Management of Mixed and Radioactive PCB Waste at SRS

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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACP</td>
<td>Area Completion Project</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulation</td>
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<tr>
<td>DOT</td>
<td>Department of Transportation</td>
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<tr>
<td>DWPF</td>
<td>Defense Waste Processing Facility</td>
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<tr>
<td>FHL</td>
<td>F/H Laboratory</td>
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<td>HMW</td>
<td>Hazardous Mixed Waste</td>
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<tr>
<td>HTF</td>
<td>H Tank Farm</td>
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<tr>
<td>KAC</td>
<td>K Area Complex</td>
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<tr>
<td>LAWV</td>
<td>Low Activity Waste Vault</td>
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<td>MW</td>
<td>Mixed Waste</td>
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<tr>
<td>NNSS</td>
<td>Nevada Nuclear Security Site</td>
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<td>PCB</td>
<td>Polychlorinated Biphenyl</td>
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<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
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<td>SCHWMR</td>
<td>South Carolina Hazardous Waste Management Regulations</td>
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<td>SFP</td>
<td>Spent Fuel Project</td>
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<td>SRNL</td>
<td>Savannah River National Laboratory</td>
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<td>SRS</td>
<td>Savannah River Site</td>
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<td>SWMF</td>
<td>Solid Waste Management Facility</td>
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<td>TSCA</td>
<td>Toxic Substances Control Act</td>
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<tr>
<td>TSDF</td>
<td>Treatment, Storage and Disposal Facility</td>
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<td>WCS</td>
<td>Waste Control Specialists</td>
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Solid Waste Management Facility
Solid Waste Management Facility

- Rad PCB Disposal
- HMW/PCB Storage
Mixed Waste (MW)

• **Definition**
  - A waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act (RCRA), respectively.

• **Regulatory Drivers**
  - RCRA
  - South Carolina Hazardous Waste Management Regulations (SCHWMR) Chapter 61, Article 79

• **RCRA Waste Types**
  - Listed
  - Ignitable
  - Corrosive
  - Reactive
  - Toxicity Characteristic
Mixed Waste (MW) cont’d

**Examples of MW generated at SRS**
- Oils with mercury (Hg) and/or selenium (Se)
- Contaminated lead
- Zinc Bromide
- Mercury Debris
- Solvent Contaminated Rags
- Excess chemicals
- Tritium Gold Traps
- Lead-Acid Batteries
- Brass Valves
- Smoke Detectors
Mixed Waste (MW)

• **Storage**
  – MW is transferred from site generators to SWMF within regulatory timeclocks (e.g., 90-Day)
  – Solid Waste Management temporarily stores MW until shipped to offsite Treatment, Storage, and Disposal Facility (TSDF) for treatment/disposal
  – RCRA permit allows up to one year of storage
  – For MW, if the waste requires decay prior to shipment, then storage may exceed one year –
    • *SRS reports the following three MW streams in the Site Treatment Plan as stored awaiting decay*
      – Cadmium Rod Cask
      – Tritium Contaminated Equipment
      – Tritiated Oil with Mercury

• **Packaging/Shipment**
  – MW is packaged in DOT compliant containers (e.g., drums, B12s, B25s)
  – Use of consolidated shipments when appropriate to minimize the number of transports
Mixed Waste (MW) – cont’d

• Where is MW typically generated at SRS?
  – Defense Waste Processing Facility
  – H Tank Farm
  – F/H Laboratory
  – Savannah River National Laboratory
  – K Area Complex
  – Spent Fuel Project

• Where is MW dispositioned?
  – Perma-Fix
  – WCS / Energy Solutions
  – NNSS

• How much MW is dispositioned from SRS?
  – A total of 107.5 m$^3$ of MW has been dispositioned over the last 5 years
  – On average, 21.5 m$^3$/year (ranged from 9.8 – 44.2)
Radioactive Polychlorinated Biphenyl (PCB) Waste

• Definitions
  – Radioactive PCB Waste
    • PCB waste that also contains source, special nuclear, or byproduct material subject to regulation under the Atomic Energy Act of 1954, as amended, or naturally occurring or accelerator-produced radioactive material
  – Polychlorinated Biphenyl (PCB)
    • A family of highly toxic chemical compounds consisting of two benzene rings in which chlorine takes the place of two or more hydrogen atoms

• Regulatory Driver
  – Toxic Substances Control Act (TSCA) of 1976
  – 40 CFR 761
Radioactive Polychlorinated Biphenyl (PCB) Waste

- **PCB Waste Types**
  - **PCB Article Waste**
    - Waste consisting of any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs (e.g., capacitors, transformers, electric motors, pumps, pipes and any other manufactured item)
  - **PCB Bulk Product Waste**
    - Waste derived from manufactured products containing PCBs in a non-liquid state at any concentration where the concentration at the time of designation for disposal was greater than or equal to 50 ppm PCBs
  - **PCB Bulk Remediation Waste**
    - Non-liquid PCB remediation wastes including, but not limited to soil, sediments, dredged materials, muds, PCB sewage sludge and industrial sludge
  - **PCB Decontamination Waste**
    - Associated PCB waste that has been separated from regulated waste during decontamination (i.e., by chopping, shredding, scraping, abrading, oil/water separation) or which were generated as a result of decontamination activities
  - **PCB Remediation Waste**
    - Wastes containing PCBs as a result of a spill, release or unauthorized disposal
Radioactive PCB Waste (cont’d)

- Examples of Radioactive PCB Waste generated at SRS
  - Light ballasts
  - Painted items (building structure debris, equipment)
  - Mastic on Floor Tiles
  - Caulking and Roof Materials
  - Cables and Wiring
  - Saw cooling water “sludge”
  - Emptied containers that formally held PCBs at concentrations > 500 ppm
  - Oils

*Note: Rad PCB Waste could also contain RCRA constituents*
Radioactive PCB Waste (cont’d)

• Storage/Disposal
  – E-Area
    • PCB Waste is transferred from site generators to SWMF within regulatory timeclocks (e.g., 30-Day, 180-Day), and SWMF then ensures disposal within one year time limit
      – Trenches for PCB Bulk
      – Low Activity Waste Vault (LAWV) for light ballasts
  – Offsite
    • Solid Waste Management temporarily stores PCB Waste until shipment to offsite TSDF
    • SWMF ships to offsite TSDF by day 270 to ensure waste can be disposed by one year time limit
    • PCB waste could be direct shipped from generator to offsite TSDF if timing allows

• Packaging/Shipment
  – PCB waste destined for offsite transport is packaged in DOT compliant containers (e.g., drums, B12s, B25s)
  – MW and Radioactive PCBs are often shipped on same transport if offsite destination is the same to minimize number of transports
Radioactive PCB Waste (cont’d)

• **Where is PCB waste typically generated at SRS?**
  – K Area Complex
  – Savannah River National Laboratory
  – Spent Fuel Project
  – Area Completion Project

• **Where is PCB Waste dispositioned?**
  – SWMF
  – Perma-Fix / WCS / Energy Solutions
  – NNSS

• **How much Radioactive PCB Waste is dispositioned from SRS?**
  – A total of 5.1 m³ of PCB Waste has been dispositioned offsite over the last 5 years
  – A total of 453 m³ of PCB Waste has been dispositioned onsite at SWMF over the last 5 years
Questions?