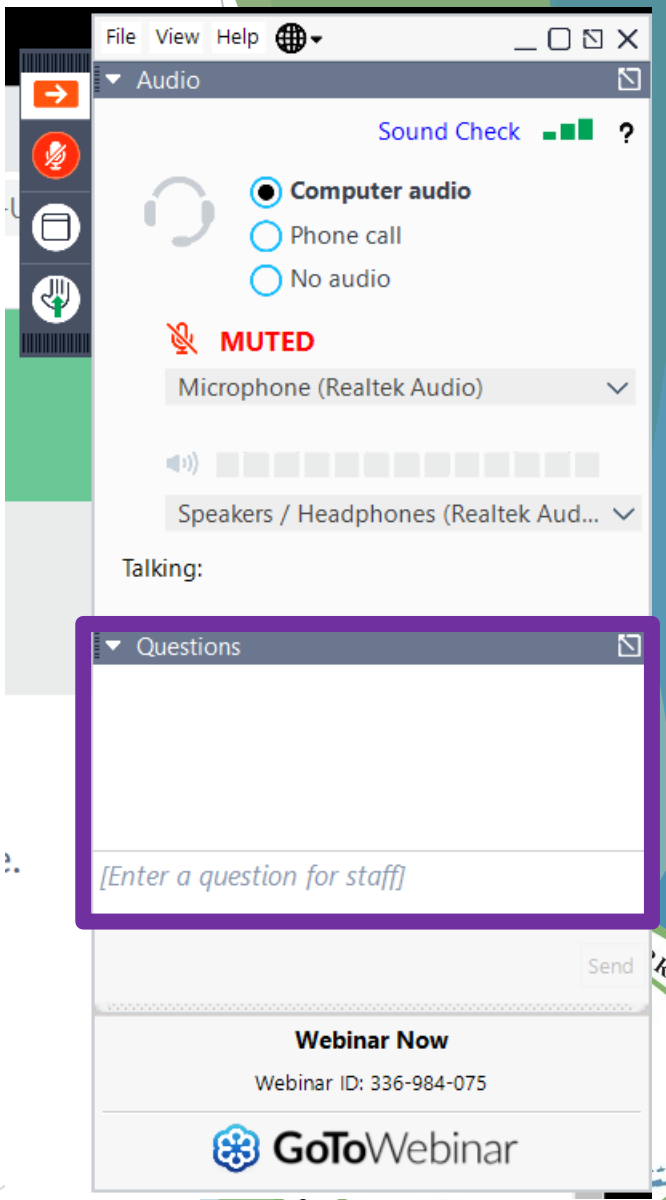
Radiation Regulatory Framework 101: Regulatory Authority of States, NRC, and EPA

ASTSWMO Virtual Mid-Year Meeting

April 29, 2021

Before we start

- All attendees will be muted throughout the webinar.
- **Questions:** Use the **Questions Panel** in the dashboard to send questions to the speakers during the webinar.
- **Note who the question is directed to in your submittal.**
- Questions will be answered at the end of the webinar.
- The webinar is being recorded and will be made available on the ASTSWMO website.



Libby McCaskill, OK

Vice-Chair, ASTSWMO Radiation Task Force

Welcome

Maurice Heath

Project Manager, Low-Level Waste and Projects Branch
Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission

NRC Radioactive Waste Regulatory Framework

U.S. Nuclear Regulatory Commission's (NRC's) Radioactive Waste Regulatory Framework

Maurice Heath, Project Manager

Low-Level Waste and Projects Branch
Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards

"Protecting today, tomorrow, and cleaning up the past"

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Topics

- Legislative and regulatory framework for commercial radioactive waste management
- Agreement State Program
- 10 CFR Part 61 disposal sites
- Alternative Disposal Requests (10 CFR Part 20)
- Radium

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Legislative Framework

- Atomic Energy Act of 1954 as amended
  - Under section 274 of the Act, the NRC may enter into an agreement with a State (Agreement State)

NRC was created through the Energy Reorganization Act of 1974 to independently oversee – but not promote – the civilian use of radioactive materials

