

# 201( <sup>99</sup>Mo Topical Meeting

June 24-27, 2014  
Hamilton Crowne Plaza  
Washington D.C.

<http://mo99.ne.anl.gov>



NNSA's 201( Mo-99 Topical Meeting, hosted by Argonne National Laboratory, will take place in K Uq.)b[ hcb'87 from >i bY'&!&+, 201(. This meeting is ]ntended to serve as a workshop where international and domestic policy and technical experts can gather to present and discuss progress toward achieving the production of Mo-99 without the use of HEU in support of nonproliferation objectives and global reliability of supply.

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## Agenda

Meeting Organizer:





# TOPICAL MEETING • PROGRAM

**Tuesday, June 24**

Registration: 3:00 pm - 6:00 pm, Hamilton Crowne Plaza Pre-Function Area

Welcome Reception: 6:00 pm - 8:00 pm, Hamilton Ballroom

#	Session Title	Time	Topic	Presenter
<b>Wednesday, June 25</b>				
Meeting Room: Sphinx Grand Ballroom — Almas Temple				
1	<b>Opening Plenary Session: Supporting a Reliable, Non-HEU Mo-99 Supply</b>  Emcee: Parrish Staples	8:30 am	DOE-NNSA Welcome	Anne Harrington (DOE-NNSA)
			The Importance of the American Medical Isotopes Production Act for Global Health and National Security	Michal Freedhoff (Director of Oversight and Investigations, Office of Senator Edward J. Markey)
			Continuing to Support Reliable Supplies of Non-HEU Medical Isotopes	Cindy Atkins-Duffin (OSTP)
			European Union's Actions to Secure the Supply of Mo-99/Tc-99m	Stamatios Tsalas (ESA)
9:30 am Coffee Break and Refreshments				
2	<b>Medical Community Perspective on Needs of Mo-99</b>  Session Chair: Jordi Roglans-Ribas	10:00 am	Needs for Mo-99 – the SNMMI Perspective	Erin Grady (SNMMI)
			The FDA's Role in Addressing the Mo99/Tc99m Shortage	Eric Duffy & Orhan Suleiman (FDA)
			The Future of Nuclear Medicine Services: Reimbursement Challenges	Denise Merlino (Merlino Healthcare Consulting)
12:00 pm Lunch Break				
3	<b>Nuclear Pharmacy and Generator Manufacturer Perspectives on Non-HEU Mo-99 Supply</b>  Session Chair: Rilla Hamilton	1:30 pm	UPPI LEU Walk: Radiopharmacy in the Transition to non-HEU Medical Radiopharmaceuticals	John Witkowski (UPPI)
			TechneLite® Generators Manufactured with LEU-based Mo-99	Ira Goldman (Lantheus Medical Imaging)
			New Generating System for Tc-99m Production	Jim Harvey (NorthStar Medical Radioisotopes)
			A Progress Report on Mallinckrodt's Conversion to Low Enriched Uranium (LEU) Targets for the Production of Mo-99	Roy Brown (Mallinckrodt Pharmaceuticals)
3:30 pm Coffee Break and Refreshments				
4	<b>Panel Discussion and Roundtable</b>  Moderated by: Orhan Suleiman	4:00 pm	Panel and Roundtable Discussion	<ul style="list-style-type: none"> <li>- Robert Atcher (SNMMI)</li> <li>- Georgia Hearn (ANSC)</li> <li>- Michael Guastella (CORAR)</li> <li>- Howard Lewin (MD, FACC, FASNC)</li> <li>- John Zehner (Zevacor Molecular)</li> </ul>
5:30 pm Adjourn				

<b>Thursday, June 26</b>				
Meeting Room: Sphinx Grand Ballroom — Almas Temple				
#	Session Title	Time	Topic	Presenter
5	<b>Ensuring Sustainable Supplies of Non-HEU Mo-99</b>  <b>Session Chair: Dennis Phillips</b>	8:30 am	Are Medical Radioisotope Shortages a Thing of the Past?	Pavel Peykov (OECD-NEA)
			Tc-99m Payment Economics Update	Dan Duvall (CMS)
			IAEA Activities Supporting Mo-99 Production Without the Use of HEU	Joan Dix (IAEA)
			Implementing the American Medical Isotopes Production Act	Rilla Hamilton (DOE-NNSA)
10:00 am Coffee Break and Refreshments				
6	<b>Producer Perspectives on Current Mo-99 Production</b>  <b>Session Chair: Joan Dix</b>	10:30 am	Status of the IRE LEU Conversion Program	Valery Host (IRE)
			An Update on the Progress of ANSTO's New Molybdenum Processing Facility	Doug Cubbin (ANSTO)
			Development of a Process for the Purification of Mo-99 Obtained by Irradiation of Uranium Solutions	Cecilia Maneiro (INVAP)
			Reflections on Four Years of Conversion Experience	Gavin Ball (NTP)
12:00 pm Lunch Break				
7	<b>Technical, Regulatory, and Conversion Challenges in Mo-99 Production</b>  <b>Session Chair: Joseph Gintner</b>	1:30 pm	Commitment Time: The End of HEU in Mo-99 Production and the 2016 Nuclear Security Summit	Miles Pomper (MIIS)
			European Foot-Dragging on Conversion is Endangering Mo-99 Supply	Alan Kuperman (UT – Austin)
			Collaboration Between the Medical Isotope Production and Nuclear Explosion Monitoring Communities	Theodore Bowyer (PNNL)
			Regulatory Activities Related to Licensing Medical Radioisotope Production Facilities	William Shuster (NRC)
3:00 pm Coffee Break and Refreshments				
8	<b>Development Toward Non-HEU Based Mo-99 Production, Session I</b>  <b>Session Chair: Chris Bryan</b>	3:30 pm	Northwest Medical Isotopes, LLC Overview and Status	Carolyn Haass (Northwest Medical Isotopes, LLC)
			Current Engineering and Design Activities at LANL Supporting Commercial U.S. Production of Mo-99 Without the Use of HEU	Gregory Dale (LANL)
			NorthStar Progress Towards Domestic Mo-99 Production	Jim Harvey (NorthStar Medical Radioisotopes)
			Overview of Argonne Support for Mo-99 Medical Isotope Production: NorthStar Medical Technologies	Sergey Chemerisov (ANL)
			Powder Metallurgy Fabrication of Thin, Flat Molybdenum Disks	Richard Lowden (ORNL)
			Future Supply Options of Mo-99, Tc-99m	Mark Frontera (GE Global Research)
5:30 pm Poster Setup in Sphinx Grand Ballroom — Almas Temple 6:00 pm Poster Session and Reception Meeting Room: Sphinx Grand Ballroom				

