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DUWP-ISG-03

CONTAMINATION CONTROL, RADIOLOGICAL SURVEY, AND DOSE MODELING CONSIDERATIONS TO SUPPORT LICENSE TERMINATION AT SITES WITH ENVIRONMENTAL DISCRETE RADIOACTIVE PARTICLE CONTAMINATION

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What is a Discrete Radioactive Particle?

- Small particle/object that has a relatively high activity and is insoluble in water
  - "Hot Particles" generated during operations
    - Fuel fleas from fuel rod failures
    - Activated metals from reactor vessel internal component wear
    - May be held up in systems being dismantled during decommissioning
  - "Chips" from decommissioning segmentation efforts
    - Activated metal segmentation
      - Reactor vessel
      - Internal components
      - Bioshield rebar
    - Activated concrete
      - Bioshield demolition
- A concern for skin contaminations during dismantling
- Assessing risk for license termination if released to the environment

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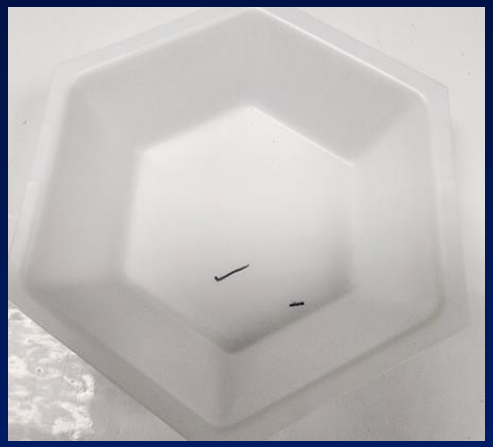

DRPs vary in size ranging from less than visible to small rocks

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Why the concern?

- DRPs can be
  - Very mobile
  - Difficult to detect/identify
    - Even harder if covered by soil/debris or under water
    - A point source vs area source
- If DRPs are present at license termination
  - How to assure public risk is consistent with regulations/guidance
    - License termination limit is 25 mrem/y total effective dose equivalent (TEDE) + ALARA
    - Shallow Dose Equivalent (SDE) is not a component of TEDE
  - Potential exposure to particles cannot be assessed using typical decommissioning codes (RESRAD or DandD)

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DUWP-ISG-03 focus

- Prevention is Key
  - Emphasis is on Contamination Control
  - Timely and appropriate remediation of DRPs
- Detection sensitivity methods for scanning for point sources
- ALARA for DRPs
  - DRPs should be collected, assessed, and disposed
- Assessing Potential Dose/Risk of Public Exposure from a DRP to risk inform license termination decisions

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DUWP-ISG-03 Schedule

- Draft DUWP-ISG-03 issued for comment in early September 2024
  - Significant comments
    - Activity associated with very small risk significant DRPs may be too low to detect
    - Is the NRC developing new criteria?
    - International scientific consensus should be established for DRP dose modeling
- Final DUWP-ISG-03 expected to be released in early 2025

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