U.S. DEPARTMENT *of* ENERGY

Office of Environmental Management

TRU Waste Characterization and Certification at LANL TA-54

Carlsbad Field Office

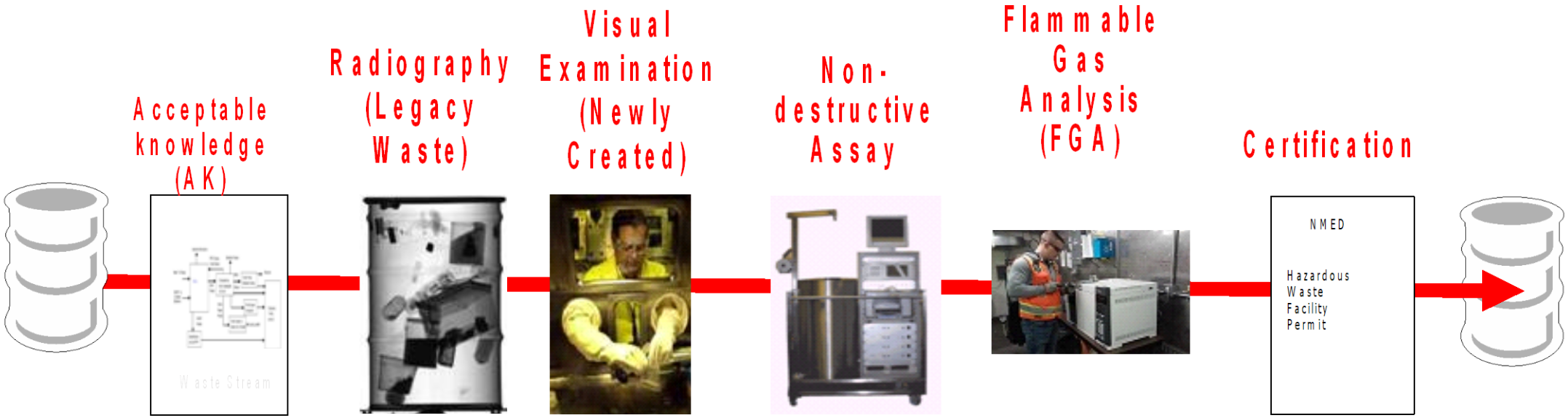
Casey Gadbury, National TRU Program Certification Division Director

September 10, 2025

TRU Waste Characterization and Certification at LANL TA-54

TRU Waste Regulatory Framework

Simplified TRU Waste Characterization/Certification Process



Use documented waste stream knowledge to identify waste contents

Verify absence of prohibited items, such as aerosol cans or liquids and verify waste matches the AK

Determine radiological contents

Determine flammable gas contents

Certify that the waste meets the requirements of the permit.

Methods of TRU Waste Characterization/Certification

Acceptable Knowledge

- Documentation of waste generation activities
- Identify waste streams and characterize hazardous waste
- Verify waste contents are compatible (stable)

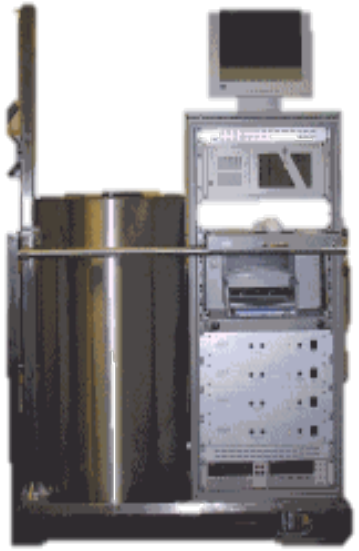
Non-Destructive Examination

- Verify the waste matches the description
- Confirm the absence of prohibited items
- Real time Radiography is the Non-Destructive Examination method used at LANL TA-54

Methods of TRU Waste Characterization (Continued)

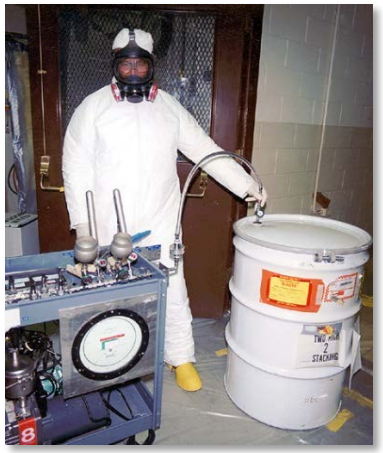
Non-Destructive Assay

- Quantify the EPA regulated radioactivity and radionuclides
- Verify radioactivity meets definition of TRU waste
- Quantify the NRC regulated radionuclide properties for shipping



Flammable Gas Analysis

- Analysis of the headspace of a waste container to determine the concentration of flammable gas/volatile organic compounds, hydrogen and methane
- Verify the concentrations are allowable to meet NRC requirements for shipping



Central Characterization Program (CCP) Key Roles

Site Project Manager

- Ensures characterization data meets the requirements by performing a validation and verification of waste reports before that waste is shipped to the WIPP

Waste Certification Assistant

- Ensures characterization data has been accurately entered for use in the validation and verification done by the Site Project Manager and the future certification of the container

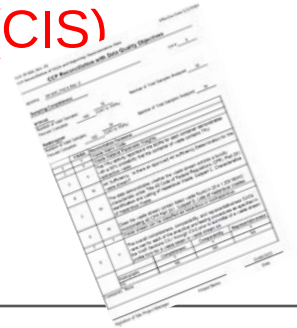
Waste Certification Official

- Certifies each container meets the requirements for disposal at the WIPP
- Coordinates the planning of payloads for shipment

