

Decommissioning Experience in the Field Implementation of Release of Materials and Future Guidance

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NRC Policy

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- Staff to continue to review specific cases on an individual basis
- Current approach is fully protective of public health and safety
- A rule is not immediately needed

Current Approach

Surface residual radioactivity: Sources may include metal, equipment, tools, furniture

- Reactor licensees: “No Detect” policy of I&E Circular 81-07 and Information Notices 85-92 and 88-22
- Materials licensees: Regulatory Guide 1.86 and its equivalent Directive Guidance Fuel Cycle 83-23

Current Approach

Volumetric residual radioactivity: Sources may include concrete, soil, debris etc.

- May be approved under 20.2002 request, license termination or decommissioning plan, or other specific license amendment
- To maintain doses ALARA and below the limits in Part 20, there may be approval of a release under a criterion of a “few mrem”
- For reactors, releases made using “no detect” policy

Experience

- NRC licensees typically request RG 1.86 as release criteria for surface residual activity in a License Amendment or Decommissioning Plan.
- Since January 2000, NRC licensees request for release of volumetric residual activity in accordance with §20.2002.

Experience: §20.2002 Requests

- 16 of 24 §20.2002 requests have been approved
 - ✓ (7) Local landfill disposals
 - ✓ (3) RCRA disposal sites
 - ✓ (3) Onsite disposals
 - ✓ (3) other
- 8 requests were withdrawn
 - (4) Decided to send to LLW licensed site
 - (4) Variety of reasons

Experience: § 20.2002 Requests

- Failure to recognize variability of HTDs driving the dose
- Inadequate QA/QC of shipments prior to transport

Field Experience: HP Qualifications

- Unqualified individuals performing release surveys
- Untrained individuals performing release surveys
- Radiation Safety Officer qualifications and experience

Field Experience: Survey Programs

- Inappropriate survey instruments for release measurements/personnel
- Non-conservative instrument efficiencies for release measurements
- Failure to employ ISO 7503 standards for efficiencies resulted in under estimating activity

Field Experience: Survey Programs

- Scan surveys procedures do not meet required Scan MDC requirements
- Failure to survey equipment internals
- Portable Gamma Spec (GeLi) System issues
 - inappropriate geometries
 - inadequate detection requirements
 - failure to recognize system degradation

Field Experience: Surrogate Nuclides

- Inappropriate use of Gamma measurements for HTDs where no surrogate relationship is not statistical viable or justified
- Failure to recognize variability in HTDs to determine sampling requirements
- Failure to perform ongoing QA measurements to ensure surrogate ratio remains conservative

Experience: Composite Sampling

- Reduces action (investigation) levels (DCGL_w) by the dilution factor
- Cannot be used when action levels (DCGL_w) are near the analytical detection limits
- Cannot be used when action levels (DCGL_w) are near the natural background concentration

Future Guidance

- ANSI/HPS N13.12
- Composite sampling
- ALARA

Tools and Approaches

- PNNL's Visual Sample Plan
- MARSAME
- NUREG 1640, Volume 1

Conclusions

- NRC guidance has been consistent
- Staff continues to be concerned about field implementation and understanding of technical basis for measurements
- Staff has concerns that new tools will be used properly

