wilson, Mississippi State University (USA); Coralie Rose, Mississippi State University (USA)

[Radionuclide Risk Coefficient Uncertainty Distributions for Use in Performance Assessments](#) - 19156

**Christopher Schaupp**, Neptune and Company, Inc. (USA); Kristin Broms, Neptune and Company, Inc. (USA); Leslie Gains-Germain, Neptune and Company, Inc. (USA); Robert Lee, Neptune and Company, Inc. (USA); Ralph Perona, Neptune and Company, Inc. (USA); Paul Black, Neptune and Company, Inc. (USA)

[Offsite Source Recovery Program; High Activity Beta Gamma Removal, Transport and Disposition](#) - 19663

**James Cole**, Los Alamos National Laboratory (USA); Temeka Taplin, US DOE NNSA (USA); Frank Cocina, Los Alamos National Laboratory (USA); Becky Coel-Roback, Los Alamos National Laboratory (USA)

[Automated Analysis, Reporting, and Archiving for Robotic Nondestructive Assay of Holdup Deposits](#) - 19508

**Heather Jones**, Carnegie Mellon University (USA); Siri Maley, Carnegie Mellon University (USA); Kenji Yonekawa, Carnegie Mellon University (USA); Mohammadreza Mousaei, Carnegie Mellon University (USA); J. David Yesso, Independent Contractor (USA); David Kohanbash, Carnegie Mellon University (USA); William Whittaker, Carnegie Mellon University (USA)

## Session 072 - US DOE Featured Site: Idaho National Laboratory (5/5)

### Session Co-Chairs:

Kliss McNeel (USA)

Ann Riedesel (USA)

### Lead Organizer:

Ann Riedesel (USA)

### Paper Reviewer:

Ann Riedesel (USA)

### Paper Title

[A Study into the Benefits of Using Discrete Event Simulation in TRU and MLLW Disposal at AMWTP](#) - 19536

**Carwyn Chamberlain**, DBD International (United Kingdom); **Scott Williamson-Owens**, DBD International (United Kingdom); **Scott Biorn**, Fluor Idaho, LLC (USA)

[Criticality Safety Aspects of Higher Fissile Gram Equivalent at the AMWTF](#) - 19296

**Cecilia Hoffman**, Fluor Idaho, LLC (USA)

[Design of an Evapotranspiration Surface Barrier for the Subsurface Disposal Area at INL](#) - 19220

**Charles Sullivan**, Fluor Idaho, LLC (USA); **Gundar Peterson**, Daniel B. Stephens & Associates, Inc. (USA); **Nolan Jensen**, US DOE - Idaho Operations Office - Idaho Cleanup Project (USA)

[Idaho-Developed Technologies, Processes Offer Unique Solutions to Waste Management Challenges](#) - 19281

**Hoss Brown**, Fluor Idaho, LLC (USA); **Erik Simpson**, Fluor Idaho, LLC (USA)

[Managing Risks via Small / Pilot Scale Testing for INL's Integrated Waste Treatment Unit \(IWTU\)](#) - 19268

**Afshin Kazeminezhad**, Fluor Idaho, LLC (USA); **Craig Porter**, Fluor Idaho, LLC (USA)

[Developing & Testing a New Gas Distribution System for the Fluidized Bed of the IWTU Steam Reformer](#) - 19219

**Allyson Ferry**, Fluor Idaho, LLC (USA); **Richard Farnsworth**, Fluor Idaho, LLC (USA); **Brad Eldredge**, Eldredge Engineering (USA); **James Law**, Fluor Idaho, LLC (USA); **Rodney Campbell**, Fluor Idaho, LLC (USA); **Jeffrey Klinger**, Fluor Idaho, LLC (USA); **Scott Shurtliff**, Fluor Idaho, LLC (USA); **Afshin Kazeminezhad**, Fluor Idaho, LLC (USA)

[Innovative Implementation of Consolidated Dry Fuel Storage at the INL](#) - 19655

**Russell Cottam**, Fluor Idaho, LLC (USA); Roger Friesz, Fluor Idaho, LLC (USA)

[Win-Win Regulatory Strategies and Integration in Idaho](#) - 19241

**Scott Reno**, Fluor Idaho, LLC (USA)

## Session 077 - Instrumental Methods for Waste Characterization of LLW/ ILW

### Session Co-Chairs:

Frazier Bronson (USA)

Loong Yong (USA)

### Lead Organizer:

Frazier Bronson (USA)

### Additional Organizer(s):

Stephen Halliwell (USA)

Loong Yong (USA)

### Paper Reviewer:

Loong Yong (USA)

### Paper Title

[Waste Characterization Methods Based on Gamma-ray Imaging Spectrometers](#) - 19454

**Willy Kaye**, H3D, Inc. (USA); **Weiwei Wang**, H3D, Inc. (USA); **Brian Kitchen**, H3D, Inc (USA)

[Expanded ISOCS Characterization Techniques for WIPP Certification at the Idaho Clean-up Project](#) - 19623

**Ed Gulbransen**, Fluor Idaho, LLC (USA); **Doug Dinneen**, Fluor Idaho, LLC (USA); **Preston Abbott**, Mirion Technologies (Canberra) (USA); **Marcel Villani**, Mirion Technologies (Canberra) (USA); **Steven (Corey) Boland**, Mirion Technologies (Canberra) (USA)

[Use of an ISOCS-based Waste Assay System for Decommissioning Waste at Trawsfynydd](#) - 19526

**Colin Wilkins**, Mirion Technologies (Canberra UK) (United Kingdom); **Thomas Williams**, Magnox Ltd (United Kingdom); **Jas Singh**, Mirion Technologies (Canberra UK) (United Kingdom); **Gareth Price**, Magnox Ltd. (United Kingdom); **Gareth White**, Mirion Technologies (Canberra UK) Ltd. (United Kingdom); **Tas Akhtar**, Magnox Ltd. (United Kingdom)

[A Gamma Assay System for Characterizing Excavated Soil with High <sup>137</sup>Cs and <sup>90</sup>Sr Contamination](#) - 19460

**John Kirkpatrick**, Mirion Technologies (Canberra) (USA); **David Sullivan**, Mirion Technologies (Canberra) (USA); **Stuart Gailey**, Mirion Technologies (USA); **Jeffrey Lagana**, Mirion Technologies (Canberra) (USA); **Patricia McClay**, Mirion Technologies (USA); **Sasha Philips**, Mirion Technologies (Canberra) (USA); **Sean Stanfield**, Mirion Technologies (Canberra) (USA); **Marcel Villani**, Mirion Technologies (Canberra) (USA)

[Radiological Characterisation of VLLW Produced at High-Energy](#)

[Particle Accelerators](#) - 19118

**Biagio Zaffora**, CERN (Switzerland); Matteo Magistris, CERN (Switzerland); Thomas Frosio, CERN (Switzerland); Patrycja Dyrzcz, CERN (Switzerland); Chris Theis, CERN (Switzerland)

[Monitoring the Composition of Low-Activity Nuclear Waste using In-Situ Measurements](#) - 19356

**Stefani Kocevsk**a, Georgia Institute of Technology (USA); Martha A. Grover, Georgia Institute of Technology (USA); Ronald W. Rousseau, Georgia Institute of Technology (USA)

[Radiation Leakage and the Precision of Characterizing Nuclear Material Using Calorimetric Assay](#) - 19233

**Wojciech Kubinski**, Warsaw University of Technology (Poland); Cedric Carasco, CEA/DEN/DTN Cadarache (France); Daniel Kikola, Warsaw University of Technology (Poland); Christophe Mathonat, KEP Technologies (France); Dariusz Tefelski, Warsaw University of Technology (Poland); Holger Tietze-Jaensch, Forschungszentrum Juelich GmbH (Germany); Bart Rogiers, SCK•CEN Belgian Nuclear Research Centre (Belgium)

[Development of a Trace Detection Method for Mercury Speciation in Hanford Tank Waste](#) - 19014

**Matthew S. Fountain**, Pacific Northwest National Laboratory (USA); Shirmir Branch, Pacific Northwest National Laboratory (USA); Gary Gill, Pacific Northwest National Laboratory (USA)

## Session 078 - Innovative Field Monitoring for Environmental Remediation

### Session Co-Chairs:

Kurt Gerdes (USA)

Charles Waggoner (USA)

### Lead Organizer:

Ella Feist (USA)

### Additional Organizer(s):

Charles Waggoner (USA)

### Paper Reviewer:

Charles Waggoner (USA)

### Paper Title

[Integration of Real-Time Geophysical Monitoring with In Situ Uranium Remedy Implementation](#) - 19094

**Michael Truex**, Pacific Northwest National Laboratory (USA); Tim Johnson, Pacific Northwest National Laboratory (USA); Jon Thomle, Pacific Northwest National Laboratory (USA); Robert Mackley, Pacific Northwest National Laboratory (USA); Sarah Springer, CH2M HILL PRC (USA); Sunil Mehta, INTERA, Inc. (USA); David Becker, CH2M HILL PRC (USA); David St. John, CH2M HILL PRC (USA)

[Waste Facility Groundwater Monitoring Design Under Uncertainty](#) - 19462

**Matthew Tonkin**, S.S. Papadopoulos & Associates, Inc. (USA); Bill Faught, CH2M HILL PRC (USA); Jessica Ni, CH2M HILL PRC (USA); Marinko Karanovic, S.S. Papadopoulos & Associates, Inc. (USA); Kinsley Binard, S.S. Papadopoulos & Associates, Inc. (USA); R. Douglas Hildebrand, US DOE (USA)

[Deployment of Rapid Assay Systems for Real-time Sorting of Excavation Spoil on Contaminated Land](#) - 19258

**Dan Clifton-Climas**, NUVIA (United Kingdom); Winston Smith, NUVIA (United Kingdom); Katie Adams, Canadian Nuclear Laboratories (Canada); Paul McMillan, Canadian Nuclear Laboratories (Canada); Helen Beddow, NUVIA (United Kingdom)

[Numerical Investigation of the Electrical Resistivity Tomography for Detecting the Waste Zone beneath an Engineered Surface](#) - 19066

**Zhuanfang Zhang**, Pacific Northwest National Laboratory (USA); Chris Strickland, Pacific Northwest National Laboratory (USA); Tim Johnson, Pacific Northwest National Laboratory (USA)

[Depth of the Biologically Active Zone in Terrestrial Habitats at the Chalk River Laboratories Site: Implications for Contaminated Site Assessment and Ecological Risk Assessment](#) - 19272



**Penny Neal**, Canadian Nuclear Laboratories (Canada); Matt Bond, Canadian Nuclear Laboratories (Canada); Lee Bellan, Canadian Nuclear Laboratories (Canada)

[The Development of Legacy Waste Scaling Factors for Radioactively Contaminated Soils at Chalk River Labs](#) - 19333

**Billy Cox**, Cox Nuclear Consulting Services (USA); Kate Stephenson, Canadian Nuclear Laboratories (Canada); Kathryn Jean Hogue, Canadian Nuclear Laboratories (Canada)

## Session 079 - ER Post Closure Challenges and Long-Term Stewardship/Legacy Management

### Session Co-Chairs:

Mark Kautsky (USA)

Joy Shoemake (USA)

### Lead Organizer:

Dale Bignell (USA)

### Additional Organizer(s):

Mark Kautsky (USA)

Joy Shoemake (USA)

### Paper Reviewer:

Mark Kautsky (USA)

### Paper Title

[Path to Subsurface Closure: When Real and Predicted Data Don't Match, Central Nevada Test Area](#) - 19560

**Rick Findlay**, Navarro Research and Engineering, Inc. (USA); Rex A. Hodges, Navarro Research and Engineering, Inc. (USA); Mark Kautsky, US DOE (USA)

[Erosion Challenges at the L-Bar Disposal Site](#) - 19561

**Jordan Cario**, Navarro Research and Engineering, Inc. (USA); William Frazier, US DOE (USA); Richard Johnson, Navarro Research and Engineering, Inc. (USA); Melvin Madril, Navarro Research and Engineering, Inc. (USA)

[Sustainable Transactions: The Fine Art of the Forever Deal](#) - 19569

**Ann Wei**, Navarro Research and Engineering, Inc. (USA); Bud Sokolovich, US DOE Office of LM (USA)

[Unforeseen Events alter Stewardship Strategies at the Decommissioned BONUS Reactor in Puerto Rico](#) - 19572

**Cliff Carpenter**, US DOE Office of LM (USA); Michele Miller, Navarro Research and Engineering, Inc. (USA); Jose Santos Jimenez, Puerto Rico Electric Power Authority (USA); Ruperto Berrios, Puerto Rico Electric Power Authority (USA)