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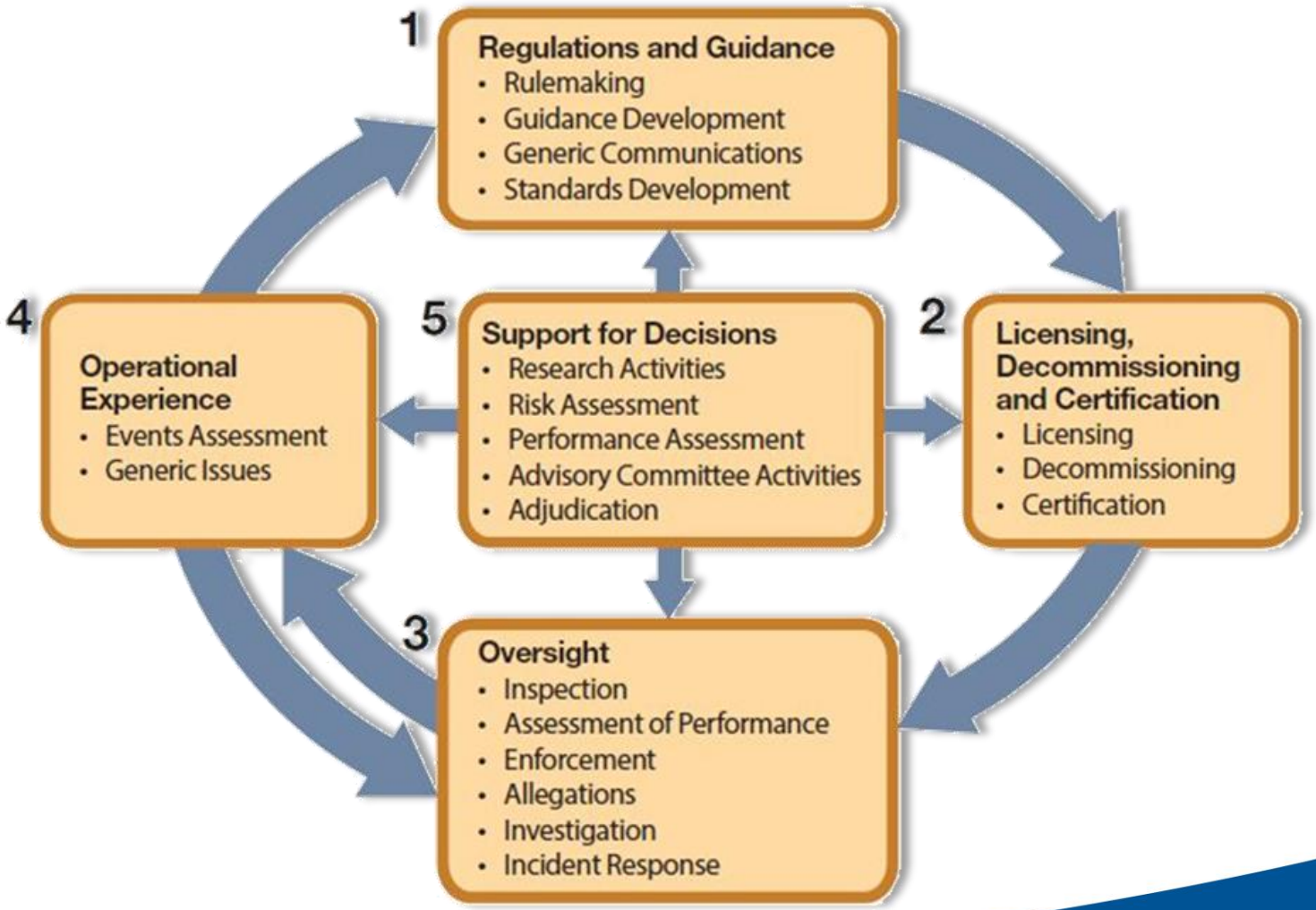
NRC's Regulatory Approach



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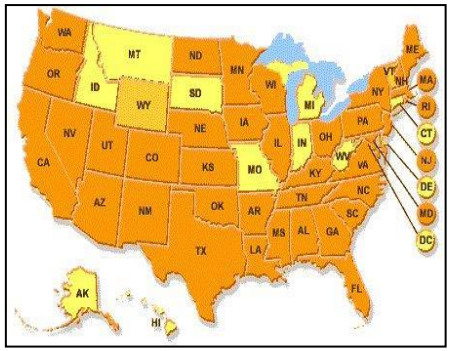
Agreement State Program

