U.S. EPA's Radiation Protection Program – A 2011 Update

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General Responsibilities

Under the Atomic Energy Act (AEA), EPA sets "limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment"

EPA's standards developed under the AEA are fundamentally different from those developed under other authorities

- EPA's AEA-based standards are enforced by NRC and Agreement States
- EPA's standards developed under environmental statutes are typically implemented and enforced by EPA

How EPA's Standards Are Enforced

EPA Standard	Enforced By
TRU (40 CFR 191)	EPA (40 CFR 194)
HLW (40 CFR 191)	NRC (10 CFR 60)
Uranium Mill Tailings (40 CFR 192)	NRC (10 CFR 40)
Clean Air Act Standards (40 CFR 61)	NRC for its licensees; EPA for others

Federal Guidance Authority

The Federal guidance function is to *"...advise the President on radiation matters, directly or indirectly affecting the public, including guidance for all Federal agencies in the formulation of radiation standards..."*

- Authority transferred from the Federal Radiation Council to the EPA Administrator in 1970
- Broader than just environmental protection
- President signs final guidance

EPA has used Federal Guidance to

- Set New Limits for Uranium Workers (Nixon, 1970)
- Issue Guidance on the Use of Diagnostic X-rays (Carter, 1978)
- Set Revised General Standards for Workers (Reagan, 1987)

Federal Guidance Technical Reports

Federal Guidance Technical Reports (FGRs)

- Provide methodologies and coefficients for radiation dose and risk assessments
- Provide background information to support Presidential Guidance and standards

Federal Guidance Reports 11, 12, and 13 are all undergoing revision now and will reflect current science (e.g., ICRP 103+ for DCFs and BEIR VII for risk coefficients)

Current Technical Reports (Under Revision)

	FGR 11 (1988)	FGR 12 (1993)	FGR 13 (1999)
Subject of Report	Internal DCFS - Ingestion - Inhalation	External DCFs	Cancer Risk Coefficients
International Consensus Basis	ICRP 26/30	ICRP 26/30	ICRP 60+

Regulatory Actions Under Consideration (?) or Underway (!) at EPA

40 CFR 190 (?) – Radiation protection standards for nuclear power operations (1977)

- Authority is Atomic Energy Act

40 CFR 192 (!) – Health and environmental standards for uranium and thorium mill tailings (1983)

- Authority is Uranium Mill Tailings Radiation Control Act

40 CFR 61, Subpart W (!) – Radon emissions from uranium mill tailings

- Authority is Clean Air Act

Current Fuel Cycle Regulations

40 CFR Part 190

- Standard is for U fuel cycle
- Sets environmental standards for nuclear power operations
- Sets dose limits for the general public (25/75/25 mrem/yr to whole body/thyroid/other organs)
- Sets emissions limits for krypton-85, iodine-131 and alpha emitters (incl. plutonium-239)

Technical Considerations if Part 190 is Updated

Current standard does not have ground water protection requirements

- Recent experience has shown that the potential for groundwater contamination exists (tritium leaks)
- Current rule did not anticipate ground water problems and did not analyze for them

Dosimetry is out of date

- Effective dose (per ICRP 103?) would replace critical organ dose (ICRP 2)
- Radionuclide “caps” (release limits) were developed based on collective dose—Is it still appropriate?

40 CFR 190 Summary

We are currently considering whether a formal regulatory review of 40 CFR 190 is necessary

If EPA proceeds with reviewing and revising this standard, the public review process would be an important factor in the Agency's decisions

There would be multiple opportunities for input

- Anticipate we would issue an advanced notice of proposed rulemaking (ANPR)
- Anticipate we would have public meetings in several cities
- Docket would be accessible through regulations.gov

Uranium Mill Tailings Regulations

Uranium Mill Tailings (40 CFR Part 192)

- Sets soil cleanup standards for active and inactive mill tailings sites
- Limits radon emissions from inactive mill tailings piles to 20 picocuries / m^2-sec

Reason for Review and Update

Over 25 years since rule was originally finalized, ~15 years since last update for ground water protection

Lacks explicit provisions for in situ leach/recovery (ISL/ISR), which is now principal means of uranium recovery in U.S, and for heap leach facilities

Changes in EPA environmental standards for hazardous substances in ground water and drinking water

Potential for uranium extraction in new areas (e.g., VA, MI)

Changes in dose conversion factors, exposure pathways, etc.

40 CFR 61 Subpart W Summary

Applies to radon emissions from operating uranium mill tailings

- Radon emissions flux standard: 20 pCi/m^2·sec

After 12/15/1989, new impoundments were required to meet one of two new work practices

- Phased disposal – Impoundment size $\leq$ 40 acres
- Continuous disposal – dewatered tailings with no more than 10 acres uncovered
- Both must meet design, construction, ground-water monitoring standards at 40 CFR 192.32(a)

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Review of Subpart W

Review began after receiving Notice of Intent to Sue (NOI) by two Colorado environmental groups

- Based on EPA's alleged failure to review & revise regulation within ten years after enactment of Clean Air Act Amendments of 1990 (11/15/2000)
- Plaintiffs filed suit against EPA in October 2008
- Settlement agreement reached November 2009

EPA is currently reviewing with intent to revise Subpart W, projected proposal is late summer 2011

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Summary

Revisions to the dose conversion factors and risk coefficients in Federal Guidance Reports 11, 12, and 13 are underway

EPA is considering an update to 40 CFR 190 (fuel cycle operations)

EPA is in the process of updating

- 40 CFR 192 (uranium mills)
- 40 CFR 61, Subpart W (radon emissions from operating uranium facilities)

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EPA Radiation Protection HomePage

URL: http://www.epa.gov/radiation/

Provides up-to-date information on:

- Current regulatory actions
- Waste management and disposal (WIPP, Yucca Mt., mixed waste)
- Cleanup technology and emergency response
- Risk assessment, radiation dose and risk modeling, EPA's Federal Guidance

Has fact sheets about radiation, radiation protection, and some environmental aspects of radioactive waste disposal

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