**Thursday, June 26 (continued)**

Meeting Room: Sphinx Grand Ballroom — Almas Temple

#	Session Title	Time	Topic	Presenter
9	<b>Poster Session and Reception</b>  <b>Session Chair:</b> <b>John Holland</b>	6:00 pm	Conversion of Uranyl Sulfate Solution to Uranyl Nitrate Solution for Processing in UREX	Megan Bennett (ANL)
			Removal of Technetium from Neutron-Capture Mo-99 using Eichrom's ABEC Resin	Megan Bennett (ANL)
			Measuring Radiolytic-and Fission-Gas Generation in an Aqueous Uranium-Sulfate Target Solution in Accelerator-Based Mo-99 Production	Thad Heltemes (ANL)
			Optimization of Processes for Waste Treatment and Disposal from Facilities Utilizing Aqueous Uranyl Salt Media for Medical Isotope Production	Thad Heltemes (ANL)
			Dose Rate Calculations and Van-de-Graaff Irradiations for Testing Radiation Stability of Materials and Equipment	Vakhtang Makarashvili (ANL)
			Monte Carlo Calculations for the Linac Irradiations	Vakhtang Makarashvili (ANL)
			Argonne Chemical-Processing Activities in Support of the Development of ( $\gamma,n$ ) Production of Mo-99	David Rotsch (ANL)
			Chemical Processing of mini-SHINE Targets Solutions for Recovery and Purification of Mo-99	David Rotsch (ANL)
			Column Optimization for Molybdenum Separation and Recovery	Amanda Youker (ANL)
			Experimental Setup for Direct Electron Irradiation of the Uranyl Sulfate Solution. Bubble Formation and Thermal Hydraulics Studies	Sergey Chemerisov (ANL)
			Mo-100 to Mo-99 Production Target: Design, Analysis, and Test Status	Keith Woloshun (LANL)
			Efficient and Timely Production of Valuable Radioisotopes	Alexander DeVolpi (Nuclear Applications Company)
			Design of a Tritium Purification System for SHINE Mo-99 Production	Jim Klein (SRNL)
			Ensuring Reliable Supplies of Mo-99/Tc-99m without Highly Enriched Uranium	Rilla Hamilton (NNSA)
			Integrated Thermal/Mechanical Analysis of Assembly and Irradiation of Annular, LEU-foil Based Target	Gary Solbrekken (University of Missouri)
			Fission Gas Measurement from Annular, LEU-foil Based Target	Gary Solbrekken (University of Missouri)
General Atomics' Selective Gaseous Extraction: High Quantity/Quality Mo-99 at Reduced Waste and Cost	Tim Bertch (General Atomics)			
7:30 pm Adjourn				

**Friday, June 27**

Meeting Room: Sphinx Grand Ballroom — Almas Temple

#	Session Title	Time	Topic	Presenter
10	<b>Development Toward Non-HEU Based Mo-99 Production, Session II</b>  Session Chair: Gregory Dale	8:30 am	Progress of the High Density LEU Mo-99 Target Project	John Creasy (Y-12)
			The SHINE Path to a Reliable Domestic Supply of Mo-99	Katrina Pitas (SHINE Medical Technologies)
			Overview: Argonne Assistance in Developing SHINE Production of Mo-99	Amanda Youker (ANL)
			Dynamic System Simulation of Fissile Solution Systems	Steve Klein (LANL)
			Production of Mo-99/Tc-99m by the Photo-Neutron Production Process and Regulatory Pathway to Clinical Use in Canada	Kennedy Mang'era (Winnipeg Health Sciences Centre)
			Technical Progress and Preliminary Cost Analysis for the Direct Production of Tc-99m	Paul Shaffer (TRIUMF)
10:30 am Coffee Break and Refreshments				
11	<b>Development Toward Non-HEU Based Mo-99 Production, Session III</b>  Session Chair: Sarah Bender	11:00 am	Status of Coqui Mo-99 Medical Isotope Production	Blair Everett (Coquí RadioPharmaceuticals Corporation)
			Low Enriched Uranium Control Applicable to a Range of Potential Mo-99 Production Processes	Iain May (LANL)
			Development of Frontend Processing to Allow Use of High-Density LEU Foil Targets in Current Mo-99 Production Facilities	Alex Brown (ANL)
			Production of Mo-99 using High-Current Alpha Beams	Glenn Rosenthal (Alpha Source, LLC)
			A Novel Micro-Porous Sorbent for Mo-99/Tc-99m Generator Using (n, g) Mo-99	Shameem Hasan (Perma-Fix Environmental Services Inc.)
			Mo-99 Production Using a Superconducting Electron Linac	Valeria Starovoitova (Niowave, Inc.)
12	Summary and Closure, 1:00 pm Parrish Staples			
1:30 pm Adjourn				