

# Plant Operations to Minimize Dose During Decommissioning

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# Operations Impact Decommissioning

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- ◉ Spills to Environment
- ◉ Spills within the Facility
- ◉ Waste
- ◉ Source Term

# Spills to Environment

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## ● Document spills

- 10CFR 50.75g
- More is better
  - Surveys
  - Pictures/videos
  - Isotopic results
- Utilize new technology
  - GPS coordinates

# Spills to Environment

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## ● Particulates

- Typically static
  - May want to stabilize through vegetation, barriers, etc
- Decay is predictable
- May or may not decide to remediate

## ● Tritium

- Migrates
  - Predictable with proper hydrological modeling
  - Hydrological modeling can be very sophisticated
- Groundwater
  - Potential to introduce to public domain
- Earliest possible remediation

# Spills within the Facility

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## ● Concrete

- Entrainment
  - Particulates
  - Tritium
- Can become dominant source
  - Longer lived isotopes
    - Cs 137 –  $T_{1/2} = 30 \text{ y}$
    - Am-241 –  $T_{1/2} = 432 \text{ y}$
- Immediate decontamination after spills reduces future challenges

# Waste

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## ● Includes

- “Classical” Waste
  - Resins
  - DAW
- Tools and materials
  - If it is radioactive it will be waste
- Fuel pool inventory
- Mixed

# Waste

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- Maintain “classic waste inventories as low as possible
- Routinely assess inventory of tools and materials
  - Recycle if possible
  - Provide to others in need
- Eliminate waste stored in fuel pools
  - Burial
  - Waste containers
- Eliminate inventory of mixed waste
  - Fluorescent bulbs
  - Lead shielding
  - Batteries
  - Acids/caustics

# Source Term

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## ● PWR

- Predominantly Co-58
  - Relatively short half life
    - $T_{1/2} = 70.9 \text{ d}$
  - Can rapidly appreciate the effects of decay
- Eliminate elemental sources of Co-60
- Maintain fuel integrity!

# Source Term

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## ● BWR

- Predominantly Co-60
  - Relatively long half life compared to Co-58
    - $T_{1/2} = 5.27 \text{ y}$
  - Can appreciate the effects of decay through safestor
- Maintain fuel integrity!