- Enacted in 1959
- Regulates about 17,000 licensees in 39 States
- Provides a mechanism for transfer and discontinuance of certain NRC authority; reserves certain areas for NRC to regulate
- All active commercial Low-Level Waste disposal sites are in Agreement States
- Integrated Materials Performance Evaluation Program (IMPEP) is a performance evaluation process that provides the NRC and Agreement States with systematic, integrated, and reliable evaluations



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Byproduct Material

- "Byproduct" defined
- Atomic Energy Act defines Byproduct material
  - Section 11e.(1)
  - Section 11e.(2)
  - Section 11e.(3)
  - Section 11e.(4)

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Regulatory Framework

- 10 CFR Part 60
  - "Disposal of high-level radioactive wastes in geological repository for sites other than Yucca Mountain"
- 10 CFR Part 63
  - "Disposal of high-level radioactive wastes in a geologic repository at Yucca Mountain, Nevada"
- Regulate storage of spent nuclear fuel
  - Spent Fuel Pools
  - Dry Cask Storage

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Regulatory Framework (cont'd)

- 10 CFR Part 61
  - "Licensing Requirements for Land Disposal of Radioactive Waste"

- 10 CFR Part 20
  - "Standards for Protection Against Radiation"

10 CFR Part 61 Disposal Sites

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Alternative Disposal Request (ADR)

- NRC authorize ADR under 20.2002
- Each ADR contains two approvals for offsite disposals
  - Generator of waste requests approval
    - NRC receives ADRs from its licensees
  - Recipient of waste receives approval to receive and dispose
    - Agreement State, if applicable, approves disposal in a non-licensed facility

- **Disposal in Resource Conservation and Recovery Act (RCRA) facilities**
- Recently updated the ADR guidance to address both approvals
- Revised ADR Guidance was issued in April 2020 (ML19295F109)

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Radium

- Energy Policy Act of 2005 amended the Atomic Energy Act giving the NRC the authority to regulate “discrete sources” of radium

- NRC issued the “Naturally Occurring and Accelerator- Produced Radioactive Material” rule in 2007 addressing its new authorities

- NRC has taken actions to identify and address sites with risk-significant quantities of radium

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Historic Radium Products

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Conclusions

- NRC radioactive waste management
  - Ensure adequate protection of public health and safety and the environment
  - Flexible and adaptable
- Agreement State Program
  - Review in IMPEP

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Associate Director, Center for Waste Management and Regulations
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EPA Programs and Authorities

Radiation 101:
EPA Programs and Authorities

Implications for Waste Management

April 29 2021

Presented by:
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Office of Resource Conservation and Recovery

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Prepared for:
ASTSWMO Mid-Year Meeting
Joint Virtual Session of
Materials Management Subcommittee
Hazardous Waste Subcommittee

Outline of Presentation

EPA statutory authorities for radiation

Resource Conservation and Recovery Act

EPA’s emergency responsibilities

Working with NRC

Working with States

EPA's Creation in 1970

Reorganization Plan No. 3 transferred multiple programs and authorities to EPA, including:

- Functions of the Atomic Energy Commission, under the Atomic Energy Act, for "establishing generally applicable standards for the protection of the general environment from radioactive material"
  - Applicable outside site boundaries
  - Typically implemented by NRC and DOE
  - Standards for uranium fuel cycle for electricity production
  - Standards for spent fuel, high-level and transuranic waste
- Functions of the Federal Radiation Council
  - Federal Guidance Reports (technical and policy)

Additional Radiation-Specific Authorities

Congress built on EPA's basic AEA authority:

- Uranium Mill Tailings Radiation Control Act of 1978
  - Standards for managing wastes from milling
  - Amended Atomic Energy Act
- Nuclear Waste Policy Act of 1982 (amended 1987)
  - Generally applicable repository standards
- Energy Policy Act of 1992
  - Site-specific standards for Yucca Mountain
- Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act of 1992
  - Oversight and certification of WIPP

Other EPA Authorities

EPA has authority over radionuclides under other environmental statutes, including:

- Clean Air Act
  - Dose/emission limits on radon and other radionuclides
- Clean Water Act
  - Discharge limits on uranium/radium mines/mills
- Safe Drinking Water Act
  - Underground injection control
  - Drinking water treatment
- Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
  - ‘Off site rule” for disposal
- Indoor Radon Abatement Act of 1988 (non-regulatory)