[Stability of a Uranium-Contaminated Plume in a Karst Aquifer in Northwest New Mexico](#) - 19574

**Bernadette Tsosie**, US DOE (USA); Richard Johnson, Navarro Research and Engineering, Inc. (USA); Alison Kuhlman, Navarro Research and Engineering, Inc. (USA); Dave M. Peterson, Navarro Research and Engineering, Inc. (USA)

[Path Forward for Groundwater Compliance Strategy at the Tuba City, Arizona, Disposal Site](#) - 19581

**Michael Morse**, Navarro Research and Engineering, Inc. (USA); Jeff Carman, Navarro Research and Engineering, Inc. (USA); Raymond H. Johnson, Navarro Research and Engineering, Inc. (USA); Peter Lemke, Navarro Research and Engineering, Inc. (USA); Mark Kautsky, US DOE (USA)

[Successful Implementation of a Natural Resource Restoration Plan at the Fernald Preserve](#) - 19568

**John Homer**, Navarro Research and Engineering, Inc. (USA); Susan Smiley, US DOE Office of LM (USA); Thomas Schneider, Ohio Environmental Protection Agency (USA); Jennifer Finfera, US Fish and Wildlife Service (USA); William Hertel, Navarro Research and Engineering, Inc. (USA)

## Session 080 - Advancements in Technical Education and Training to Improve and Sustain Institutional Knowledge

### Session Co-Chairs:

Robert Berry (United Kingdom)

Rachel West (USA)

### Lead Organizer:

Robert Berry (United Kingdom)

### Paper Reviewer:

Judith Connell (USA)

### Paper Title

[Developing Tomorrows Nuclear Professionals – Apprentice and Graduate Development at PFCS, Sellafield](#) - 19013

**Derek Carlisle**, Sellafield Ltd (United Kingdom); Virag Szabo, Sellafield Ltd (United Kingdom); Joseph Hicks, Cavendish Nuclear (United Kingdom); Connor Smith, Sellafield Ltd (United Kingdom)

[Talent Programs: Engaging Young Professionals to Increase Engagement in the Radwaste Environment](#) - 19075

**Chastity Bitters**, Washington River Protection Solutions (USA); Katherine Gracie, Washington River Protection Solutions (USA)

[Ensuring Future Qualified Employees Through Workforce Development Initiatives](#) - 19183

**Ashley Saunders**, URS | CH2M Oak Ridge LLC (USA); Len Morgan, URS | CH2M Oak Ridge LLC (USA); Roger Jarrell, URS | CH2M Oak Ridge LLC (USA)

[Resourcing Strategies for the NRU Reactor Shutdown Planning and Execution](#) - 19218

**Rafaele Fiorella**, Canadian Nuclear Laboratories (Canada)

[Building a Decommissioning Army](#) - 19259

**Bruce Conning**, Promation Nuclear Ltd. (Canada)

[SRNL's Lessons Learned from the University of Nevada Reno's Nuclear Packaging Internships](#) - 19464

**Edward Ketusky**, Savannah River National Laboratory (USA); James Shuler, US DOE (USA); Natalie Davis Ferguson, Savannah River National Laboratory (USA); Charles McKeel, Savannah River National Laboratory (USA)

[AECOM Early Career Professional Technology Exchange](#) - 19045

**Natalie Young**, Washington River Protection Solutions (USA); Mark Tavelli, Washington River Protection Solutions (USA)

## Session 085 - D&D of US DOE Facilities

### Session Co-Chairs:

Andrew Szilagyi (USA)

Julia Tripp (USA)

### Lead Organizer:

Andrew Szilagyi (USA)

### Additional Organizer(s):

Michelle Claggett (USA)

Mike Serrato (USA)

Julia Tripp (USA)

### Paper Reviewer:

Julia Tripp (USA)

### Paper Title

[Overcoming Technical Challenges During Demolition of the West Valley Vitrification Facility](#) - 19387

**John Rendall**, CH2M HILL BWXT West Valley, LLC (USA); Daniel Sullivan, US DOE (USA); Cynthia Dayton, CH2M HILL BWXT West Valley, LLC (USA); Thomas Dogal, CH2M HILL BWXT West Valley, LLC (USA); Scott Chase, CH2M HILL BWXT West Valley, LLC (USA)

[Deactivation and Demolition \(D&D\) of the Toxic Substance Control Act \(TSCA\) Incinerator Oak Ridge, Tennessee](#) - 19184

**Daniel Macias**, URS | CH2M Oak Ridge LLC (USA); Brad Adams, URS | CH2M Oak Ridge LLC (USA)

[Comparing Ecological Risk between D & D Facilities and Operating Facilities at the Hanford Site](#) - 19531

**Joanna Burger**, Rutgers University - CRESP (USA); Michael Gochfeld, Rutgers University - CRESP (USA); David Kosson, Vanderbilt University - CRESP (USA); Amoret Bunn, Pacific Northwest National Laboratory (USA); Jennifer Salisbury, Vanderbilt University - CRESP (USA); Kevin Brown, Vanderbilt University - CRESP (USA); Janelle Downs, Pacific Northwest National Laboratory (USA); Christian Jeitner, Rutgers University - CRESP (USA)

[Particle Loading Dynamics of SRNL Electrostatic Particle Collectors](#) - 19398

**James Nicholson**, Savannah River National Laboratory (USA); Matthew Siegfried, Savannah River National Laboratory (USA); Laken Inabinet, Savannah River National Laboratory (USA); Mike Serrato, Savannah River National Laboratory (USA)

[Stabilization of Residual Contamination with Alternative Materials](#) -

19404

**James Nicholson**, Savannah River National Laboratory (USA); Joseph Sinicrope, Applied Research Center - FIU (USA); Aaron Washington, Savannah River National Laboratory (USA); Peggy Shoffner, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Mike Serrato, Savannah River National Laboratory (USA)

[Molten Salt Reactor Experiment \(MSRE\) Lay-Up](#) - 19187

**Tommy Morgan**, URS | CH2M Oak Ridge LLC (USA); Alfred Johnson, URS | CH2M Oak Ridge LLC (USA)

[Applying Technology and Experience to Ensure Safe In Situ Decommissioning](#) - 19587

**Mike Serrato**, Savannah River National Laboratory (USA); Christine Langton, Savannah River National Laboratory (USA); Laurie Judd, Longenecker & Associates (USA)

[Remote Technology to Retrieve Waste Below the 324 Building at the Hanford Site](#) - 19622

**L Michael Douglas**, CH2M HILL PRC (USA); Brad Herzog, CH2M HILL PRC (USA); Eric Ison, CH2M HILL PRC (USA); Benjamin Vannah, US DOE (USA)

## Session 086 - Spent/Used Nuclear Fuel: Tools, Techniques & Modeling

### Session Co-Chairs:

John Gregory (USA)

Tom Michener (USA)

### Lead Organizer:

Tom Michener (USA)

### Additional Organizer(s):

John Gregory (USA)

### Paper Reviewer:

Tom Michener (USA)

### Paper Title

[Applicability of Developed Calculation Models to Predict Long-term Behavior of Metal Seals – Necessary Scope of Tests](#) - 19311

**Linan Qiao**, BAM Federal Institute for Materials Research and Testing (Germany); **Sven Nagelschmidt**, BAM Federal Institute for Materials Research and Testing (Germany); **Uwe Herbrich**, BAM Federal Institute for Materials Research and Testing (Germany)

[Contamination Control: Challenges & Innovative Design Solutions Utilized at Chalk River Laboratories](#) - 19263

**Bryan Goode**, Rolls-Royce Civil Nuclear Canada Ltd. (Canada); **Godwin Thambithurai**, Canadian Nuclear Laboratories (Canada)

[Development of Transient Coupled Chemical-Thermal-Fluids Simulation for Unsealed Aluminum-Clad Spent Nuclear Fuel Storage Canister](#) - 19273

**Alexander Abboud**, Idaho National Laboratory (USA); **Hai Huang**, Idaho National Laboratory (USA)

## **Session 087 - Evaluation of HLW Tank Modular Salt Waste Processing**

### **Session Co-Chairs:**

Mark Keefer (USA)

David Peeler (USA)

### **Lead Organizer:**

Bill Wilmarth (USA)

### **Additional Organizer(s):**

Vijay Jain (USA)

### **Paper Reviewer:**

Mark Keefer (USA)

### **Paper Title**

[Understanding and Controlling Cesium Loading on Crystalline Silicotitanate](#) - 19601

**Laura Britanisky**, Savannah River Remediation (USA); Terri Fellingner, Savannah River Remediation (USA); Mark Keefer, Savannah River Remediation (USA)

[Safety Basis Development for the Tank Closure Cesium Removal \(TCCR\) Demonstration](#) - 19596

**Nicholas Eigenbrot**, AECOM (USA)

[Saltstone Facility Operating Experience with Mega-Vault Disposal Units](#) - 19497

**Aaron Staub**, Savannah River Remediation (USA)

[Implementation of Increased Salt & Decreased Sludge Volumes in the Defense Waste Processing Facility](#) - 19597

**Rachel Seeley**, Savannah River Remediation (USA)



## Session 089a - D&D General - Posters

### Session Co-Chairs:

Michelle Claggett (USA)

Kathy Ethridge (USA)

### Lead Organizer:

Michelle Claggett (USA)

### Additional Organizer(s):

Mike Serrato (USA)

Julia Tripp (USA)

### Paper Reviewer:

Scott Dam (USA)

### Poster Judge:

Michelle Claggett (USA)

### Paper Title

[Challenges of Transitioning Obsolete Legacy Systems to Decommissioning in NRU](#) - 19047

**Qays Nazarali**, Canadian Nuclear Laboratories (Canada); Cameron Barr, Canadian Nuclear Laboratories (Canada)

[Innovative Hot Lab Concept for Advanced D&D Applications](#) - 19175

**Maria Isabel Machado**, Assystem Energy and Infrastructure (France); Fanny Fouin, Assystem Energy and Infrastructure (United Kingdom); Bernard Blanc, Assystem Energy and Infrastructure (France); Robert Plana, Assystem Energy and Infrastructure (France)

[Quantifying Rates of Erosion Using Historical Aerial Photos](#) - 19478

**Paul Black**, Neptune and Company, Inc. (USA); Paul Duffy, Neptune and Company, Inc. (USA); John Tauxe, Neptune and Company, Inc. (USA); Kelly Crowell, Neptune and Company, Inc. (USA)

[Water-proof Property of Super Heavy Bentonite Slurry for Decommissioning of Fukushima Daiichi NPS](#) - 19313

**Shinsuke Ujiie**, HOJUN CO., LTD. (Japan); Hideo Komine, Waseda University (Japan); Shigeru Goto, Waseda University (Japan); Ema Yoshikawa, Waseda University (Japan); Seiichi Narushima, SEIBU Construction Co, Ltd (Japan); Yasushi Nagae, TELNITE CO., LTD. (Japan)

[Perspectives of Decommissioning and Waste Processing of Old Radon-type Near-surface Repository](#) - 19325

**Iulian Gisca**, Radioactive Waste Management Company (Moldova); Natalia Vasilieva, National

Agency for Regulating Nuclear and Radiological Activities (Moldova)

## Session 089d - D&D Techniques - Posters

### Session Co-Chairs:

Kathy Ethridge (USA)

Con Lyras (Australia)

### Lead Organizer:

Michelle Claggett (USA)

### Additional Organizer(s):

Mike Serrato (USA)

Julia Tripp (USA)

### Paper Reviewer:

Con Lyras (Australia)

### Poster Judge:

Michelle Claggett (USA)

### Paper Title

[Performance and Stability of HyBRID Process](#) - 19115

**Hui-Jun Won**, Korea Atomic Energy Research Institute (South Korea); Naon Chang, Korea Atomic Energy Research Institute (South Korea); Sang Yoon Park, Korea Atomic Energy Research Institute (South Korea); Man-Soo Choi, Korea Atomic Energy Research Institute (South Korea); Seon Byeong Kim, Korea Atomic Energy Research Institute (South Korea); Bum-Kyoung Seo, Korea Atomic Energy Research Institute (South Korea)

[Control of Radioactive Methyl Iodide Gases by Mesoporous Hybrid Adsorbents at High Humid Condition](#) - 19329

**Byung-Seon Choi**, Korea Atomic Energy Research Institute (South Korea); Seon Byeong Kim, Korea Atomic Energy Research Institute (South Korea); Jeikwon Moon, Korea Atomic Energy Research Institute (South Korea)