Prior to shipping waste to WIPP, the following documents must be provided:

- Waste Stream Profile Form

- Characterization Information Summary (CIS)



Central Characterization Program (CCP) Key Roles (Continued)

The Mobile Loading Unit team is deployed to generator sites for the loading and shipping of TRU waste

Transportation Certification Officials (TCOs)

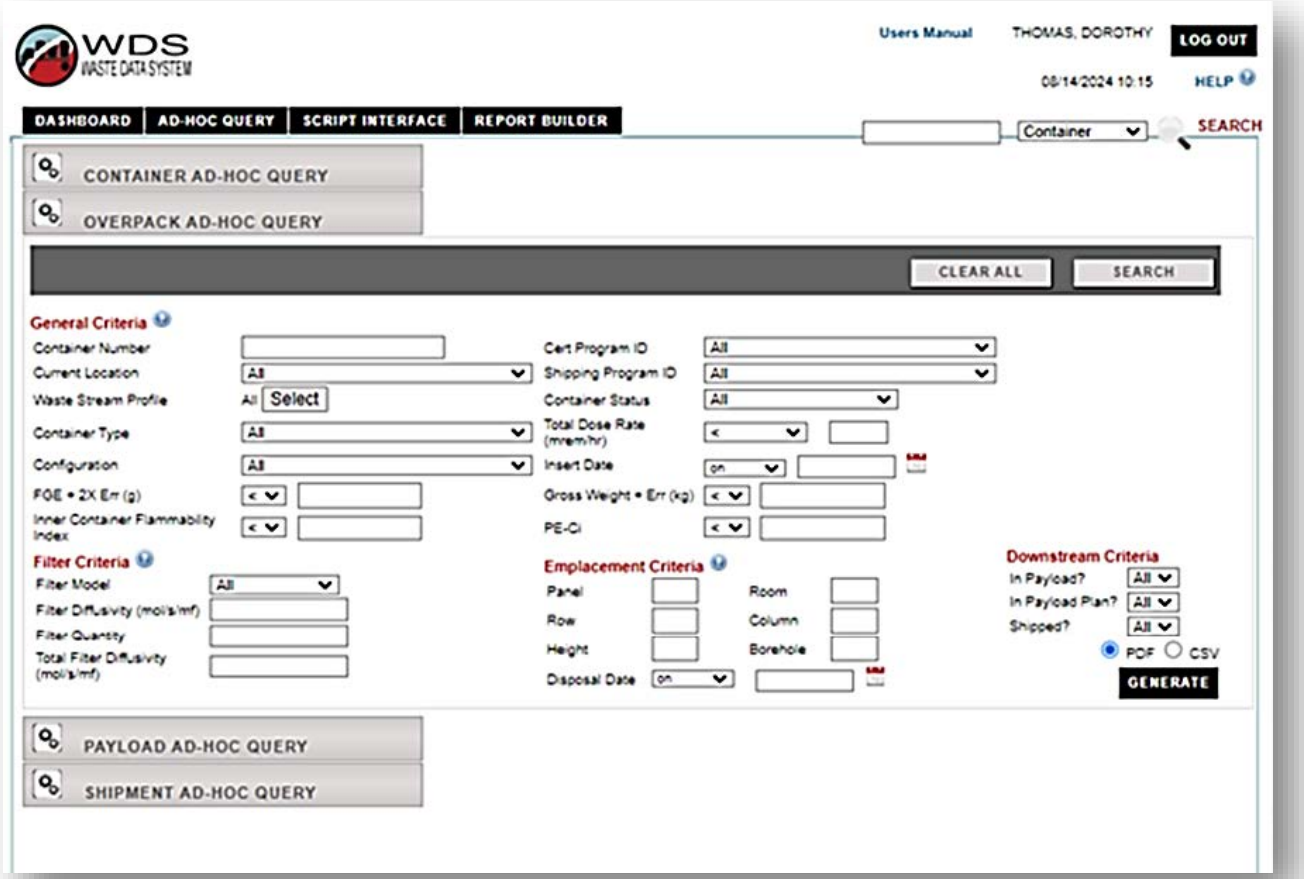
- Interface and coordinates with all involved to plan payloads for shipment
- Virtually builds payloads in the Waste Data System
- Ensures all manifests and shipping papers are correct
- Works with generator site personnel when container integrity and radiation/contamination issues may have occurred for containers being prepared for shipment

CCP CH Packaging and Transportation Team

- Ensures the payload assemblies are prepared in accordance with approved procedures

Waste Data System/WIPP Waste Information System (WDS/WWIS)

- Performs all required edit limit checks for each payload container and shipment to ensure that compliance to the WIPP WAC prior to authorization to ship.
- Used by WCOs to certify waste containers and build payload shipments.
- Transportation Engineers verify the shipment manifest prior to a shipment leaving the generator site as well as perform receipt inspection of each shipment when it arrives at the WIPP.



Real Time Radiography (RTR) Equipment at LANL TA-54

High Energy RTR (HERTR)

Real Time Radiography (RTR) Equipment at LANL TA-54

High Energy RTR (HERTR)

Non-Destructive Assay (NDA) Equipment at LANL TA-54

Mobile In Situ Object Counting System (ISOCS) Large Container Counter (MILCC)

NDA Equipment at LANL TA-54 (Continued)

High Efficiency Passive Neutron Counter (HENC)

NDA Equipment at LANL TA-54

Super High Efficiency Passive Neutron Counter (HENC)

NDA Equipment at LANL TA-54 (Continued)

Super High Efficiency Passive Neutron Counter (HENC)

Questions ?

U.S. DEPARTMENT *of* ENERGY

Office of Environmental Management