TENORM Largely Falls to States

Technologically Enhanced Naturally-Occurring Radioactive Material does not fall under AEA:

- Often large volume but not highly radioactive
- Often other hazardous substances present
- Mining and (non-AEA) mineral processing
- Oil and gas exploration and production
- Drinking water treatment
- Geothermal energy
- Industrial byproducts (e.g., coal ash)
- States have addressed disposal in permits

EPA focus on technical studies and assistance

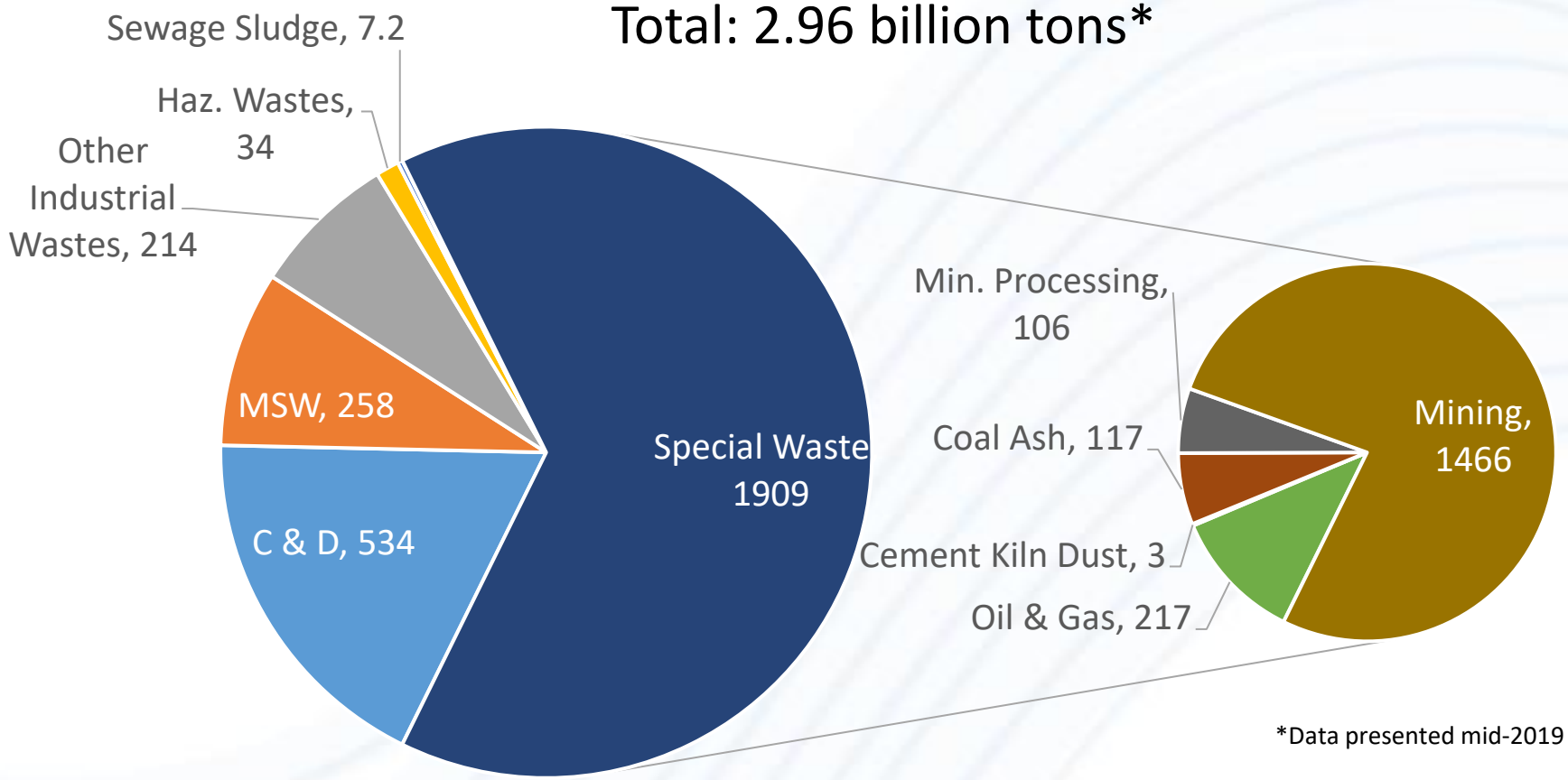
RCRA

Resource Conservation & Recovery Act (RCRA)