[The Applications of Intumescent Technologies in Support of D&D Activities across the DOE Complex](#) - 19599

**Joshua Nunez**, Applied Research Center - FIU (USA); Joseph Sinicrope, Applied Research Center - FIU (USA); James Nicholson, Savannah River National Laboratory (USA)

[Open-air Demolition: Validation of EPA Approved Alternative Method for Emission Estimation](#) - 19397

**Brent Blunt**, Blunt Consulting (USA); Janice Williams, CH2M HILL BWXT West Valley, LLC (USA); Moira Maloney, US DOE (USA); Joseph Forti, Northwind Environmental Solutions (USA)

[Engineering Controls for the Processing and Repackaging of Gloveboxes Contaminated with Plutonium](#) - 19629

**Philip Smith**, Idaho Cleanup Project (USA); Britt Edquist, Idaho

Cleanup Project (USA)

[NPP SCCs Based Deregulation Process Application Case Design with Internal Block Diagram of SysML](#) - 19237

**Sun-Kee Lee**, KEPCO International Nuclear Graduate School (South Korea); Chang-Lak Kim, KEPCO International Nuclear Graduate School (South Korea); Heon Kim, KEPCO International Nuclear Graduate School (South Korea)

[Big Data Framework with Machine Learning for D&D Applications](#) - 19108

**Walter Quintero**, Applied Research Center - FIU (USA); Himanshu Upadhyay, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Anthony Abrahao, Applied Research Center - FIU (USA); Santosh Joshi, Applied Research Center - FIU (USA)

## Session 090a - Packaging and Transportation - Posters

### Session Co-Chairs:

James Shuler (USA)

Robert Watkins (USA)

### Lead Organizer:

James Shuler (USA)

### Paper Reviewer:

James Shuler (USA)

### Poster Judge:

James Shuler (USA)

### Paper Title

[Development of the B-25 Low Level Radioactive Waste Container in Taiwan](#) - 19042

**Yun-Chung Shen**, Institute of Nuclear Energy Research (Taiwan);  
Kuei-Jen Cheng, Institute of Nuclear Energy Research (Taiwan);  
Chen-Chzu Peng, Institute of Nuclear Energy Research (Taiwan);  
Ying-Wei Lin, Institute of Nuclear Energy Research (Taiwan); Sue-Ray Lin, Institute of Nuclear Energy Research (Taiwan)

[Alternative Impact Limiter Designs for Used/Spent Nuclear Fuel Transportation Casks](#) - 19496

**Anthony Chang**, Orano (USA); Sven Bader, Orano Federal Services (USA); Michael Smith, Orano Federal Services (USA)

[Dry Cask Shipments of ATR Spent Nuclear Fuel at INL](#) - 19600

**Tamara Shokes**, Idaho National Laboratory (USA); Robert Spears, Idaho National Laboratory (USA); M.W. Patterson, Idaho National Laboratory (USA); Colleen Dustin, Idaho Cleanup Project (USA)

[History and Status of DOE's Standardized Canister](#) - 19657

**Gordon Petersen**, Idaho National Laboratory (USA); Sandra Birk, Idaho National Laboratory (USA); Brett Carlsen, Idaho National Laboratory (USA); Dayna Daubaras, Idaho National Laboratory (USA); Ken Bulmahn, Contractor (USA); Lee Montierth, Idaho National Laboratory (USA); Rebecca Smith, Idaho National Laboratory (USA)

[Developing a US High Performance Research Reactor Transportation Roadmap](#) - 19674

**Lynh Nguyen**, Savannah River National Laboratory (USA); Edward Ketusky, Savannah River National Laboratory (USA); Dan Leduc, Savannah River National Laboratory (USA); Kerry Dunn, Savannah River National Laboratory (USA)

## **Session 090b - DOE-EM Minority Serving Institutions Partnership Program (MSIPP) Posters**

### **Session Co-Chairs:**

Mike Serrato (USA)

Aaron Washington (USA)

### **Lead Organizer:**

Andrew Fellingner (USA)

### **Paper Title**

[Effect of Zero Valent Iron Pre-treatments on Reductive Removal of Aqueous Tc-99](#) - 19379

**Yelena Katsenovich**, Applied Research Center - FIU (USA); Daria Boglaienko, Applied Research Center - FIU (USA); Hilary Emerson, Pacific Northwest National Laboratory (USA); Tatiana Levitskaia, Pacific Northwest National Laboratory (USA)

## **Session 093 - Worldwide Perspectives of Radioactive Waste Management - Challenges and Solutions**

### **Session Co-Chairs:**

Malcolm Morley OBE (United Kingdom)

Kristan Schruder (Canada)

### **Lead Organizer:**

John Mathieson (United Kingdom)

### **Paper Reviewer:**

John Mathieson (United Kingdom)

### **Paper Title**

[Inventory of Radioactive Waste in Canada](#) - 19336

**Jason Kenney**, Natural Resources Canada (Canada)

[Canadian Regulatory Framework for Waste Management and Decommissioning](#) - 19373

**Karine Glenn**, Canadian Nuclear Safety Commission (Canada);

Shona Thompson, Canadian Nuclear Safety Commission (Canada)

[Canadian Nuclear Laboratories Waste Management: Challenges and the Integrated Waste Strategy](#) - 19160

**Lynne Jones**, Canadian Nuclear Laboratories (Canada)

[Canadian Nuclear Laboratories: An Asset Management Journey](#) - 19438

**Allison Huffman**, Canadian Nuclear Laboratories (Canada)

[Development of an Alternative Approach to Demonstrating Environmental Performance in the UK](#) - 19354

**Matthew Keep**, Wood (United Kingdom); Massimo Scirea, Wood (United Kingdom); Mark Lowries, Wood (United Kingdom); Douglas McGeachin, Dounreay Site Restoration Ltd (United Kingdom); Chloe Gamble, Horizon Nuclear Power (United Kingdom); Yu Hara, Hitachi-GE Nuclear Energy Ltd. (United Kingdom); Stuart Woodings, Wood (United Kingdom)

[Small Modular Reactors in Canada: Planning for Waste from the Outset](#) - 19254

**Catherine Badke**, Natural Resources Canada (Canada); Paul McClelland, Atomic Energy of Canada Limited (Canada)

## Session 095 - D&D of Nuclear Power Plants (1/2)

### Session Co-Chairs:

Con Lyras (Australia)

Serge Vanderperre (Belgium)

### Lead Organizer:

Joseph Boucau (Belgium)

### Additional Organizer(s):

Simon Carroll (Sweden)

Al Freitag (USA)

Serge Vanderperre (Belgium)

### Paper Reviewer:

Serge Vanderperre (Belgium)

### Paper Title

[Benchmarking NPP Decommissioning Costs - Outcomes of the OECD Nuclear Energy Agency Activity](#) - 19117

**Simon Carroll**, Vattenfall AB (Sweden); Niklas Bergh, Westinghouse Electric Company (Sweden)

[Feedback from Reactor Internals Segmentation Projects in Europe](#) - 19141

**Joseph Boucau**, Westinghouse Electric Company (Belgium); Per Segerud, Westinghouse Electric Company (Sweden); Bernhard Wiechers, Westinghouse Electric (Germany)

[Development of Remote Dry Cutting Technology for Reactor Vessel Segmentation](#) - 19176

**Niklas Bergh**, Westinghouse Electric Company (Sweden); John Hubball, Westinghouse Electric Company (USA)

[Engineering Challenges for the In-Situ Disposal of the 20 MWe NPD Demonstration Reactor](#) - 19407

**Mike English**, Canadian Nuclear Laboratories (Canada); Ernie Aikens, Canadian Nuclear Laboratories (Canada)

[Dismantling of the Spent Resins Hot Compaction Unit at Tihange NPP, Belgium](#) - 19139

**David Charpentier**, Tractebel Engineering (Belgium); Serge Vanderperre, Tractebel (Belgium); Candice De Jonghe, Tractebel Engineering (Belgium)

[Decommissioning Status and Preliminary Engineering Planning for Chinshan NPP in Taiwan](#) - 19114

**Yun-Chung Shen**, Institute of Nuclear Energy Research (Taiwan); Hsien-Ming Hsiao, Institute of Nuclear Energy Research (Taiwan); Yi-Kuo Chang, Institute of Nuclear Energy Research (Taiwan); Hsien-Te Hsieh, Institute of Nuclear Energy Research (Taiwan); Yung Chih Chen, Institute of Nuclear Energy Research (Taiwan)



## Session 096 - Developments in the Design of Radioactive Packages

### Session Co-Chairs:

Edward Ketusky (USA)

James Shuler (USA)

### Lead Organizer:

Edward Ketusky (USA)

### Paper Reviewer:

Kent McDonald (USA)

### Paper Title

[Influence of Cable Stiffness and Preload on Shipping Package](#)

[Restraint Loads](#) - 19381

**David McKeel**, Clemson University (USA); Jeff England, NAC International (USA)

[Maximum Inner Container Dose Rate That Will Ensure Meeting](#)

[Regulatory Limit at Package Surface](#) - 19206

**Steven Nathan**, Savannah River Nuclear Solutions (USA); Zachary Weis, Savannah River Nuclear Solutions (USA)

[INAC's OPTIMUS™-L Package – the Next Transformation](#) - 19396

**Steven Sisley**, NAC International (USA); Jeff England, NAC International (USA); Juan Subiry, NAC International (USA)

[Licensing and Operation of BEA Research Reactor Package for](#)

[Fuel, Source and Target Payloads](#) - 19198

**Richard Smith**, Orano (USA)

## **Session 097 - Packaging for Interim Storage, Transport and Disposal of Spent Nuclear Fuel**

### **Session Co-Chairs:**

Christopher Brandjes (USA)

Olaf Oldiges (Germany)

### **Lead Organizer:**

Christopher Brandjes (USA)

### **Additional Organizer(s):**

Jeff England (USA)

### **Paper Reviewer:**

Paul Jones (USA)

### **Paper Title**

[The Next Generation System Analysis Model: Capabilities for Simulating a Waste Management System](#) - 19131

**Robert Joseph**, Oak Ridge National Laboratory (USA); Brian Craig, Argonne National Laboratory (USA); Riley Cumberland, Oak Ridge National Laboratory (USA); Casey D Trail, Conversant (USA); James St. Aubin, Argonne National Laboratory (USA); Charles Olson, Argonne National Laboratory (USA); Lucas Vander Wal, Argonne National Laboratory (USA); Evan VanderZee, Argonne National Laboratory (USA); Josh Jarrell, Idaho National Laboratory (USA); Elena Kalinina, Sandia National Laboratories (USA)

[Virtual Simulation of Spent Nuclear Fuel Repackaging Facility Design Concepts](#) - 19479

**Young Soo Park**, Argonne National Laboratory (USA); William Nutt, Pacific Northwest National Laboratory (USA)

[Challenges of SLOWPOKE-2 HEU Irradiated Fuel Transportation from Canada to USA](#) - 19123

**Shahzad Alim**, SNC Lavalin (Canada)

[Assessing the Success of Shipping High Burn-Up Sister Rods from ORNL to PNNL](#) - 19456

**Edward Ketusky**, Savannah River National Laboratory (USA); Lynh Nguyen, Savannah River National Laboratory (USA); Fletcher Davis, Savannah River National Laboratory (USA)

## Session 098 - Stabilization/Immobilization of HLW, SNF/UNF and Long-lived Alpha/TRU

### Session Co-Chairs:

John Gregory (USA)

David Peeler (USA)

### Lead Organizer:

Sharon Marra (USA)

### Additional Organizer(s):

Steven Thomson (United Kingdom)

### Paper Reviewer:

Sharon Marra (USA)

### Paper Title

[NM in HLW Borosilicate Glass: Focus on the High Performances of the IHMM Operated at La Hague Plant - 19019](#)

**Régis Didierlaurent**, Orano (France); Céline Roussel, Orano (France); Emilien Sauvage, CEA Marcoule (France); Virginie Labe, CEA Marcoule (France); Muriel Neyret, CEA (France); Christophe Renaut, Orano (France); Catherine Veyer, Orano (France)

[Laboratory-Scale Melter Systems for Simulated and Real AP-105 Tank Waste - 19301](#)

