

RG 4.21 - Minimization of Contamination and Radioactive Waste Generation-Life Cycle Planning



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Purpose of this Meeting

- Provide an overview of RG 4.21 and 10CFR 20.1406
- Discuss approach on DCD and COLA reviews
- Give an opportunity to discuss questions concerning RG 4.21 guidance and its' implementation

10 CFR 20.1406



Applies to all license applications and design certifications after August 20, 1997. The application must describe how facility design and operation will:

Facilitate
decommissioning

Minimize

- Contamination of the facility
- Contamination of the environment
- Generation of waste

Overview of RG 4.21 (DG 4012)

“Minimization of Contamination and
Radioactive Waste Generation: Life-Cycle
Planning”

ADAMS Accession Number: ML080500187

Principles Embodied in RG 4.21

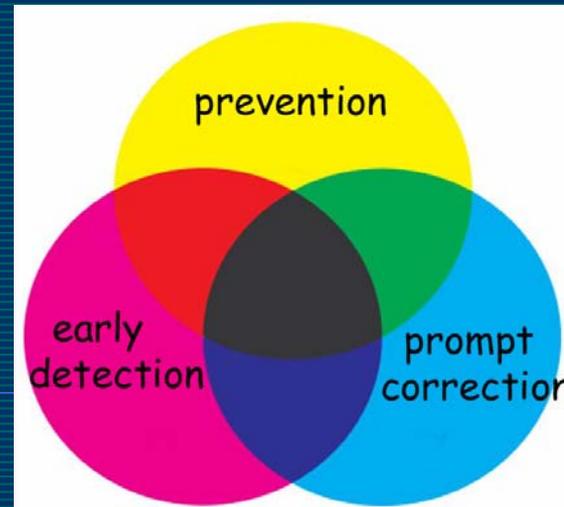
- **Prevent** -- unintended release, through design features and operational processes, programs or procedures

- **Detect** -- early detection if there is unintended release of radioactive contamination,
and

- **Correct** -- unintended release of radioactive contamination by prompt and aggressive action when warranted [risk should be considered].

Demonstrating Compliance

- ❑ Explore opportunities to minimize contamination before application
- ❑ Risk-informed approach
- ❑ By using “sound” engineering and science
- ❑ By application of the guiding principles in RG 4.21



Structure of RG 4.21

- The Regulatory Position parallels the organization of 10 CFR 20.1406
 - C.1. Minimize contamination of the facility
 - C.2. Minimize contamination of the environment
 - C.3. Facilitate decommissioning
 - C.4. Minimize waste generation

- Each section of the Regulatory Position describes an objective. An appendix contains examples of measures to consider for achieving compliance with 10 CFR 20.1406.
 - **NOTE:** this appendix is not intended as a review checklist.

Summary of RG 4.21 Objectives

- ❑ Minimize leaks and spills and provide containment of leaks
- ❑ Provide for adequate leak detection capability to provide prompt detection of leakage from any SSC
- ❑ Provide leak detection methods capable of early detection of leaks where regular inspections are impossible or difficult

Summary of RG 4.21 Objectives (cont)

- ❑ Decrease the probability of any release, any amounts released, and decrease spread of contaminant from source

- ❑ Minimize the volume of SSCs that become contaminated

- ❑ Minimize the use of embedded or buried piping and facilitate the removal of large components

- ❑ Periodic review of operational practices

Summary of RG 4.21 Objectives (cont)

- Develop a conceptual site model (based on site characterization and facility design and construction)
- Evaluate the final site configuration after construction to assist in preventing the migration of radio-nuclides offsite via unmonitored pathways
- Facilitate decommissioning by maintaining complete records

NRC Technical Review Approach

- RAI - NRC asks DC applicants to describe overall philosophy for complying with 20.1406 in Chapter 12 of FSAR. Specific design information (SSCs) describing compliance should be placed in the appropriate section of the DCD, along with any related COL action items addressing operational compliance with 20.1406.
- RAI – NRC asks COL applicants to describe the operational programs, processes or procedures which meet those operational aspects of compliance with 20.1406.
- Responses to these RAIs will be routed to appropriate technical reviewers, if necessary.

Looking Forward

- ❑ Regulatory Guide 4.21 is publicly available (ML080500187)
- ❑ 20.1406 RAI issued for all applicants for Design Certification.
- ❑ NRC Staff will review RAI response and evaluate compliance with 20.1406 using RG 4.21 for their technical area.
- ❑ Draft Interim Staff Guidance for 10CFR20.1406 is out for public comment (ML081850160)
- ❑ NEI template (NEI 08-08) to be developed for operational programs and submitted for safety evaluation.
- ❑ Incorporate 20.1406 acceptance criteria into the appropriate sections of NUREG-0800 (SRP) that weren't previously included.

QUESTIONS?



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