- Federal statute controlling solid & hazardous waste
  - Solid waste (and thus hazardous waste) does not include "*source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended*"
- Subtitle C – hazardous waste
  - Cradle-to-grave requirements
- Subtitle D – non-hazardous waste
  - Federal minimum criteria for "solid waste facilities & practices"
  - Municipal Solid Waste Landfill regulations
  - Coal Combustion Residuals regulations
  - Special wastes

U.S. Waste Generation (million tons)

Total: 2.96 billion tons*



*Data presented mid-2019

RCRA Waste Topics

- Mixed waste
  - Hazardous waste + radioactive waste
- TENORM
  - Oil & gas exploration and production wastes
- Landfill Disposal
  - Hazardous waste, industrial waste, municipal waste
  - CERCLA
    - Off-Site Rule (CERCLA 121(d)(3)) – Wastes removed from Superfund sites must be disposed in compliant facilities
    - Protective analysis for planned disposal of CERCLA waste at a non-NRC licensed facility

After an Incident

Under the National Response Framework, EPA is lead coordinating Federal agency for Emergency Support Function 10, “Oil and Hazardous Materials Response”

- Long-term cleanup and waste management
- Natural disasters, accidents, intentional events
- EPA emphasizing planning for waste/debris

A radiological incident could generate waste volumes in excess of current licensed capacity

- Much will have limited contamination
- Potentially complex decision-making framework
- Late phase planning guidance in 2017 PAGs

How EPA and NRC Work Together

As co-regulators, EPA and NRC work closely in several ways:

- To develop regulated programs
  - EPA develops environmental standards
  - NRC implements and enforces those standards
- To avoid/limit dual regulation, e.g., through MOUs
  - “Guiding Principles” for interactions in 1992
  - CERCLA-specific groundwater MOU in 2002
  - EPA rescinded parts of two Clean Air Act rules
- To explore new approaches
  - 2003 low-activity waste Advance Notice
  - Mixed waste guidance in late 1980s

Working With States on Radiation Issues

EPA works with states in several ways:

- Through delegated programs
- ASTSWMO Radiation Task Force
  - Presentations and products (e.g., TENORM guidance)
- Conference of Radiation Control Program Directors
  - Suggested State Regulations (e.g., Part N – NORM)
  - Subcommittees/working groups (e.g., E-42 on oil and gas)
- Interagency Steering Committee on Radiation Standards (ISCORS)
  - Eight federal agencies (EPA and NRC co-chair)
  - State representation (currently PA and WA)
- Regions typically have more direct contact
  - Each region has a radiation lead

Questions?

Useful Links:

RCRA:

- https://www.epa.gov/environmental-topics/land-waste-and-cleanup-topics

CERCLA:

- https://www.epa.gov/superfund
- https://www.epa.gov/superfund/radiation-superfund-sites

Radiation:

