Radiological Work in SD&D (Site Deactivation and Decommissioning)

230-H Beta-Gamma Incinerator

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- **Scope**
  - Conduct a review of potential waste streams associated with this facility to facilitate decommissioning activities of the structure and its components.
  - Determine and implement appropriate radiological controls to support planned activities.
  - Obtain characterization samples (ash, refractory material) of the interior surface and contents located in the incinerator without physical entry.

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History of the BGI facility:

- The BGI process provided volume reduction of solid and liquid low level waste by using a two-stage, controlled-air incinerator which exhausted via HEPA filtration through stacks. The facility operated from January 1985 to January 1988. The facility components were flushed prior to shut down; however, contamination levels were unknown.
- The incinerator is located in a Contamination Area (CA). The interior of the incinerator is posted as a "Confined Space". Radiological posting consisted of Inactive High Contamination Area (HCA), and Airborne Radiological Area (ARA). Contamination levels could be very high at the time of sampling.

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Utilization of Engineering Controls

- WSRC Containment Fabricators were consulted to discuss construction and installation of a glove bag for several important reasons:
  - Incinerator was identified as "Confined Space" therefore physical entry could be avoided and workers would not have to deal with confine space issues.
  - Extensive sleeving was installed so extended tools could be used to perform swipes of internal surfaces to be analyzed.
  - Unknown high radiological contamination levels would be encountered on internal surfaces which would increase PPE (e.g. air supplied plastic suit, air supplied hood, full face respirator with double set of anti-c PPE).
  - Glove bag would contain radiological contamination at its source.
  - Facility in Cold and Dark status - no building or process ventilation and electrical supply disconnected so glove bag use seemed best suited for sampling activities.

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Incinerator before glove bag installation

Incinerator Door (Looking North)

Open door of the Incinerator slowly as directed by RCO. Inspect and obtain sample of the Incinerator refractory from the inside of the door.

WARNING: No Confined Space entry allowed. Use extended tools as required.

Incinerator after glove bag installation and certification

Closer view of incinerator


Obtain ash and smears from interior with extended tools
Opened incinerator door


Closer view of interior


Location of refractory sample

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Outcome from successful use of glove bag

- Workers were not exposed to unknown hazards in incinerator.
- No unnecessary utilization of PPE.
- Contained contamination at the source.
- Did not break the plane of the confined space due to the utilization of extended tools to obtain refractory material and swipes for analysis/characterization.
- No increased radiological airborne activity detected.
- Workers were not exposed to contamination during work evolution.
- Effective use of engineering controls and safe completion of work activities without incident.

- Lesson Learned: The use of bungee cords instead of ty-wraps would have allowed greater flexibility and maneuverability during use of glove bag.