**William Eaton**, Pacific Northwest National Laboratory (USA); Derek Dixon, Pacific Northwest National Laboratory (USA); Jeff Venarsky, Pacific Northwest National Laboratory (USA); Cody Stewart, Pacific Northwest National Laboratory (USA); Derek Cutforth, Pacific Northwest National Laboratory (USA); Jesse Lang, Pacific Northwest National Laboratory (USA); Michael Schweiger, Pacific Northwest National Laboratory (USA); Reid Peterson, Pacific Northwest National Laboratory (USA); Kris Colosi, Washington River Protection Solutions (USA); Albert Kruger, US DOE ORP (USA)

[Enhanced Corrosion of Magnesium as a Treatment for Legacy SNF - 19369](#)

**Joe Vickers**, University of Leeds (United Kingdom); Bruce Hanson, University of Leeds (United Kingdom); Bhoopesh Mishra, University of Leeds (United Kingdom)

[Fluor Idaho's Technical and Programmatic Approach That Resolved the Problems with the Integrated Waste Treatment Unit - 19290](#)

**Leo Thompson**, Sterling Engineering & Consulting Group, LLC (USA); Joseph Giebel, Fluor Idaho, LLC (USA)

[Robust and High-Waste Loaded Glass Formulations for Hanford Low-Activity Waste - 19050](#)

**John Vienna**, Pacific Northwest National Laboratory (USA);

Dongsang Kim, Pacific Northwest National Laboratory (USA);  
Nicholas Lumetta, Pacific Northwest National Laboratory (USA);  
Albert Kruger, US DOE ORP (USA)

[Deep Isolation – Innovation for the Storage and Disposal of High-level Waste and Spent Nuclear Fuel](#) - 19367

**Rod Baltzer**, Deep Isolation (USA); Timothy Frazier, Deep Isolation (USA); Mary Woollen, Deep Isolation (USA)

[Radiochemical Characterization of PWR Control Rods](#) - 19030

**Jaap Hart**, Nuclear Research and Consultancy Group (Netherlands);  
Tanja Tomasberger, Nuclear Research and Consultancy Group (Netherlands);  
Irene Loppersum, Nuclear Research and Consultancy Group (Netherlands);  
Werner Schuurman, Nuclear Research and Consultancy Group (Netherlands)

## Session 101 - Modeling Applications and Risk/Dose Analysis in Environmental Remediation

### Session Co-Chairs:

Vicky Freedman (USA)

Keith Tucker (USA)

### Lead Organizer:

Tjalle ("Chuck") Vandergraaf (Canada)

### Additional Organizer(s):

Paul Black (USA)

Vicky Freedman (USA)

Simon Kwong (United Kingdom)

### Paper Reviewer:

Vicky Freedman (USA)

### Paper Title

#### [Development of a Stochastic Infiltration Model for PPA](#)

[Implementation](#) - 19293

**Aaron Bandler**, Neptune and Company, Inc (USA); Hayley Brittingham, Neptune and Company, Inc. (USA); Kristin Broms, Neptune and Company, Inc. (USA); John Tauxe, Neptune and Company, Inc. (USA); Tom Stockton, Neptune and Company, Inc. (USA); Paul Black, Neptune and Company, Inc. (USA); Daniel Levitt, Neptune and Company, Inc. (USA); Megan Higgs, Neptune and Company, Inc. (USA)

#### [Preliminary Logistics Modeling of the Integrated Wash Aid Treatment](#)

[Emergency Reuse System](#) - 19495

**Katherine Hepler**, University of Illinois (USA); Michael Kaminski, Argonne National Laboratory (USA); Evan VanderZee, Argonne National Laboratory (USA)

#### [Natural Gas Drilling near the Underground Nuclear Test Site Rulison,](#)

[Colorado](#) - 19571

**Ken Kreie**, US DOE Office of LM (USA); Rex A. Hodges, Navarro Research and Engineering, Inc. (USA); Art Kleinrath, US DOE Office of LM (USA)

#### [PlumeSeeker™: A Model-Based Least-Cost Monitoring Network](#)

[Design Technology for 3-D Contaminant Plume Boundary](#)

[Delineation](#) - 19582

**Metin Ozbek**, HGL (USA); Varut Guvanasen, HydroGeoLogic, Inc. (USA); Nathan Voorhies, HydroGeoLogic, Inc. (USA); Larry Deschaine, HydroGeoLogic, Inc. (USA); Tad Fox, HGL (USA)

#### [EPA's Suite of Tools for Managing Waste Following a Large-Scale](#)

[Incident](#) - 19420

**Timothy Boe**, US EPA (USA); Paul Lemieux, US EPA (USA); Sang Don Lee, US EPA (USA); Erin Silvestri, US EPA (USA); Colin Hayes, Eastern Research Group, Inc. (USA); Molly Rodgers, Eastern Research Group, Inc. (USA); Heather Perez, Eastern Research Group, Inc. (USA)

[US EPA Superfund Radiation Risk Assessment Update: Superfund Update: Revisions to Risk and Dose Assessment Tools](#) - 19057

**Stuart Walker**, Office of Remediation & Technology Innovation (OSRTI), US EPA (USA)

[Novel Approach for Considering Ecosystem Services at Industrial Sites Near Agricultural Lands](#) - 19482

**Margaret MacDonell**, Argonne National Laboratory (USA); Shruti Mishra, Argonne National Laboratory (USA); R. Douglas Hildebrand, US DOE (USA); Emily Zvolaznek, Argonne National Laboratory (USA)

## **Session 102 - Analytical Methods for Waste Characterization of LLW / ILW**

### **Session Co-Chairs:**

Frazier Bronson (USA)

Stephen Halliwell (USA)

### **Lead Organizer:**

Frazier Bronson (USA)

### **Additional Organizer(s):**

Kapila Fernando (Australia)

Kent Rosenberger (USA)

Loong Yong (USA)

### **Paper Reviewer:**

Stephen Halliwell (USA)

### **Paper Title**

[Developing Waste Characterization Capabilities in Support of the Near Surface Disposal Facility](#) - 19245

**Katie Adams**, Canadian Nuclear Laboratories (Canada); Josh Swan, Canadian Nuclear Laboratories (Canada)

[Using Correlations to Cs-137 to Reduce Uncertainty in SRS Tank Farm Tc-99 and I-129 Inventories](#) - 19266

**Steven Hommel**, Savannah River Remediation (USA)

[Development of a Technical Standard for Radiological Characterization of DAW](#) - 19552

**Daniel Dilday**, Argonne National Laboratory (USA); Sydney Gordon, Navarro Research and Engineering, Inc. (USA)

[Destructive and Non-Destructive Characterization of various LLW/ILW at NRG](#) - 19078

**Jaap Hart**, Nuclear Research and Consultancy Group (Netherlands); Gael Menard, Nuclear Research and Consultancy Group (Netherlands)

## **Session 103 - Disposal of Very Low-Level Waste (VLLW) / Low-Activity Waste**

### **Session Co-Chairs:**

Rateb (Boby) Abu Eid (USA)

Christine Langton (USA)

### **Lead Organizer:**

Rateb (Boby) Abu Eid (USA)

### **Additional Organizer(s):**

Gabriele Bandt (Germany)

Kapila Fernando (Australia)

Linda Suttora (USA)

### **Paper Reviewer:**

Linda Suttora (USA)

### **Paper Title**

[Remediation of Irradiated Graphite Using Microorganisms Isolated from Oil Contaminated Soil](#) - 19643

**Evans Chirwa**, University of Pretoria (South Africa); Pulane Molokwane, OLOENVIRON Pty Ltd, South Africa (South Africa)

[Engineered Containment Mound \(ECM\) Design for LLRW at CNL in Chalk River, Canada](#) - 19213

**Mark Day**, AECOM (USA); Chris Brown, AECOM (USA); James Sorensen, AECOM (USA)

[The Development of a Small-Scale Project Model for Waste Management at the Port Hope Conversion Facility](#) - 19126

**Rebecca Peters**, Cameco Corporation (Canada); Thomas Smith, Cameco Corporation (Canada); Chad Hyslop, US Ecology (USA); Justin Jensen, US Ecology (USA); Curtis Hamilton, US Ecology (USA); Rebecca Robertson, Cameco Corporation (Canada); Lori Southern, Cameco Corporation (Canada)

[Value Based Decision Approach to Help Inform Waste Management Guidance for VLLW Following an RDD Detonation](#) - 19510

**Joseph Rustick**, AAAS Fellowship Program, Inc. (USA)



## Session 106 - Communication of Technical Issues: Worldwide Experiences

### Session Co-Chairs:

Jeannette Hyatt (USA)

Rachel West (USA)

### Lead Organizer:

Judith Connell (USA)

### Paper Reviewer:

Judith Connell (USA)

### Paper Title

[Tracking Restoration And Closure \(TRAC\): Status Update on Story Maps for Communicating Site Cleanup and Closure Status](#) - 19033

**Vicky Freedman**, Pacific Northwest National Laboratory (USA); Patrick Royer, Pacific Northwest National Laboratory (USA); Paul Weidert, Pacific Northwest National Laboratory (USA); John Garza, Pacific Northwest National Laboratory (USA); Sadie Montgomery, Pacific Northwest National Laboratory (USA); Jackie Wells, Pacific Northwest National Laboratory (USA); David Lewis, Pacific Northwest National Laboratory (USA); Ryan Williams, Pacific Northwest National Laboratory (USA); Ford Powers, Pacific Northwest National Laboratory (USA)

[Public Perception of Low-Dose Radiation: New Approaches of Study](#) - 19113

**Larissa Shasko**, University of Regina (Canada); Margot Hurlbert, University of Regina (Canada)

[Perception of the Risks of CEA Cadarache Research Centre: Reconciling the Fears with the Challenges](#) - 19362

**Guy Brunel**, French Alternative Energies and Atomic Energy Commission (CEA) (France); Yannick Dupré, Davidson Consulting (France); Anais Razier, Market Invest (France); Lauranne Dannau, Market Invest (France)

[Communicating Technical Information: Different Approaches for Different Audiences](#) - 19399

**Candida Cianci**, Canadian Nuclear Safety Commission (Canada); Lisa Donnelly, CNSC (Canada)

[Positive Social License Solicitation and Affiliation Development Through Non-Traditional Engagement Vectors](#) - 19423

**Darryl Spector**, Promotion Nuclear Ltd. (Canada)

[Evolution of Stakeholder Relations at the Mound Laboratory – End of DOE's Mission to the Present](#) - 19551

**Susan Smiley**, US DOE Office of LM (USA); Melissa Lutz, Navarro (USA)

[Improving Operational Efficiency, Compliance and Community Perception with Real-time Data](#) - 19260

**Simon Turner**, SensaWeb (Australia)

[Developments in the Regulatory Framework of Nuclear Waste Management in Germany – Licensing Procedures for Storage of SNF and Public Involvement](#) - 19612

**Julia Palmes**, BfE - Federal Office for the Safety of Nuclear Waste Management (Germany); Christoph Gastl, Federal Office for the Safety of Nuclear Waste Management (Germany)

## Session 112 - Operational Safety Issues in the Implementation of Deep Geological Repositories (DGR)

### Session Co-Chairs:

Patrick Landais (France)

Thilo von Berlepsch (Germany)

### Lead Organizer:

Patrick Landais (France)

### Additional Organizer(s):

Thilo von Berlepsch (Germany)

### Paper Reviewer:

Patrick Landais (France)

### Paper Title

[Operational Safety Analysis for Disposal Period of the Future Belgian Geological Disposal Facility](#) - 19249

**Bernt Haverkamp**, BGE TECHNOLOGY GmbH (Germany); Philipp Herold, BGE TECHNOLOGY GmbH (Germany); Didier Leonard, ONDRAF/NIRAS (Belgium); Didier Raymaekers, ONDRAF/NIRAS (Belgium); William Wacquier, ONDRAF/NIRAS (Belgium)

[The Challenges of Repository Operation in an Existing Mine](#) - 19339

**Volker Kunze**, Bundesgesellschaft fuer Endlagerung mbH (BGE) (Germany); Christiane Vieh, Bundesgesellschaft fuer Endlagerung mbH (BGE) (Germany); Jonas Mendel, Bundesgesellschaft fuer Endlagerung mbH (BGE) (Germany)

[WIPP Operational and Safety Lessons Learned from the 2014 Fire and Radiological Events](#) - 19389

**Ronald Gill**, US DOE (USA)

[A Practical Approach of Mining Operational Risks in Cigéo – A Field-Test](#) - 19349

**Jean-Michel Bosgiraud**, Andra (France); Nataliya Dias, Andra (France); Gilles Armand, Andra (France)

## Session 113 - Monitoring and Evaluation Strategies in Support of HLW Closure Activities

### Session Co-Chairs:

Bernt Haverkamp (Germany)

