Overview of Commercial Power Plant Wastes

Lisa Edwards
EPRI
Sr. Program Manager

National Academy of Sciences
Low Level Radioactive Waste: Management and Disposition
October 24-25, 2015
Together…Shaping the Future of Electricity

EPRI’s Mission

Advancing *safe, reliable, affordable* and *environmentally responsible* electricity for society through global collaboration, thought leadership and science & technology innovation

Three Key Aspects of EPRI:

*Independent, Non-profit, Collaborative*
Types of Radioactive Waste Generated at Commercial Nuclear Power Plants

- Wet Waste
  - Resin
  - Charcoal
  - Filters

- Dry Waste (DAW)
  - Compactable
    - Cloth, paper, plastic
  - Non-compactable
    - metal

This presentation does not include discussion on irradiated hardware
Historic Average Annual Waste Profile

Average Annual Waste Volumes for 65 Plants (Ft3) by Waste Type

- **Resins**
  - Charcoal
  - Ion exchange media
- **Filters**
  - Filter media
  - Mechanical filter
- **DAW**
  - Compactable trash
  - Non-compactable trash
- **Industry Totals**
  - DAW – 938,000 Ft3
  - Resins – 98,800 Ft3
  - Filters – 7,500 Ft3

Source: EPRI Waste Stream Profile database – Jan ‘03 – Feb ‘07
Historic Annual Waste Volumes by Waste Class

Vast majority of NPP waste by volume is DAW which is primarily Class A.

Vast majority of activity is contained in resin and filters – small overall volume.

Industry Distribution (DAW + Resin + Filters):
- 86% Class A (82,355 ft³)
- 11.9% Class B (11,317 ft³) - majority from resins
- 1.2% Class C (1,152 ft³) - majority from filters

Average Annual Resin Waste Volume (Ft³) for 65 Plants by Waste Class

Class A, 50,889, 86%
Class B, 7,446, 13%
Class C, 759, 1%

Source: EPRI Waste Stream Profile database – Jan ’03 – Feb ’07
Current Trends - Total Volumes: Dry Waste

Source: EPRI RadBench™
Current Trends - Total Volumes: Wet Waste

Source: EPRI RadBench™
Current Trends – Class A Wet Waste

Source: EPRI RadBench™
Current Trends – Class B&C Waste

Source: EPRI RadBench™
EPRI Research Regarding VLLW

- 2 publically available reports
- **Investigation conclusions:**
  - Safe, practical and practiced in the US and abroad
  - Significant industry O&M and decommissioning savings can be realized with RCRA VLLW disposal path
- Project provides valuable technical input
- We should start a conversation

As much as 80%+ of Decommissioning waste is expected to be very low activity
VLLW Cost Savings Projection
EPRI Report: 1024844
Together…Shaping the Future of Electricity
Update of Nuclear Power Plant Waste Stream Profiles- Data Collection Effort

Objective:
To characterize process waste stream and to determine the quantities of waste generated on an industry level.

Results:
- Data Sources – shipping records
  - Gives indication of number of shipments and disposal volumes
  - Break down by radionuclide
  - Didn’t require additional efforts, worked with WMG
- 41 PWR units and 24 BWR units responded, representing ~65% of the industry
- Total of 10,000 records compiled covering period from January ’03 to February ’07