- https://www.epa.gov/radiation

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State Perspective

Radiation Regulatory Framework 101: Regulatory authority of States, NRC, and EPA

State Perspective

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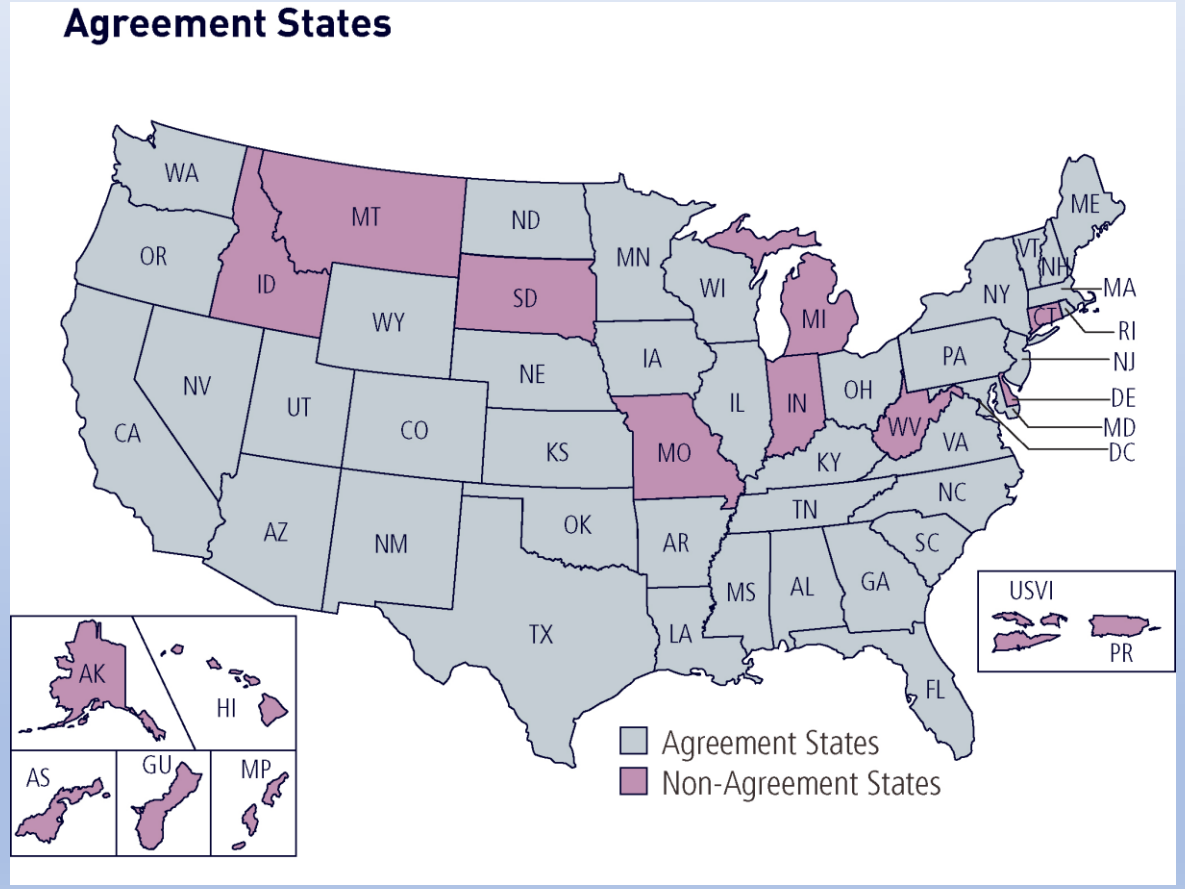
State Regulatory Authority

State Radiation Control Programs

- Agreement States
  - 39 States
- Non-Agreement
  - 11 States
  - 5 US Territories



From NRC Website

Non-Agreement States

- NRC Regulates all radioactive material within the jurisdiction of the NRC
- Non-Agreement States typically have a smaller Radiation Control Program that regulates/oversees radioactive material that is not under the jurisdiction of the NRC, such as:
  - NORM (the NRC does regulate discrete Radium)
  - TENORM

Agreement States

- Delegated authority, by NRC, to regulate all radioactive material within NRC's jurisdiction, except radioactive material subject to "exclusive Federal jurisdiction":
  - Nuclear Power Plants
  - Military Bases and Military Hospitals
  - Indian Reservations
- Regulate radioactive material that is not within the jurisdiction of the NRC, such as: NORM / TENORM
- Do not regulate Department of Energy facilities

Agreement States

- What Agreement States Do Regulate
  - Low-Level Radioactive Waste Sites
  - Uranium Mills
  - Industrial Radioactive Material Use
  - Laboratory Radioactive Materials Use
  - Medical Radioactive Materials Use
  - Accelerator Produced Radioactive Material
  - NORM / TENORM
  - Exempt/Generally Licensed Radioactive Material

Agreement States

- What Agreement States Do Not Regulate
  - Nuclear Power Plants
  - Nuclear Fuel Fabrication
  - Nuclear Power Plant Fuel
  - High Level Radioactive Waste
  - Department of Energy Facilities
  - Military Bases
  - Military Hospitals
  - Indian Reservations

Agreement State Interaction with NRC

NRC Communications with Agreement States

- The NRC:
  - Forwards incidents/allegations to Agreement States
  - Asks for feedback on draft documents and regulations
  - Provides a comprehensive website with pertinent documents
  - Provides guidance documents
  - Available for consultation on regulations, interpretations, and site-specific questions
  - Shares lessons learned
  - Hosts numerous meetings

