

NRC INSPECTION MANUAL

DQASIP

INSPECTION PROCEDURE 83525

INTERNAL EXPOSURE CONTROL AND ASSESSMENT (PREOPERATIONAL AND SUPPLEMENTAL)

PROGRAM APPLICABILITY: 2513, 2515, and 2525

83525-01 INSPECTION OBJECTIVES

01.01 To determine whether the applicant can effectively control internal occupational exposure and assess individual intakes of radioactive material.

01.02 To determine whether the applicant can effectively control the internal exposure of onsite emergency workers during accident conditions.

83525-02 INSPECTION REQUIREMENTS

02.01 Administrative Controls

- a. Determine whether administrative measures for controlling intake of radioactive materials meet requirements and FSAR commitments.
- b. Determine whether administrative measures to control internal exposures during emergency operations are adequate and whether they satisfy licensee commitments.

02.02 Engineering Controls. Determine whether engineering controls for limiting intake of airborne radioactive materials meet requirements and FSAR commitments.

02.03 Respiratory Protection Equipment

- a. Determine whether the program for use of respiratory protection equipment meets requirements and FSAR commitments.
- b. Determine whether the respiratory protection program for emergency operations is adequate.

02.04 Air Sampling for Assessing Individual Exposure. Determine whether procedures and equipment for assessing individual internal exposure from air sampling data meet requirements and FSAR commitments.

02.05 Bioassays. Determine whether the bioassay program meets requirements and FSAR commitments.

03.01 Administrative Controls

- a. Aspects of administrative controls that may be examined include:
 1. Radiation Work Permit (RWP) program as it applies to internal exposure.
 2. Controlling access to areas with airborne radioactivity.
 3. Adequacy of written procedures for controlling internal exposure.
 4. Use of control/action levels.
 5. Provisions for posting airborne radioactivity areas.
- b. In addition to those factors specified in 03.01a, above, consider the following for emergency operations:
 1. Provisions for 24-hour-per-day coverage by individuals who have the authority to authorize exposures in excess of 10 CFR 20 limits.
 2. Criteria to exceed 10 CFR 20 limits.
 3. Consistency of site exposure limits with Environmental Protection Agency (EPA), emergency worker and lifesaving protective action guidelines (125 rems thyroid for corrective action; no upper limit established for lifesaving activities).
 4. Adequacy of provisions for contractor or other persons/agencies augmenting the onsite emergency organization. These may include, but not be limited to, contractor HP technicians, local fire departments and rescue squads, INPO representatives, and NSSS vendors.
 5. Adequacy of provisions for controlling exposures of security personnel.

03.02 Engineering Controls. Aspects of engineering controls that may be examined include:

- a. Ventilation systems with air flows from areas of low potential airborne radioactivity to areas of higher potential airborne radioactivity.
- b. Provisions for use of auxiliary ventilation systems to provide local control of airborne contamination.
- c. Provisions for evaluating use of engineering controls for specific jobs before authorizing the use of respiratory equipment.

03.03 Respiratory Protection Equipment

- a. Select a number of requirements and FSAR commitments and verify that applicant meets (or will be able to meet) them. These may include: fitting, testing, cleaning, inspection, repair, storage, control, issuance, use, and return of equipment; medical examinations; training of users; and evaluations of users. (See Regulatory Guide 8.15 and NUREG-0041.)

- b. Review procedures and selected records, hold discussions with cognizant individuals, and observe samples of equipment; for example, equipment in emergency kits, in the Control Room, in the Operational Support Center, or in the Technical Support Center. In addition to the applicable factors specified in 03.03a, above, consider the following:
 1. Availability and accessibility of sufficient supplies of approved self contained breathing apparatus (SCBA). If cascade or manifold systems will be used under accident conditions, the licensee should have a program to periodically check the air purity and operability of the power supply. At a minimum, the system should be checked after each major maintenance on the compressors.
 2. The licensee's capability to ensure continuity of air supplies for emergency operations. Consider provisions for timely replacement of air bottles.
 3. Availability of full-face respirators with appropriate filtering media for the class of service required. Half-mask respirators are unacceptable for emergency operations.

03.04 Air Sampling for Assessing Individual Exposure. Aspects of the air sampling program that may be considered include:

- a. Capability for representative sampling of air in a zone occupied by workers. [See ANSI N13.1-1969 (R 1982), Section 4.2.1.1 and Section 6.]
- b. Provisions for review and evaluation of air sampling data.
- c. Calibration of air sampling equipment (flow measuring devices).
- d. Adequacy of written procedures for collecting and analyzing air samples and for evaluating, reporting, and reviewing air sampling data.

03.05 Bioassays. Aspects of the bioassay program that may be considered include:

- a. Calibration and quality control checks for whole body/thyroid/lung (in vivo) counter(s).
- b. Provisions for estimating MPC-hour exposures from whole body counting data.
- c. Use of in vitro or indirect bioassay (e.g., measurements of radioactive material in excreta) to complement in vivo measurements and quality assurance for these measurements.
- d. Adequacy of written procedures for bioassays.
- e. Provisions for comparing bioassay data with data from air sampling.
- f. Provisions for whole body counting of emergency workers during accident conditions.
- g. Provisions for reviewing in vivo measurements to detect trends.

83525-04 REFERENCES

Standard Review Plan Section 12.5, "Operational Radiation Protection Program," NUREG-0800.

Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring" (endorses ANSI N13.2-1969).

Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems" (endorses ANSI N13.6-1966 (R 1972).

Regulatory Guide 8.8, "Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable."

Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations and Assumptions for a Bioassay Program."

Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection."

Regulatory Guide 8.20, "Applications of Bioassay for I-125 and I-131."

Regulatory Guide 8.26, "Applications of Bioassay for Fission and Activation Products" (endorses ANSI N343-1978).

NUREG-0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials," October 1976.

NUREG-0761, "Radiation Protection Plans for Nuclear Power Reactor Licensees," Chapter 5, "Dose Control" (Draft Report for Comment), March 1981.

NUREG-0938, "Information for Establishing Bioassay Measurements and Evaluations of Tritium Exposure," June 1983.

Task OP-713-4, Draft Regulatory Guide for Comment, "Applications of Bioassay for Tritium," June 1983.

DHHS (NIOSH), Publication No. 82-106, "Supplement to the NIOSH Certified Equipment List," October 1, 1981, and subsequent supplements.

ANSI N13.1-1969 (R 1982), "Sampling Airborne Radioactive Materials in Nuclear Facilities."

ANSI N13.2-1969 (R1982), "Administrative Practices in Radiation Monitoring (A Guide for Management)."

ANSI N13.6-1966 (R1982), "Practice for Occupational Radiation Exposure Records Systems."

ANSI N343-1978, "Internal Dosimetry for Mixed Fission and Activation Products."

INPO REN/FDO-01, "Respiratory Cleaning and Maintenance Packages," November 1981.

NCRP Report No. 57, "Instrumentation and Monitoring Methods for Radiation Protection," May 1, 1978.

IE Information Notice No. 82-18, "Assessment of Intakes of Radioactive Material by Workers," June 11, 1982.

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