

TENTATIVE TECHNICAL PROGRAM



WORKSHOP ON MEASUREMENT OF ELEMENTAL CONTAMINANTS IN CANNABIS AND HEMP

Sponsored by ASTM Committee D37 on Cannabis

June 28-30, 2021
Virtual Event

Workshop Chair: Robert Thomas
Scientific Solutions
Gaithersburg, MD, USA

ABOUT THE WORKSHOP

This workshop will provide a broad perspective and awareness of the current knowledge of elemental contaminants in cannabis/hemp consumer products, communicate their significance, and as a result, educate users, cultivators, processors, testing labs, and regulators within the cannabis/hemp community of their potential risk.

The following topics will be addressed in the workshop:

- The most current research detailing the mechanisms for metal uptake into a cannabis plant-based on growing conditions and soil chemistry.
- Optimization of analytical methodology used to measure heavy metals in cannabis/hemp consumer products.
- Lessons learned from regulating heavy metals in drug products and using a scientifically risk-based approach to predict elemental impurities derived from the manufacturing process.
- Toxicological impact of heavy metals and the industry's responsibility for ensuring consumer health and safety.
- The current state of the art research in phytoremediation and phytoextraction techniques.
- The most recent research in characterizing elemental contaminants in vaping liquids and aerosols produced by electronic nicotine delivery systems (ENDS) and electronic cannabis delivery systems (ECDS).

MONDAY, JUNE 28, 2021
(All times are in U.S. EDT)

- 9:45 AM **Welcome**
Ralph Paroli, ASTM International
- 10:00 AM **Regulating Heavy Metals in Cannabis: What We Can Learn from the Pharmaceutical Industry**
Robert Thomas, Scientific Solutions
- 10:45AM **Heavy Metals in Hemp Extract Products**
Diane Pickett; Dr. Serena Giovinazzi,; and, George Kilgore, Florida Department of Agriculture and Consumer Services
- 11:30 AM **Validation of an Expanded List of Elements in Cannabis and Hemp Flower by Microwave Digestion and ICP-MS Analysis**
Aaron Hineman, PerkinElmer, Inc.
- 12:15 PM LUNCH
- 12:45 PM **Toxicological Impact of Heavy Metals: The Role of United Natural Hemp Extracts in Ensuring Public Health and Safety**
Dr. Joseph Dzisam and Dennis Springs, United Natural Hemp Extracts, LLC
- 1:30 PM **Phytoremediation of Radionuclides with Hemp (*Cannabis sativa L.*)**
Hanah Rhey, New Mexico State University
- 2:15 PM **Essential Practices for Quality Analyses of Metal Concentrations in Hydrophilic and Hydrophobic Vaping Liquids and Aerosols**
Dr. R. Steven Pappas; Naudia Gray; and Dr. Nathalie Gonzalez-Jimenez, Centers for Disease Control and Prevention – Mary Halstead, Battelle Analytical Services
- 3:00 PM **Examination of Cannabis Hemp Oil Products for Heavy Metal Contamination**
Patricia Atkins, Spex Certiprep
- 3:45 PM **Phytoremediation Potential of Hemp (*Cannabis sativa L.*): Identification and Characterization of Heavy Metals Responsive Genes**
Dr. Rafiq Ahmad and Sabaz Ali Khan, COMSATS University Islamabad
- 4:30 PM WORKSHOP ADJOURNS FOR THE DAY

TUESDAY, JUNE 29, 2021
(All times are in U.S. EDT)

- 9:45 AM **Recap of Day One**
Moderator
- 10:00 AM **Beyond the Big Four: Determination of Heavy Metals in a Variety of Cannabis and Cannabis-Derived Products**
Jenny Nelson, Craig Jones, Agilent Technologies and Sam Heckle, Leanne Anderson, CEM Corp.
- 10:45 AM **Phytoremediation Potential of Hemp (*Cannabis Sativa L.*): Identification of Genetic Modifications Leading to the Development of Hemp Strains for Enhancing its Phytoremediative Properties**
Roger Ford, National Hemp Growers Cooperative, and Cary Black, CK Black Consulting Group LLC
- 11:30 AM **Heavy Metals Analysis of Cannabis Related Products by ICP-MS: Optimizing and Troubleshooting a Method for Improved Efficiency and Accuracy**
Jonathan Peters, Shimadzu Scientific Instruments
- 12:15 PM LUNCH
- 12:45 PM **Control of Elemental Impurities in Drug Substances**
Dr. Donglei Yu, Office of Pharmaceutical Quality, FDA/CDER
- 1:30 PM **Trace Metal Profiling of Commercially Available Hemp Derived CBD Oils**
Dr. Tom Gluodenis, Lincoln University, and Robert Thomas, Scientific Solutions
- 2:15 PM **Vaping, Metals, and Health Effects: Lessons for Cannabis Products**
Dr. Markus Hilpert and Dr. Ana Navas-Acien, Department of Environmental Health Sciences, Columbia University
- 3:00 PM **Cadmium Accumulation in Industrial Hemp (*Cannabis sativa L.*)**
Amanda Olbrick Marabesi, University of Georgia
- 3:45 PM **Elemental Analysis of Tetrahydrocannabinol and Nicotine E-Liquids**
Kevin Kubachka and Robert Wilson, US FDA, Forensic Chemistry Center
- 4:30 PM WORKSHOP ADJOURNS FOR THE DAY

WEDNESDAY, JUNE 30, 2021
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- 9:45 AM **Recap of Day Two**
Moderator
- 10:00 AM **Status of ASTM - WK74576 Method: Analyses of Trace Elements in Cannabis and Related Products by Inductively Coupled Plasma-Mass Spectrometry**
Dr. William Lipps, Shimadzu Scientific Instruments
- 10:45 AM **Cannabis Vaping Aerosols: Non-Polar Methods for Collection and Analysis of Ten Metals**
Dr. Amber Wise, Medicine Creek Analytics
- 11:30 AM **Effect of Soil Contamination on Some Heavy Metal Content of Cannabis Sativa**
Dr. Murad Ali Khan, Kohat University, Pakistan
- 12:15 PM LUNCH
- 12:45 PM **Challenges in Development of a Cannabis Reference Material for Trace Elements**
Dr. Charles Barber; Dr. Melissa Phillips; Dr. Brent Wilson; and Dr. Laura Wood, Chemical Sciences Division, National Institute of Standards and Technology
- 1:30 PM **USP Perspectives on the Limits of Elemental Contaminants in Cannabis/Hemp**
Dr. Nandakumara Sarma, United States Pharmacopeia
- 2:15 PM **Metals in the Flower, Is It Safe? A Look at Which Metals Cannabis Should be Tested for to Maximize Consumer Safety**
Elizabeth Sherburne, All Set Analytical
- 3:00 PM **Evaluation of Propensity of the Canadian Hemp Varieties to Accumulation of Elevated Heavy Metal Levels in Grain**
Jan J. Slaski and Sharla M. Eldridge - InnoTech Alberta
- 3:45 PM WRAP UP & WORKSHOP ADJOURNS