Thilo von Berlepsch (Germany)

### Lead Organizer:

Thilo von Berlepsch (Germany)

### Paper Reviewer:

Thilo von Berlepsch (Germany)

### Paper Title

[Development and Demonstration of Monitoring Strategies and Technologies -Modern2020 Project](#) - 19317

**Johan Bertrand**, Andra (France); Mansueto Morosini, Swedish Nuclear Fuel and Waste Management Co. (Sweden); José-Luis Garcia-Sineriz, AMBERG Infraestructuras S.A. (Spain); Jan Verstricht, EIG EURIDICE (Belgium); Anne Bergmans, University of Antwerp (Belgium)

[Performance Assessment for Closure of the Calcined Solids Storage Facility at the INL Site](#) - 19289

**Arthur Rood**, K-Spar Inc (USA); James M. McCarthy, Fluor Idaho, LLC (USA); Alva M. Parsons, Fluor Idaho, LLC (USA); David J. Thorne, North Wind Portage, Inc. (USA)

[Corrosion Monitoring in an Irradiated/Used Fuel Dry Storage Container](#) - 19193

**Catherine Wang**, Ontario Power Generation (Canada); James Sato, Ontario Power Generation (Canada); Jim Carmichael, Ontario Power Generation (Canada)

## Session 114 - Reprocessing/Recycling and Separation of HLW, SNF/UNF and Long-lived Alpha/TRU

### Session Co-Chairs:

Paul Bredt (USA)

Robert Jubin (USA)

### Lead Organizer:

Robert Jubin (USA)

### Paper Reviewer:

Robert Jubin (USA)

### Paper Title

[Management of Legacy Enriched Uranium and Transuranic Materials at ORNL](#) - 19062

**Sharon Robinson**, Oak Ridge National Laboratory (USA); Bradley Patton, Oak Ridge National Laboratory (USA); Tina Matta, Oak Ridge National Laboratory (USA)

[The Mk-18A Target Recovery Program: A Collaborative Effort](#) - 19186

**Bradley Loftin**, Savannah River National Laboratory (USA); Richard Meehan, National Nuclear Security Administration (USA)

[Update on Plans for Treatment of Research Reactor Used Fuels at La Hague](#) - 19507

**Sven Bader**, Orano Federal Services (USA); Paul Murray, Orano Federal Services (USA); Vanessa Vo Van, Orano (France); Isabelle Morlaes, Orano (France)

[Oxide Growth and Validation for Aluminum Research Reactor Fuel](#) - 19422

**Anna d'Entremont**, Savannah River National Laboratory (USA); Roderick Fuentes, Savannah River National Laboratory (USA); Luke Olson, Savannah River National Laboratory (USA); Kathryn Metzger, Savannah River National Laboratory (USA); Robert Sindelar, Savannah River National Laboratory (USA)

## **Session 115 - TRU Waste Characterization, Storage, Retrieval & Treatment**

### **Session Co-Chairs:**

Sal Golub (USA)

J.R. Stroble (USA)

### **Lead Organizer:**

Kapil Goyal (USA)

### **Additional Organizer(s):**

Betty Humphrey (USA)

J.R. Stroble (USA)

### **Paper Reviewer:**

Kapil Goyal (USA)

### **Paper Title**

[Testing of Oxidizing Chemicals and Sorbents in Support of the WIPP Basis of Knowledge](#) - 19617

**Jean-Francois Lucchini**, Los Alamos National Laboratory (USA);  
Christopher Chancellor, Los Alamos National Laboratory (USA);  
Beverly Crawford, Los Alamos National Laboratory (USA)

[Understanding Nitrate Chemistry – The Key to Safer and More Efficient TRU Waste Acceptance](#) - 19618

**Paul Duval**, Los Alamos National Laboratory (USA)

[Future Transition of WIPP from EM to Another DOE Office](#) - 19256

**J.R. Stroble**, US DOE (USA)

[Readiness Process and Transition to Operation for a Remote-Handled TRU Packaging Facility at Hanford](#) - 19298

**Raymond Geimer**, CH2M HILL PRC (USA); Neal Sullivan, CH2M HILL PRC (USA); Ketra Evans, Orano (USA)

## Session 116 - Technical Innovations in Environmental Remediation and Site Closure

### Session Co-Chairs:

Del Baird (USA)

Stefanie Fountain (USA)

### Lead Organizer:

Del Baird (USA)

### Additional Organizer(s):

Dale Bignell (USA)

Ella Feist (USA)

Leo van Velzen (Netherlands)

### Paper Reviewer:

Del Baird (USA)

### Paper Title

[Identifying the Technical Basis for TI Waivers for Recalcitrant Radionuclides at DOE Sites](#) - 19055

**Vicky Freedman**, Pacific Northwest National Laboratory (USA);  
Mark Rockhold, Pacific Northwest National Laboratory (USA);  
Catherine Yonkofski, Pacific Northwest National Laboratory (USA);  
Janelle Downs, Pacific Northwest National Laboratory (USA); Scott  
Waichler, Pacific Northwest National Laboratory (USA); Yilin Fang,  
Pacific Northwest National Laboratory (USA)

[Execution of an Alternative Modeling Strategy for Closure of the Rainier Mesa CAU at the NNSS](#) - 19099

**Andrew Tompson**, Lawrence Livermore National Laboratory (USA);  
Tim de Bues, Navarro Research and Engineering, Inc. (USA);  
Sharad Kelkar, Navarro-HydroGeoLogic, Inc. (USA)

[Geochemical and Solute Transport Modeling of In Situ Biological Treatment of Chromium in Groundwater](#) - 19334

**Mike Hay**, ARCADIS US, Inc. (USA); Frank Lenzo, ARCADIS US, Inc. (USA); Jonathan Roller, ARCADIS US, Inc. (USA)

[Mercury Remediation in Oak Ridge, Tennessee; Successes and Remaining Challenges](#) - 19390

**Mark Peterson**, Oak Ridge National Laboratory (USA); Janice Hensley, UCOR (USA); Elizabeth Phillips, US DOE (USA); Teresa Mathews, Oak Ridge National Laboratory (USA); Eric Pierce, Oak Ridge National Laboratory (USA)

[Cleaning and Stabilization of Elemental Mercury Trapped in Pipe](#) - 19405

**Arthur Niemoller**, Orano (USA)

[Recovery of Buried Discrete Radioactive Objects by Channel-Specific Analysis of Gamma Scan Data](#) - 19110

**Jerry Cooper**, Gilbane (USA); Christopher Bryson, Envirachem, Inc. (USA)

## Session 117A - Groundwater Remediation Projects - Worldwide Experiences

### Session Co-Chairs:

Latrincy Bates (USA)  
Michelle Howard (USA)

### Lead Organizer:

Michelle Howard (USA)

### Additional Organizer(s):

Latrincy Bates (USA)  
Kurt Gerdes (USA)

### Paper Reviewer:

Kurt Gerdes (USA)

### Paper Title

[Biofouling of Injection Wells at 200 West Pump and Treat](#) - 19252

**Bill Barrett**, Jacobs/CH2M PRC (USA); John Rendall, CH2M HILL BWXT West Valley, LLC (USA); Mark Carlson, Jacobs/CH2M PRC (USA); Sam Cartmell, Jacobs/CH2M PRC (USA); Charles Miller, Jacobs/CH2M PRC-Retired (USA); Michael Cline, US DOE (USA); James Hanson, US DOE (USA)

[Pump and Treat Impacts on Aquifer Conditions and the Development of System-Wide Performance Strategies](#) - 19077

**Michael Truex**, Pacific Northwest National Laboratory (USA); Inci Demirkanli, Pacific Northwest National Laboratory (USA); Nikolla Qafoku, Pacific Northwest National Laboratory (USA); Amanda Lawter, Pacific Northwest National Laboratory (USA); Christopher Bagwell, Pacific Northwest National Laboratory (USA)

[Analysis of Tc and U Spent Ion Exchange Resins from Hanford 200 West P&T Facility](#) - 19202

**Tatiana Levitskaia**, Pacific Northwest National Laboratory (USA); Emily Campbell, Pacific Northwest National Laboratory (USA); Syandev Chatterjee, Pacific Northwest National Laboratory (USA); Gabriel Hall, Pacific Northwest National Laboratory (USA); Meghan Fujimoto, Pacific Northwest National Laboratory (USA); Vanessa Holfeltz, Pacific Northwest National Laboratory (USA)



**Session 117B - Remediation and Information Systems for Managing Radionuclides, Organics, and Extreme Weather**

**Session Co-Chairs:**

Latrincy Bates (USA)

Michelle Howard (USA)

**Lead Organizer:**

Michelle Howard (USA)

**Paper Reviewer:**

Latrincy Bates (USA)

**Paper Title**

[Port Hope Area Initiative Port Granby Project - Water Management in Extreme Weather Conditions](#) - 19257

**Stuart Bailey**, Wood (Canada); Everett Wessner, Wood (USA); Blair Greenly, AECOM (Canada); Mark Galanter, Canadian Nuclear Laboratories (Canada); Tanzeel Ahmed, Wood (Canada)

[Port Hope Area Initiative: Information Management for a Very Large Radiation Survey](#) - 19567

**Ron Stager**, ARCADIS Canada Inc. (Canada); Douglas Chambers, ARCADIS Canada Inc. (Canada); Gerd Wiatzka, ARCADIS Canada Inc. (Canada); Michael Krapez, ARCADIS Canada Inc. (Canada); Monica Dupre, ARCADIS US, Inc. (USA)

[Long-Term Stewardship Challenges at the Piqua, Ohio, Decommissioned Nuclear Reactor Site](#) - 19578

**Brian Zimmerman**, US DOE Office of LM (USA); Michele Miller, Navarro Research and Engineering, Inc. (USA)

## Session 118B - Global Perspectives on Advances in Nuclear Safety Management

### Session Co-Chairs:

Paul Dixon (USA)

Zenghu Han (USA)

### Lead Organizer:

Kim "KD" Auclair (USA)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Paper Title

[Safeguards Lessons Learned from the Rokkasho Reprocessing Plant](#) - 19502

**Sven Bader**, Orano Federal Services (USA); Paul Murray, Orano Federal Services (USA); Tomonori Iwamoto, Japan Nuclear Fuel Limited (JNFL) (Japan)

[Compressing the Recovery Timeline for an Urban Contamination Event](#) - 19539

**Michael Kaminski**, Argonne National Laboratory (USA); Katherine Hepler, University of Illinois (USA); Matthew Magnuson, US EPA (USA); Sang Don Lee, US EPA (USA); Katrina McConkey, Booz Allen Hamilton EPA (USA); Benjamin Stevenson, Department of Homeland Security (USA); Orly Amir, Department of Homeland Security (USA)

[Guidance Development: Management of Low Activity Waste After a Radiological Incident](#) - 19616

**Thomas Peake**, US EPA (USA); Ingrid Rosencrantz, US EPA (USA); Jay Santillan, US EPA (USA); Daniel Schultheisz, US EPA (USA); Jonathan Walsh, US EPA (USA)

[Optimizing the WIPP Safety Significant Confinement Ventilation System](#) - 19691

**Steve Smith**, Nuclear Waste Partnership, LLC (USA); John Menna, AECOM (USA); Rodney Whisenhunt, Nuclear Waste Partnership, LLC (USA); Ronald Gill, US DOE (USA)

## Session 119 - Nuclear and Industrial Robotics, Remote Systems and Emerging Technology (4/5)

### Session Co-Chairs:

Joe Dixon (USA)

Rodrigo Rimando (USA)

### Lead Organizer:

Kim "KD" Auclair (USA)

### Additional Organizer(s):

Rodrigo Rimando (USA)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Paper Title

[Savannah River Site H-Canyon Collaborative Advanced Technology Demonstration \(ATD\) Progress Review](#) - 19499

**Jean Plummer**, Savannah River National Laboratory (USA); William Wells, Savannah River National Laboratory (USA); Rick Minichan, Savannah River National Laboratory (USA); Thomas Nance, Savannah River National Laboratory (USA); Brent Gutierrez, US DOE SRS (USA); Christopher Suarez, University of Texas, Austin (USA); Conor McMahon, The University of Texas at Austin (USA)

[Human and Robotic Testing in Gloveboxes to Reduce Worker Fatigue](#) - 19542

**Leonel Lagos**, Applied Research Center - FIU (USA); Aparna Aravelli, Florida International University (USA); Ou Bai, Florida International University (USA); Erik Engeberg, Florida Atlantic University (USA); Rick Demmer, Idaho National Laboratory (USA); Craig Ades, Florida Atlantic University (USA); Mostapha Al-Saidi, Florida Atlantic University (USA); Christopher Nataros, Florida International University (USA); Sai Srinivas Divvela, Florida International University (USA); Maria Ovalle, Florida International University (USA)