NRC Oversight of Agreement States

- Agreement States have delegated authority by the NRC to regulate radioactive material
- NRC periodically performs comprehensive reviews of Agreement State Radiation Programs
- IMPEP – Integrated Materials Performance Evaluation Program
  - NRC performs inspector accompaniments as well as onsite interviews with staff and reviews of the state's records
  - NRC reviews state's regulations for compatibility with NRC regulations
  - NRC assesses staffing levels and reviews staff training records
  - NRC provides an overall assessment of the state program that may include comments or recommendations
  - Results of assessment determine "when" the NRC will be "back" for the next IMPEP
- NRC performs onsite Periodic Meetings with states between IMPEPs

NRC Communications with Non-Agreement States

- The NRC:
  - Asks for feedback on draft documents and regulations
  - Provides a comprehensive website with pertinent documents
  - Provides guidance documents
  - Available for consultation on regulations, interpretations, and site-specific questions
  - Shares lessons learned
  - Hosts numerous meetings

EPA

EPA

- EPA sets air emission standards
- EPA sets drinking water standards
- EPA sets soil standards
- EPA sets radon standards
- EPA sets Uranium Mill Standards
  - Groundwater protection standards
  - Public and Environmental Health Standards

EPA

- EPA is a co-author of multi-agency guidance documents, such as:
  - MARLAP
  - MARSSIM
- EPA manages numerous compliance and clean-up codes/computer models, including
  - COMPLY
  - CAP88
  - Radon Flux Calculators

EPA Communication with States

- Agreement State regulatory activities are overseen by the NRC
- Agreement States do not typically interact with the EPA in regard to radioactive materials (except Mixed Waste)
- EPA standards are adopted by the NRC into regulation. States meet the EPA standards by meeting the NRC/state regulations.
- EPA developed the regulatory framework and most policies used at CERCLA (Superfund) sites

Questions

???

Members, ASTSWMO Radiation Task Force

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Solid & Hazardous Waste Division
Wyoming Department of Environmental Quality

Let's Talk Waste!

Let's Talk Waste!

April 29, 2021

3:30-4:45pm Eastern

Let’s Talk Waste!

What Is It?

Hint

- Helps tell time in the dark.

Poll Question

What is it?

A. Radium painted clock dial hands
B. Mini swords for a Diorama
C. I have no idea.

Let’s Talk Waste!

ASSOCIATION OF STATE AND TERRITORIAL SOLID WASTE MANAGEMENT OFFICIALS

What Is It?

Hint

- Live from New York……

Poll Question

What is it?

A. Port window of a submarine.

B. Thoriated lens from a broadcast camera.

C. I still don't know.

What Is It?

Hint

- 10 + “Normal” – “al”

Poll Question

What is it?

A. A pile of trash.

B. TENORM material from an Oil and Gas industry waste stream.

C. Out of guesses.

Did You Know!

No. 1111
500 C.P.
HI-POWER MANTLE
GENUINE
Coleman
MADE IN U.S.A.
SOLD AROUND THE WORLD

EXIT

What Is It!

Hint

- Part of a machine used to produced medical isotopes.

Poll Question

What is it?

A. Cyclotron Part
B. Air hose adapter
C. I give up.

What Is It!

Hint:

- Used for navigation.

Poll Question

What is it?

A. The new iWatch

B. A radium dialed compass.

C. Seriously?

Did You Know!

What Is It?

Hint

- Used in the metal industry for high speed steel.
- Was previously smelted in a foreign country.

Poll Question

What is it?

A. Tungsten containing Cobalt 60.
B. A discarded Transformer from the movies.
C. Whatever it is, it looks really heavy!

What Is It?

ASSOCIATION OF STATE AND TERRITORIAL SOLID WASTE MANAGEMENT OFFICIALS

Did You Know!

Fun Fact!

Except the IBIS shown in the “What is it?” slides, All of the other items listed in the “What is it?” slides were actually recovered from the waste stream. The IBIS was recovered from a residential front yard.

PHOTO CREDITS

Photo	Source
Smoke Detector	www.orau.org
Patient Trash	www.epa.ohio.gov
Cat Litter	www.ars.usda.gov
GAC	www.epa.gov
Water Heater	www.commons.wikimedia.org
Water Softener Pellets	www.orau.org
Tritium Exit Sign	www.orau.org
Lantern Mantle	www.orau.org
Dishware	www.orau.org
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The End.

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