Chapter 0524 STANDARDS FOR RADIATION PROTECTION

0524-01 POLICY

011 Radiation protection standards applicable to ERDA and ERDA contractor operations not subject to Nuclear Regulatory Commission (NRC) licensing shall be established to protect the general public, ERDA, and ERDA contractor personnel and property.

012 ERDA and ERDA contractor operations shall be conducted in a manner to assure that radiation exposure to individuals and population groups is limited to the lowest levels technically and economically practicable.

0524-02 OBJECTIVE

To establish radiation protection standards for ERDA and ERDA contractor operations based upon the recommendations of the Federal Radiation Council, Environmental Protection Agency (EPA), and the National Council on Radiation Protection and Measurements.

0524-03 RESPONSIBILITIES AND AUTHORITIES

031 The Director, Division of Operational Safety:

a. develops, or promotes the development of, radiation protection standards and policies relating to ERDA and ERDA contractor operations.
b. approves or disapproves each proposed exception to the radiation protection standards established by this chapter.
c. appraises the performance of ERDA field offices and upon request, and when circumstances warrant, appraises ERDA contractors as set forth in chapter 0504, "Operational Safety Program Appraisals."
d. renders interpretations of the requirements of this chapter.

032 Heads of Divisions and Offices, Headquarters, assure that employees under their jurisdiction comply with the provisions of this chapter.

033 Managers of Field Offices: [1]

a. assure that ERDA and ERDA contractor personnel and the general public are protected against unnecessary radiation exposure and comply with the provisions of this chapter.
b. request and justify specific exceptions for planned or anticipated deviations from the requirements of this chapter.
c. review and approve emergency plans for rescue and recovery operations.
d. act, where immediate decisions and actions are required, on requests for exceptions to the requirements of this chapter and immediately report and justify such action to the Division of Operational Safety. Contractors may be authorized to take all appropriate measures in emergency situations. See appendix 0524, Part IV, "Guidance for Emergency Exposure During Rescue and Recovery Activities."

0524-04 DEFINITIONS (as used in this chapter)

041 ERDA contractor. Any ERDA prime contractor or subcontractor exempt from, or not subject to, NRC licensing provisions other than 10 CFR Part 115 Reactors, but subject to the contractual provisions of ERDA-PR 9-7.5000-47 or modifications thereof.

042 Controlled area. Any area, access to which is controlled for purposes of protection of individuals from exposure to radiation and radioactive materials.

043 Dose commitment. The dose equivalent (rems) received by specified organs during a period of one calendar year which was the result of an uptake of a radionuclide by a person occupationally exposed.

0524-05 BASIC REQUIREMENTS

051 Applicability. This chapter and its appendix are applicable to Headquarters divisions and offices.

[1] For purposes of this chapter, the Director, Division of Naval Reactors, will assume the same responsibility as the managers of field offices for his program activities.

field organizations, and ERDA contractors who may be exposed to ionizing radiation resulting from ERDA and ERDA contractor operations. This chapter and its appendix apply to routine operations. They do not apply to certain specific activities such as those essential to the national security which may require criteria for planning or operations involving exposure guidelines for uncontrolled areas different from the basic standards contained herein. For these activities, the guidelines of this chapter will be applied insofar as possible and exceptions may be developed in coordination with the Director, Division of Operational Safety, in accordance with 031(b), above, or may be set forth in other Manual chapters.

052 **Coverage.** This chapter assigns responsibilities and authorities for radiation protection, including the control of radiation exposures resulting from ERDA operations. Radiation exposures resulting from natural background, medical, or dental procedures are excluded from the scope of this chapter.

053 **Appendix.** Appendix 0524 prescribes standards, practices, and guides for radiation protection. It also provides guidance for emergency whole body exposure during rescue and recovery activities (part IV) and factors to consider in maintaining exposures to as low as practicable (part V).

054 **Exceptions to Chapter Requirements.** Approval of the Division of Operational Safety must be obtained for any deviations from the requirements of this chapter or use of radiation protection standards different from those provided in the appendix except in emergency situations where immediate decisions and actions are required.

055 References

a. Chapter 0525, "Occupational Radiation Exposure Information."
b. Chapter 0545, "Nuclear Accident Dosimetry Program."
c. Chapter 6301, "General Design Criteria."

0524-06 NATIONAL EMERGENCY APPLICATION

During a National Emergency, as defined in chapter 0601-042, the provisions of this chapter and appendix are suspended.

Approved: April 8, 1975

PART I

INDIVIDUALS IN CONTROLLED AREAS

A. RADIATION PROTECTION STANDARDS FOR EXTERNAL AND INTERNAL EXPOSURES:

1. Type of Exposure	Exposure Period	Dose Equivalent (Dose or Dose Commitment [1] (rem))
Whole body, head and trunk, gonads, lens of the eye[2], red bone marrow, active blood forming organs.	Year	5 [3]
	Calendar Quarter	3
Unlimited areas of the skin (except hands and forearms). Other organs, tissues, and organ systems (except bone).	Year	15
	Calendar Quarter	5
Bone.	Year	30
	Calendar Quarter	10
Forearms. [4]	Year	30
	Calendar Quarter	10
Hands [4] and feet.	Year	75
	Calendar Quarter	25

[1] To meet the above dose commitment standards, operations must be conducted in such a manner that it would be unlikely that an individual would assimilate in a critical organ, by inhalation, ingestion, or absorption, a quantity of a radionuclide(s) that would commit the individual to an organ dose which exceeds the limits specified in the above table.

[2] A beta exposure below an average energy of 700 Kev will not penetrate the lens of the eye; therefore, the applicable limit for these energies would be that for the skin (15 rem/year).

[3] In special cases with the approval of the Director, Division of Operational Safety, a worker may exceed 5 rem/year provided his average exposure per year since age 18 will not exceed 5 rem per year.

[4] All reasonable effort shall be made to keep exposures of forearms and hands to the general limit for the skin.

B. PROCEDURAL REQUIREMENTS

1. **Restrictions**

   a. An individual under age 18 shall not be employed in, or allowed to enter, controlled areas in such manner that he will receive doses of radiation in amounts exceeding one-tenth the standards in A., above.

   b. Students under age 18 exposed to radiation during educational activities shall not exceed 0.1 rem/year. This exposure shall be considered a part of the 0.5 rem/year limit for workers under age 18 and not supplemental to it.

2. **Combining Internal and External Dose.** Current year whole-body internal dose commitment from radionuclides for which the whole body is the critical organ must be combined with the external whole-body dose. Where both the external penetrating dose and internal dose to a critical organ are known, they shall be combined for that organ.

3. **Emergency or Accidental Exposure.** Radiation doses received in emergency actions or accidental situations will be chargeable to the radiation exposure status of the individual. However, the decision as to whether the individual will continue to work in a radiation area will be made on a case-by-case basis by plant management in accordance with the advice of the plant health physicist and occupational medical departments and subject to the approval of the ERDA field office manager.

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