[Development of a Semi-autonomous Miniature Rover for Inspection of Double-Shell Tank Floors](#) - 19575

**Michael DiBono**, Applied Research Center - FIU (USA); Yew Teck Tan, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Dwayne McDaniel, Applied Research Center - FIU (USA)

[Extra Robotic Legs for Bearing Equipment Loads During Emergency Response](#) - 19532

**Daniel Gonzalez**, Massachusetts Institute of Technology (USA); Harry Asada, Massachusetts Institute of Technology (USA)

[Building the Scale Model TELBOT Master Arm](#) - 19585

**Daniel Meuschke**, Wälischmiller Engineering GmbH (Germany); Hubert Hafen, Wälischmiller Engineering GmbH (Germany); Joe Dixon, NuVision Engineering (USA)

[Implementation of Augmented Teleautonomy on a Hydraulic Manipulator for Nuclear Facility D&D](#) - 19602

**Young Soo Park**, Argonne National Laboratory (USA); Mark Noakes, Oak Ridge National Laboratory (USA); Venugopal Varma, Oak Ridge National Laboratory (USA); Matthew Krebs, Los Alamos National Laboratory (USA)

[Augmented Reality for Managing Nuclear Infrastructure and Operations](#) - 19605

**Troy Harden**, Los Alamos National Laboratory (USA); David Mascarenas, Los Alamos National Laboratory (USA); John Morales, Los Alamos National Laboratory (USA); Beth Boardman, Los Alamos National Laboratory (USA); Erin Sosebee, Los Alamos National Laboratory (USA); Craig Blackhart, Los Alamos National Laboratory (USA); Alessandro Cattaneo, Los Alamos National Laboratory (USA); Matthew Krebs, Los Alamos National Laboratory (USA); Jameson Tockstein, Los Alamos National Laboratory (USA); Levi Manring, Duke University (USA); John Pederson, Columbia University (USA); Dillon Potts, Brigham Young University (USA); Fernando Moreu, University of New Mexico (USA); Dilendra Maharjan, University of New Mexico (USA); Marlon Aguero, University of New Mexico (USA); Ricardo Fernandez, University of New Mexico (USA); Julio Trujillo, Los Alamos National Laboratory (USA); Andrew Wysong, Los Alamos National Laboratory (USA)

## Session 121 - Assessment of Disposal Systems, Facilities and Sites for LLW/ILW

### Session Co-Chairs:

Marcel Bergeron (USA)

Justin Marble (USA)

### Lead Organizer:

Linda Suttora (USA)

### Additional Organizer(s):

Marcel Bergeron (USA)

Kent Rosenberger (USA)

Sherry Ross (USA)

### Paper Reviewer:

Justin Marble (USA)

### Paper Title

[Scaling Input Distributions for Probabilistic Models](#) - 19472

**Paul Black**, Neptune and Company, Inc. (USA); Katie Catlett, Neptune and Company, Inc. (USA); Doug Anderson, Neptune and Company, Inc. (USA); Paul Duffy, Neptune and Company, Inc. (USA); Tom Stockton, Neptune and Company, Inc. (USA); Sam Van Sickle, Neptune and Company, Inc. (USA)

[Near Surface Disposal Facility Performance Iterative Assessment](#) - 19199

**Ryan Kovacs**, ARCADIS Canada Inc. (Canada); Nava Garisto, ARCADIS Canada Inc. (Canada); Jordan Gilbert, ARCADIS Canada Inc. (Canada); Michael Labriola, Canadian Nuclear Laboratories (Canada); George Towler, Quintessa Ltd (United Kingdom); Kate Thatcher, Quintessa Ltd (United Kingdom); Robert Kingsbury, Canadian Nuclear Laboratories (Canada)

[Distributions of the Mean for Lognormally Distributed Data](#) - 19427

**Kristin Broms**, Neptune and Company, Inc. (USA)

[Safety Classification and Design Rules for Structures, Systems and Components in a Near Surface Disposal Facility-Post Closure Phase](#) - 19716

**Amr El Aghoury**, Canadian Nuclear Laboratories (Canada); Mahmoud Karam, Canadian Nuclear Laboratories (Canada)

## Session 122 - Operating Experience in the Treatment and Storage of LLW/ILW - a Global Perspective

### Session Co-Chairs:

J. Scott Kirk (USA)

Júlio Takehiro Marumo (Brazil)

### Lead Organizer:

Kapila Fernando (Australia)

### Additional Organizer(s):

J. Scott Kirk (USA)

Christine Langton (USA)

### Paper Reviewer:

J. Scott Kirk (USA)

### Paper Title

[Stress-Induced Porewater Pressures in the Vadose Zone Beneath a Mixed Waste Landfill](#) - 19001

**Craig Benson**, University of Virginia - CRESO (USA); Kuo Tian, George Mason University - CRESO (USA)

[Further Analyses of the Unburied Goiania Accident Packages](#) - 19161

**Ricardo Bastos Smith**, Nuclear & Energy Research Institute (Brazil); Ana Paula Gimenes Tessaro, Nuclear & Energy Research Institute (Brazil); Natalie Costa Rolindo, Nuclear & Energy Research Institute (Brazil); Roberto Vicente, Nuclear & Energy Research Institute (Brazil)

[La Hague STE2 Sludge Retrieval and Conditioning Strategy](#) - 19229

**Elisa Leoni**, Orano (France); Benoit Carpentier, Orano (France); Christine Lamouroux, Orano (France)

[Low-Level Waste Minimization and Management Planning at the Western Waste Management Facility, OPG](#) - 19235

**Rebecca Schwass**, Ontario Power Generation (Canada)

[Treatment of Foreign Radioactive Waste at the Belgoprocess Plant](#) - 19345

**Thomas Huys**, Belgoprocess (Belgium); Jan Deckers, Belgoprocess (Belgium); Laszlo Toro, MATE-FIN (Romania); Gabriela Teodorov, MATE-FIN (Romania)

[ANSTO Synroc's Inactive Engineering Demonstrator](#) - 19342

**Rohan Holmes**, ANSTO (Australia); Gerry Triani, ANSTO (Australia); Dan Gregg, ANSTO (Australia); Ben Bigrigg, ANSTO (Australia); Amanda Abboud, ANSTO (Australia)

[Use of Automation in Low Level Waste Storage and Management](#) - 19227

**Julia Garside**, ANSTO (Australia); Ebrahim Nateghi, ANSTO (Australia)

## **Session 124 - Panel: Challenges and Opportunities in Establishing a System for Transportation of SNF/UNF**

**Session Co-**Mike Nolan (USA)

**Chairs:** Anna Wikmark (Sweden)

**Lead Organizer:** Michael Snyder (USA)

**Additional** Anna Wikmark (Sweden)

**Organizer(s):**

**Paper Reviewer:** Michael Snyder (USA)

**Panel Reporter:** Carl Enderlin (USA)

### **Papers**

[Preliminary Evaluation of Removing Spent Nuclear Fuel from Shutdown Nuclear Power Plant Sites – 2018](#) - 19101

**Steven Maheras**, Pacific Northwest National Laboratory (USA); Adam Levin, AHL Consulting (USA); Ralph Best, Independent Consultant (USA); Erica Bickford, US DOE (USA); L. Mel Massaro, Federal Railroad Administration - US DOT (USA); Matt Feldman, Oak Ridge National Laboratory (USA)

[Factors Influencing the Evaluation of Spent Fuel Rail Routes](#) - 19010

**Mark Abkowitz**, Vanderbilt University (USA); Erica Bickford, US DOE (USA)

[Update on Development of a U.S. Rail Transport Capability for SNF and HLW](#) - 19092

**Patrick R. Schwab**, US DOE (USA); William Reich, UT-Battelle (USA); Matt Feldman, Oak Ridge National Laboratory (USA); Steven Maheras, Pacific Northwest National Laboratory (USA); Scott Dam, TechSource, Inc. (USA)

## Session 125A - D&D of Nuclear Power Plants (2/2)

### Session Co-Chairs:

Rateb (Boby) Abu Eid (USA)

Joseph Boucau (Belgium)

### Lead Organizer:

Joseph Boucau (Belgium)

### Additional Organizer(s):

Simon Carroll (Sweden)

Al Freitag (USA)

Serge Vanderperre (Belgium)

### Paper Reviewer:

Joseph Boucau (Belgium)

### Paper Title

[Lessons Learned from Most Recent Chemical Decontamination for Decommissioning Projects](#) - 19280

**Randy Duncan**, Westinghouse Electric Company (USA); Ryan Horton, Westinghouse Electric Company (USA)

[Current Status of Decommissioning Plans and Chemical Decontamination of Metal Scraps in Chinshan NPP](#) - 19304

**Yun-Chung Shen**, Institute of Nuclear Energy Research (Taiwan); Hsien-Te Hsieh, Institute of Nuclear Energy Research (Taiwan); Li-Ching Chuang, Institute of Nuclear Energy Research (Taiwan)

[New Project on the Analysis of Contamination Mechanisms of Concrete at the Fukushima Daiichi Nuclear Power Station](#) - 19511

**Kazuo Yamada**, National Institute for Environmental Studies (Japan); Ippei Maruyama, Nagoya University (Japan); Kazutoshi Shibuya, Taiheiyo Consultant (Japan); Go Igarashi, Tohoku University (Japan); Yoshikazu Koma, Japan Atomic Energy Agency (Japan); Kazuko Haga, Taiheiyo Consultant (Japan); Haruka Aihara, Japan Atomic Energy Agency (Japan)

[Guidance on Good Practice for Waste Management in Decommissioning](#) - 19080

**Arne Larsson**, Cyclife Sweden AB (Sweden); Michel Pieraccini, EDF DP2D (France); Klaus Buettner, NUKEM Technologies Engineering Services GmbH (Germany); Geoffrey Rothwell, Consultant (France); Douglas Kerr, Wood (United Kingdom); Evgeny Zhurbenko, TENEX (Russian Federation)

[Safely Managing CNL's Shutdown Research and Power Reactors – 30 Years of Experience](#) - 19157

**Mike English**, Canadian Nuclear Laboratories (Canada); Alan Taylor, Canadian Nuclear Laboratories (Canada)



[Transport and Treatment of Chapelcross Gas Ducts for Clearance and Recycling](#) - 19662

**Nigel Kitt**, Cyclife UK Ltd (United Kingdom); Arne Larsson, Cyclife Sweden AB (Sweden); David Saul, Cyclife UK Limited (United Kingdom); Michael Kendall, Cyclife Sweden AB (Sweden); Erica Karlsson, Cyclife Sweden AB (Sweden); Gavin Davidson, Cyclife UK Ltd (United Kingdom)

## Session 128 - Environmental Remediation Progress Toward Closure of Contaminated Sites Around the World

### Session Co-Chairs:

Margaret MacDonell (USA)  
Tjalle ("Chuck") Vandergraaf (Canada)

### Lead Organizer:

Kurt Gerdes (USA)

### Additional Organizer(s):

Mark Chapman (Canada)  
Michelle Howard (USA)  
Moses Jaraysi (USA)

### Paper Reviewer:

Tjalle ("Chuck") Vandergraaf (Canada)

### Paper Title

[Optimizing Long-term Monitoring of Radiation Air Dose Rates](#) - 19169

**Haruko Wainwright**, Lawrence Berkeley National Laboratory (USA); Carlos Oroza, University of Utah (USA); Dajie Sun, University of California, Berkeley (USA); Akiyuki Seki, Japan Atomic Energy Agency (Japan); Satoshi Mikami, Japan Atomic Energy Agency (Japan); Kimiaki Saito, Japan Atomic Energy Agency (Japan)

[Web-Assisted Methods and Tools for Efficient Remedy Design and System Performance Evaluation at Hanford](#) - 19355

**Alexandros Spiliotopoulos**, S.S. Papadopulos & Associates, Inc. (USA); Erica DiFilippo, S.S. Papadopulos & Associates, Inc. (USA); Prashanth Khambhammettu, ARCADIS US, Inc. (USA); Douglas Hayes, S.S. Papadopulos & Associates, Inc. (USA); Matthew Tonkin, S.S. Papadopulos & Associates, Inc. (USA); Mary Hartman, CH2M HILL PRC (USA); Kris Ivarson, CH2M HILL PRC (USA); Jason Hulstrom, CH2M HILL PRC (USA)

[Evaluating Remediation Performance at Radwaste Sites Using Multiple, Censored Regression Analysis](#) - 19348

**Erica DiFilippo**, S.S. Papadopulos & Associates, Inc. (USA); Matthew Tonkin, S.S. Papadopulos & Associates, Inc. (USA); Alexandros Spiliotopoulos, S.S. Papadopulos & Associates, Inc. (USA); William Huber, Quantitative Decisions (USA); Virginia Rohay, CH2M HILL PRC (USA)

[Challenges of Maintaining Institutional Controls: Maintenance of an Alternate Water Supply—A Case Study](#) - 19583

**William Frazier**, US DOE (USA); Sam Campbell, Navarro Research and Engineering, Inc. (USA)

## **Session 129 - Environmental Remediation in Urban and Suburban Environments - Examples from Around the World (2/2)**

### **Session Co-Chairs:**

Ella Feist (USA)

Nelson Walter (USA)

### **Lead Organizer:**

Nelson Walter (USA)

### **Additional Organizer(s):**

Ella Feist (USA)

Robert Zelmer (Canada)

### **Paper Reviewer:**

Ella Feist (USA)

### **Paper Title**

[An Integrated Hydrological Model for Long-Term Monitoring in Tims Branch Watershed, SC](#) - 19435

**Mehrnoosh Mahmoudi**, Applied Research Center - FIU (USA);  
Angelique Lawrence, Applied Research Center - FIU (USA); Ron  
Hariprashad, Applied Research Center - FIU (USA); Juan Morales,  
Applied Research Center - FIU (USA)

[Isopiestic Measurements of Water Adsorption on Post-treated Uranium Bearing Solids](#) - 19421

**Yelena Katsenovich**, Applied Research Center - FIU (USA);  
Claudia Cardona, Applied Research Center - FIU (USA)

[Experimental and Modeling of Low Pressure Plasma as a Complementary Process for Thermal Waste Treatment](#) - 19270

**Sharona Atlas**, NRCN (Israel); Amir Kaplan, NRCN (Israel); Ofra  
Klein-Ben David, NRCN (Israel); Hadas Raveh-Amit, NRCN (Israel);  
Gabriela Bar-Nes, NRCN (Israel); Joshua Baraban, Ben-Gurion  
University of the Negev (Israel); Avi Raveh, NRCN (Israel)

[FUSRAP Data Management and Information Transitions](#) - 19459

**Rebecca Roberts**, Navarro Research and Engineering, Inc. (USA);  
Darina Castillo, US DOE (USA); Jill Bennet, Navarro Research and  
Engineering, Inc. (USA)

## Session 130 - D&D of Nuclear and Non-Power Generating Facilities Both Large and Small

### Session Co-Chairs:

Anthony Banford (United Kingdom)

Fred Sheil (United Kingdom)

### Lead Organizer:

Fred Sheil (United Kingdom)

### Additional Organizer(s):

Anthony Banford (United Kingdom)

### Paper Reviewer:

Fred Sheil (United Kingdom)

### Paper Title

[International Government Collaboration in ISD \(In Situ Decommissioning/In Situ Disposal\) - 19261](#)

**Laurie Judd**, Longenecker & Associates (USA); Ian Seed, Cogentus (United Kingdom); Paula James, Cogentus (United Kingdom)

[A Preliminary Probabilistic Performance Assessment Model for Radiological and Chemical Contamination at the West Valley Site, New York - 19295](#)

**John Tauxe**, Neptune and Company, Inc. (USA); Doug Anderson, Neptune and Company, Inc. (USA); Aaron Bandler, Neptune and Company, Inc (USA); Paul Black, Neptune and Company, Inc. (USA); Hayley Brittingham, Neptune and Company, Inc. (USA); Kristin Broms, Neptune and Company, Inc. (USA); Katie Catlett, Neptune and Company, Inc. (USA); Kelly Crowell, Neptune and Company, Inc. (USA); Paul Duffy, Neptune and Company, Inc. (USA); Aharon Fleury, Neptune and Company, Inc. (USA); Leslie Gains-Germain, Neptune and Company, Inc. (USA); Amy Jordan, Neptune and Company, Inc. (USA); Robert Lee, Neptune and Company, Inc. (USA); Daniel Levitt, Neptune and Company, Inc. (USA); Travis Linscome-Hatfield, Neptune and Company, Inc. (USA); Sean McCandless, Neptune and Company, Inc. (USA); Patti Meeks, Neptune and Company, Inc. (USA); Gregg Occhiogrosso, Neptune and Company, Inc. (USA); Ralph Perona, Neptune and Company, Inc. (USA); Randall Ryti, Neptune and Company, Inc. (USA); Christopher Schaupp, Neptune and Company, Inc. (USA)

[Modern Integrated Decommissioning at Chalk River Laboratories - 19401](#)

**Ian Castillo**, Canadian Nuclear Laboratories (Canada); Nathan Hyde, Canadian Nuclear Laboratories (Canada); Megan Moore, Canadian Nuclear Laboratories (Canada); Shaun Holder, Canadian Nuclear Laboratories (Canada); Penny Neal, Canadian Nuclear Laboratories (Canada)

## Session 131 - Application of Innovative D&D Technologies Including Application of Virtual Reality

### Session Co-Chairs:

Anthony Banford (United Kingdom)

Rick Demmer (USA)

### Lead Organizer:

Rick Demmer (USA)

### Additional Organizer(s):

Bernard Poncet (France)

Aaron Washington (USA)

### Paper Reviewer:

Mike Serrato (USA)

### Paper Title

[3D Gamma Source Mapping and Intervention Analysis](#) - 19243

**Jeremy Hilsabeck**, Transco Products Inc. (USA)

[In Situ Gamma Radiation Mapping Device](#) - 19353

**Jean Plummer**, Savannah River National Laboratory (USA); Donald Benza, Savannah River National Laboratory (USA); Daniel Garon, Georgia Institute of Technology (USA); Scott Watson, Los Alamos National Laboratory (USA); Nicola Winch, Los Alamos National Laboratory (USA)

[Decommissioning Characterisation Through Compressive Gamma-Ray Imaging](#) - 19308

**Mathew Guenette**, ANSTO (Australia); David Boardman, ANSTO (Australia); Lachlan Chartier, ANSTO (Australia); Adam Sarbutt, ANSTO (Australia); Alison Flynn, ANSTO (Australia); John Barnes, ANSTO (Australia); Jayden Ilter, ANSTO (Australia); Dale Prokopovich, ANSTO (Australia); Craig Hughes, ANSTO (Australia)

[Application of the PHDS Germanium Gamma-ray Imager \(GeGI\) in Facility Decontamination Assessment](#) - 19471

**Eugene Jablonowski**, US EPA - Region 5 (USA); Matthew Kiser, PHDS Co. (USA); Desmond Longford, PHDS Co. (USA); James Mitchell, US EPA - Region 5 (USA)

## Session 132 - Nuclear and Industrial Robotics, Remote Systems and Emerging Technology (5/5)

### Session Co-Chairs:

John Unyong Moon (USA)

Rodrigo Rimando (USA)

### Lead Organizer:

Kim "KD" Auclair (USA)

### Additional Organizer(s):

Rodrigo Rimando (USA)

### Paper Reviewer:

Kim "KD" Auclair (USA)

### Paper Title

[Double-Shell Tank Primary Bottom Inspection Development](#) - 19067

**Jason Gunter**, Washington River Protection Solutions (USA); Kayle Boomer, Washington River Protection Solutions (USA)

[Collaborative Robots vs. Master/Slaves](#) - 19522

**Eric Egan**, Idaho National Laboratory (USA); Kevin Croft, Idaho National Laboratory (USA)

[Development of Robotic Crawlers for Inspection of High-Level Waste Tanks and Transfer Lines](#) - 19573

**Anthony Abrahamo**, Applied Research Center - FIU (USA); Christopher Excellent, Applied Research Center - FIU (USA); Manuel Losada, Applied Research Center - FIU (USA); Leonel Lagos, Applied Research Center - FIU (USA); Dwayne McDaniel, Applied Research Center - FIU (USA)

[RoboCount\(TM\) 2020 - A Robotic Non-Destructive Waste Assay System](#) - 19331

**Dusan Lexa**, DuAI GmbH (Austria); Miroslav Michalec, MicroStep spol s r.o. (Slovakia); Marian Vano, CORETEQ Technology s.r.o. (Slovakia); Stanislav Janecka, Canberra-Packard s.r.o. (Slovakia)

[A Robot for Nondestructive Assay of Holdup Deposits in Gaseous Diffusion Piping](#) - 19504

**Heather Jones**, Carnegie Mellon University (USA); Siri Maley, Carnegie Mellon University (USA); Mohammadreza Mousaei, Carnegie Mellon University (USA); David Kohanbash, Carnegie Mellon University (USA); Warren Whittaker, Carnegie Mellon University (USA); James Teza, Carnegie Mellon University (USA); Andrew Zhang, Carnegie Mellon University (USA); Nikhil Jog, Carnegie Mellon University (USA); William Whittaker, Carnegie Mellon University (USA)

[Robotic Non-destructive Test of Concrete Structures with GPR, Impact Echo and 3D Vision](#) - 19540

**Sajjad Sayyar Roudsari**, North Carolina A&T State University (USA); Theophilus Okore-Hanson, North Carolina A&T State University (USA); Sameer Hamoush, North Carolina A&T State University (USA); Younho Seong, North Carolina A&T State University (USA); Sun Yi, North Carolina A&T State University (USA); Taylor Szeto, North Carolina A&T State University (USA); Jean Plummer, Savannah River National Laboratory (USA)

[High Precision In-Pipe Robot Localization with Reciprocal Sensor Fusion](#) - 19516

**Dapeng Zhao**, Carnegie Mellon University (USA); William Whittaker, Carnegie Mellon University (USA)

## Session 133 - Improvement of Sustainability, Re-use and Recycling in Management of LLW / ILW

### Session Co-Chairs:

Fabienne Anton (Germany)

Kapila Fernando (Australia)

### Lead Organizer:

Colleen Owens (USA)

### Additional Organizer(s):

Fabienne Anton (Germany)

Gabriele Bandt (Germany)

Stephen Halliwell (USA)

### Paper Reviewer:

Kapila Fernando (Australia)

### Paper Title

[Different Approaches for Clearance of Metals – a Comparison](#) - 19079

**Arne Larsson**, Cyclife Sweden AB (Sweden); Anders Stenmark, Cyclife Sweden AB (Sweden); William Eek, Cyclife Sweden AB (Sweden)

[Radioactive Waste Minimization – Reuse, Recycling & Disposal](#) - 19598

**Bernhard Bugenhagen**, TUEV NORD EnSys (Germany); Joerg Aign, TUEV NORD EnSys (Germany)

[Methodology for Volume Reduction of Radioactive Metallic Waste](#) - 19491

J. Clara Wren, The University of Western Ontario (Canada); **Thao Do**, The University of Western Ontario (Canada); Jiju Joseph, The University of Western Ontario (Canada); Giles Whitaker, The University of Western Ontario (Canada); Barb Noye, Ontario Power Generation (Canada); Vasile Bostan, Ontario Power Generation (Canada); Don Jarron, Ontario Power Generation (Canada)

[Metallic LLW Handling Options: An Optimal Lifecycle-Based Approach for North American Operations](#) - 19413

**Nathan Tedford**, Hatch Ltd. (Canada); Renna Traboulsi, Hatch Ltd. (Canada); Patricia Lai, Hatch Ltd. (Canada); Michael Trovant, Hatch Ltd. (Canada); Noah Levin, Hatch Ltd. (Canada)



## Session 134 - The Use of Process Knowledge and Records for LLW Management Decision Making

### Session Co-Chairs:

Fabienne Anton (Germany)

Marcel Bergeron (USA)

### Lead Organizer:

Gabriele Bandt (Germany)

### Additional Organizer(s):

Fabienne Anton (Germany)

Bob Hiergesell (USA)

J. Scott Kirk (USA)

### Paper Reviewer:

Fabienne Anton (Germany)

### Paper Title

[Cameco Corporation's Approach to Legacy and Ongoing Waste Management within the Fuel Services Division](#) - 19124

**Rebecca Peters**, Cameco Corporation (Canada); Thomas Smith, Cameco Corporation (Canada)

[Development of the Waste Acceptance Criteria for the INL Remote Handled LLW Disposal Facility](#) - 19143

**Stacy Nottestad**, Idaho National Laboratory (USA); Rob Black, Idaho National Laboratory (USA)

## Session 135 - An International Perspective of Waste Management Planning and Disposal of LLW and ILW

### Session Co-Chairs:

Gabriele Bandt (Germany)

Linda Suttora (USA)

### Lead Organizer:

Kapila Fernando (Australia)

### Additional Organizer(s):

Rateb (Boby) Abu Eid (USA)

Fabienne Anton (Germany)

Felix Himmerkus (Germany)

### Paper Reviewer:

Felix Himmerkus (Germany)

### Paper Title

[New Cap Design Extends Capacity of DOE Environmental Management Waste Management Facility Oak Ridge, Tennessee](#) - 19185

**Mary Magleby**, URS | CH2M Oak Ridge LLC (USA)

[Factors Affecting the Service-life of HDPE Geomembranes in an LLW Disposal Facility](#) - 19320

**R. Kerry Rowe**, Queen's University (Canada); Deni Priyanto, Canadian Nuclear Laboratories (Canada); Rajamani Ponnar, Canadian Nuclear Laboratories (Canada)

[Erosion Control Measures at Oak Ridge Reservation Landfills Oak Ridge, Tennessee](#) - 19190

**Karen Lavorato**, UCOR (USA)

[Technical Basis and Implementation of Groundwater Pathway Models Used for INL's RH LLW Disposal Facility Performance Assessment](#) - 19440

**Arthur Rood**, K-Spar Inc (USA); A. Jeffrey Sondrup, Idaho National Laboratory (USA); Annette Schafer, Idaho National Laboratory (USA); Brady Orchard, Idaho National Laboratory (USA); Brett Welty, Idaho National Laboratory (USA)

[Water Management Successes at DOE's Environmental Management Waste Management Facility](#) - 19194

**John Wrapp**, UCOR (USA)

[Implementation of R&D Results in the Design of Liner System for the Near Surface Disposal Facility](#) - 19089

**Michael Labriola**, Canadian Nuclear Laboratories (Canada); Deni Priyanto, Canadian Nuclear Laboratories (Canada); Brodie

Whitelaw, Canadian Nuclear Laboratories (Canada); R. Kerry Rowe, Queen's University (Canada); Frank Barone, Golder Associates (Canada); Fady Abdelaal, Queen's University (Canada); Mohzen Zafari, Queen's University (Canada); James Buckley, Canadian Nuclear Laboratories (Canada)

[Leachate Treatment for Radioactive Waste Containment Mound: Pilot Test and Design](#) - 19098

**Lucy Pugh**, AECOM (USA); Rajamani Ponnar, Canadian Nuclear Laboratories (Canada)

## Session 136 - Materials for Long-Term Geologic Isolation

### Session Co-Chairs:

Patrick Landais (France)

Anderson Ward (USA)

### Lead Organizer:

Patrick Landais (France)

### Additional Organizer(s):

Thilo von Berlepsch (Germany)

### Paper Reviewer:

Anderson Ward (USA)

### Paper Title

[Optimization of Backfill Material Transport for the Future Belgian Geological Disposal Facility](#) - 19071

**Hans-Joachim Engelhardt**, BGE TECHNOLOGY GmbH (Germany); Bernt Haverkamp, BGE TECHNOLOGY GmbH (Germany); Didier Raymaekers, ONDRAF/NIRAS (Belgium)

[Study on Characterization of Colloidal Silica Grout for Rock Excavation Under Saline Groundwater](#) - 19332

**Masakuni Tsuji**, Shimizu Corporation (Japan); Hitoshi Nakashima, Shimizu Corporation (Japan); Akira Saito, Shimizu Corporation (Japan); Mitsunobu Okihara, Shimizu Corporation (Japan); Toshinori Sato, Japan Atomic Energy Agency (Japan)

[The Durability of Containers for the Disposal of Radioactive Waste – Swiss and Belgian R&D Studies](#) - 19392

**Cristiano Padovani**, Wood (United Kingdom); Nick Smart, Wood (United Kingdom); Bharti Reddy, Wood (United Kingdom); Andrew Rance, Wood (United Kingdom); Nikitas Diomidis, NAGRA (Switzerland); Roberto Gaggiano, ONDRAF-NIRAS (Belgium)

[Radiation Induced Corrosion of Copper in Deep Geological Repositories](#) - 19493

**J. Clara Wren**, The University of Western Ontario (Canada); Arielle Jean, The University of Western Ontario (Canada); Masoumeh Naghizadeh, The University of Western Ontario (Canada); Lindsay Grandy, The University of Western Ontario (Canada); Ryan Morco, The University of Western Ontario (Canada); Jiju Joseph, The University of Western Ontario (Canada); Mehran Behazin, Nuclear Waste Management Organization (Canada); Peter Keech, Nuclear Waste Management Organization (Canada)

[Corrosion of Carbon Steel Inside Used Nuclear Fuel Containers](#) - 19492

**J. Clara Wren**, The University of Western Ontario (Canada); Dan

Guo, The University of Western Ontario (Canada); Jennifer Youn Gyeong Shin, Western University (Canada); Mi Li, The University of Western Ontario (Canada); Ryan Morco, The University of Western Ontario (Canada); Jiju Joseph, The University of Western Ontario (Canada); Mehran Behazin, Nuclear Waste Management Organization (Canada); Peter Keech, Nuclear Waste Management Organization (Canada)

## Session 137 - Studies of HLW Tank Chemistry

### Session Co-Chairs:

Vijay Jain (USA)

Reid Peterson (USA)

### Lead Organizer:

Bill Wilmarth (USA)

### Additional Organizer(s):

Larry Ling (USA)

### Paper Reviewer:

Bill Wilmarth (USA)

### Paper Title

[On-Line Monitoring and Real-Time Characterization of Low Level Waste and Off-Gas Condensate Samples using Raman Spectroscopy](#) - 19274

**Sam Bryan**, Pacific Northwest National Laboratory (USA); Amanda Lines, Pacific Northwest National Laboratory (USA); PoKi Tse, Colorado School of Mines (USA); Kayte Denslow, Pacific Northwest National Laboratory (USA); Matthew S. Fountain, Pacific Northwest National Laboratory (USA); Kayle Boomer, Washington River Protection Solutions (USA); Amie Kim, Washington River Protection Solutions (USA); Dustin Stewart, US DOE ORP (USA)

[Investigation of Thermolytic Production of Hydrogen Applicable to SRS HLW](#) - 19443

**Wesley Woodham**, Savannah River National Laboratory (USA); Christopher Martino, Savannah River National Laboratory (USA)

[Waste Chemistry Envelope for the Determination of Pitting Corrosion Susceptibility](#) - 19554

**Bruce Wiersma**, Savannah River National Laboratory (USA); Roderick Fuentes, Savannah River National Laboratory (USA); Crystal Girardot, Washington River Protection Solutions (USA); Theodore Venetz, Washington River Protection Solutions (USA); Kayle Boomer, Washington River Protection Solutions (USA)

[Figures of Merit for the Application of Muon Tomography to the Characterization of Nuclear Waste Drums](#) - 19253

**John Stowell**, University of Sheffield (United Kingdom); Ahmad Alrheli, University of Sheffield (United Kingdom); Daniel Kikola, Warsaw University of Technology (Poland); Anna Kopp, University of Bristol (United Kingdom); Holger Tietze-Jaensch, Forschungszentrum Juelich GmbH (Germany); Mohammed Mhaidra, Warsaw University of Technology (Poland); Lee Thompson, University of Sheffield (United Kingdom); Elie Valcke, SCK-CEN (Belgium); Jaap Velthuis, University of Bristol (United Kingdom); Michael Weekes, University of Sheffield (United Kingdom)

## **Session 138 - Infrastructure Improvements in HLW, SNF/UNF and Long Lived Alpha/TRU Aging Facilities**

### **Session Co-Chairs:**

Jonathan Bricker (USA)

Larry Ling (USA)

### **Lead Organizer:**

Bill Wilmarth (USA)

### **Paper Reviewer:**

Larry Ling (USA)

### **Paper Title**

[Infrastructure and Mission Capability at Hanford](#) - 19048

**Rick Moren**, MSA/Jacobs (USA)

[A Flaw Stability Analysis for the Savannah River Site 3H High-Level-Waste Evaporator](#) - 19548

**Charles Keilers**, Savannah River Remediation (USA)

[In Situ Cold Spray Repair of Environmental Mission Infrastructure for Component Life Extension](#) - 19424

**Carl Enderlin**, Pacific Northwest National Laboratory (USA); Glenn Grant, Pacific Northwest National Laboratory (USA); Kayte Denslow, Pacific Northwest National Laboratory (USA); Ken Ross, Pacific Northwest National Laboratory (USA); Hellen Jiang, Pacific Northwest National Laboratory (USA)

## Session 139 - Innovations and Performance Solutions to Workplace Management

### Session Co-Chairs:

Evelyn Dawson (USA)

Andrew Fellingner (USA)

### Lead Organizer:

Andrew Fellingner (USA)

### Paper Reviewer:

Andrew Fellingner (USA)

### Paper Title

[Conflict - The Clash of Different Paradigms of Reality](#) - 19208

**Laurel Boucher**, The Laurel Co (USA)

[I Asked 30,000 People in the Nuclear Industry About Safety Culture.](#)

[This is What I Learned](#) - 19204

**Jeffrey Miller**, Oak Ridge Associated Universities (USA); Davyda Hammond, Oak Ridge Associated Universities (USA); Darren Smith, Oak Ridge Associated Universities (USA); Matthew Shaffer, Oak Ridge Associated Universities (USA); Sara Howard, Oak Ridge Associated Universities (USA)

[Progress in Addressing Workers' Concerns Related to Chemical Vapors at the Hanford Site](#) - 19054

**Rebecca Sams**, Washington River Protection Solutions (USA); Michael Lumpkin, CTEH LLC (USA); John Kind, CTEH LLC (USA); Sheryl Shea, Washington River Protection Solutions (USA); Andy Britt, Forensic Analytical Consulting Services (USA)

[Collaborative Management for Complex Closure Teams](#) - 19246

**Alexander Pappas**, Washington River Protection Solutions (USA)



## **Session 140 - The Stakeholder's Voice – Stakeholder and Tribal Perspective Related to Environmental Cleanup**

### **Session Co-Chairs:**

Jeannette Hyatt (USA)

Rob Seifert (USA)

### **Lead Organizer:**

Rob Seifert (USA)

### **Paper Reviewer:**

Rob Seifert (USA)

### **Paper Title**

[Engaging Canadian Indigenous Communities and Public Stakeholders Through a US Site Benchmarking Trip](#) - 19358

**Mitch MacKay**, Canadian Nuclear Laboratories (Canada); Oral  
Johnston, Black River First Nation (Canada)

[The Evolution of DOE/Stakeholder Relationships at the Fernald Preserve, Ohio, Site](#) - 19559

**Penny Borgman**, Navarro Research and Engineering, Inc. (USA);  
Susan Smiley, US DOE Office of LM (USA); Graham Mitchell, Ohio  
Environmental Protection Agency (retired) (USA)

## Session 141 - Management of Nuclear Power Plant Liquid and Wet Waste (2/2)

### Session Co-Chairs:

Mark Lewis (USA)

Leena Malinen (Finland)

### Lead Organizer:

Myron Kaczmarzsky (USA)

### Paper Reviewer:

Myron Kaczmarzsky (USA)

### Paper Title

[Overview of Innovative Canadian Solutions for Management of Mixed Liquid Waste](#) - 19359

**Sriram Suryanarayan**, Kinectrics Inc. (Canada)

[CNL Technologies for Heavy Water Detritiation](#) - 19437

**Laura Merlo-Sosa**, Canadian Nuclear Laboratories (Canada); Hugh Boniface, Canadian Nuclear Laboratories (Canada); Richard Prokopowicz, Canadian Nuclear Laboratories (Canada); Sam Suppiah, Canadian Nuclear Laboratories (Canada)

[Davis Besse Water Processing Upgrade](#) - 19654

**James Braun**, AVANTech, Inc. (USA)

[Development of Processing Technology for Radioactively Contaminated Water at Chernobyl NPP](#) - 19656

**Igor Voinov**, METOIL s.r.o. (Czech Republic); Victor Remez, METOIL s.r.o. (Czech Republic); Alexey Myasnikov, SSE Chernobyl NPP (Ukraine); Anatoly Terzi, SSE Chernobyl NPP (Ukraine)

[Water Processing System at Pilgrim Nuclear Station](#) - 19665

**Stephen Liebenow**, EnergySolutions (USA)