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PAGE CHANGE

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DOE 5480.1 Chg 4

5-22-81

SUBJECT: ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH
PROTECTION PROGRAM FOR DOE OPERATIONS

1. PURPOSE. This Page Change transmits a revised table of contents and Attachment 1, and adds four chapters of DOE 5480.1, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION PROGRAM FOR DOE OPERATIONS, of 5-5-80.
2. EXPLANATION OF CHANGE.
 - a. Chapter I, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION STANDARDS, is added.
 - b. Chapter VIII, CONTRACTOR OCCUPATIONAL MEDICAL PROGRAM, is added.
 - c. Chapter X, INDUSTRIAL HYGIENE PROGRAM, is added.
 - d. Chapter XIII, AVIATION SAFETY, is added.
 - e. Attachment 1, which listed ERDAM references pending the issuance of the the above four chapters, is revised to reflect the new guidance contained therein.
 - f. The table of contents has been revised to incorporate the added chapters.

3. FILING INSTRUCTIONS.

- | <u>Remove Page</u> | <u>Dated</u> | <u>Insert Page</u> | <u>Dated</u> |
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| Atch 1, page 1 (and 2) | 5-1-81 | Atch 1, page 1 (and 2) | 5-22-81 |
| i thru v | 5-1-81 | i thru vii (and viii) | 5-22-81 |
| | | I-1 thru I-23 (and 24) | 5-22-81 |
| | | VIII-1 thru VIII-16 | 5-22-81 |
| | | X-1 thru X-5 (and 6) | 5-22-81 |
| | | XIII-1 thru XIII-6 | 5-22-81 |
- b. After filing the attached pages, this transmittal may be discarded.



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INITIATED BY:

Operational and Environmental
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REFERENCES

Pending the issuances of additional supplementary chapters to this Order, the following may be used as guideline procedures and standards in the discharge of the Department's environmental protection, safety, and health protection program.

1. ERDAM 0511, RADIOACTIVE WASTE MANAGEMENT, of 9-19-73, which provides for minimizing radioactive exposure and associated risk to man and environment.
2. ERDAM 0527, RESPONSE TO ACCIDENTS INVOLVING NUCLEAR WEAPONS IN THE CUSTODY OF THE DOD, of 2-15-72, which provides for compliance with the AEC-DOD Memorandum of Understanding, of 6-10-70.

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CHAPTER I

ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION STANDARDS

1. PURPOSE. This chapter sets forth the environmental protection, safety, and health protection standards that have been adopted for use throughout the operations of the Department of Energy, hereafter referred to as the Department.
2. GENERAL REQUIREMENTS.
 - a. Provisions of this chapter shall be followed during facility design, construction, operation, modification, and decommissioning. Existing facilities need not be changed arbitrarily to comply with the specified standards except as required by law.
 - b. This chapter covers the minimum prescribed standards to be used by the Department of Energy and Department contractors. Where a Department contractor is also a Nuclear Regulatory Commission licensee, the contract relationship will not exempt him from compliance with Nuclear Regulatory Commission regulations and the terms of his license. Where Department of Energy contractors are tenants on a military installation and a Host-Tenant Agreement has been executed, the standards established by the host shall be observed unless the Department prescribed standards provide for greater protection, in which case Department standards shall be observed. Facilities covered by this chapter include those owned, leased or otherwise controlled by the Department of Energy or leased by contractors for use in work, and include those of either a permanent or temporary nature (e.g., trailers, rented spaces, field sites). Ordnance operations shall observe Department of Defense Explosive Safety Board Standards as prescribed standards. Naval Reactors Program applications shall observe Department of Navy Standards as prescribed standards.
 - c. In addition to the prescribed and recommended standards set forth by this chapter, the user should also consult the other chapters of this order and for the Operational and Environmental Safety Division for any interim standards approved for use. The sources of supply for the standards and a glossary of abbreviations are contained in Attachment 1. The latest edition of the listed standards shall be used.
 - d. If there are conflicts between prescribed standards in this chapter, or between this chapter and other chapters of this order, the standards providing the greater protection shall govern.

3. PROCEDURES FOR GRANTING EXEMPTIONS.

- a. Department of Energy contract administrators are permitted to grant exemptions, which are valid for a period of six months, from the standards of this chapter, except for the Federal regulations listed herein unless allowed by the procedures identified in paragraph 3c. Contract administrators are required to notify the Director, Occupational and Environmental Safety Division of all such exemptions granted. Exemptions for periods greater than 6 months must be approved by the Director, Occupational and Environmental Safety Division prior to being granted by the contract administrator.
- b. Exemptions are considered to be temporary, allowing time to take corrective action. When requesting approval of exemptions greater than 6 months, Department of Energy contract administrators should include with their request plans to ameliorate the conditions requiring the exemptions.
- c. Those Department of Energy Operations subject to the Occupational Safety and Health Administration's regulations, directly or through Departmental Orders, must follow the procedures of 29 CFR 1960, Subpart C, 29 CFR 1905 or Departmental Order DOE 5483.1, as appropriate, to obtain relief from standards listed herein which are also listed in 29 CFR 1910, 1915-1918 and 1926. Requests are to be forwarded to the appropriate Department of Energy official as defined in Departmental Orders DOE 3790.1 or DOE 5483.1.

4. EMERGENCY PREPAREDNESS. The following standards, in addition to those listed in the other chapters, shall be used as minimum prescribed standards at such facilities as applicable.

a. Prescribed Standards.

- (1) "Immediate Evacuation Signal for Use in Industrial Installations Where Radiation Exposure May Occur", ANSI N2.3-1979 (ANSI).

b. Recommended Standards.

- (1) Exposure to Radiation in an Emergency, NCRP Report No 19.
- (2) Basic Radiation Protection Criteria, NCRP Report No. 39.
- (3) National Plan for Emergency Preparedness (FEMA).
- (4) Office of Emergency Preparednesss Circulars (FEMA).
- (5) Federal Civil Defense Guide (FEMA).

- (6) "Planning for the Handling of Radiation Accidents," Safety Series 32 (IAEA).
- (7) "Emergency Plans for Production and Utilization Facilities," 10 CFR 50, Appendix E and Associated Guide.

5. ENVIRONMENTAL PROTECTION.

a. Prescribed Standards.

- (1) "Prevention, Control, and Abatement of Air and Water Pollution," Chapter XII of this Order.
- (2) Federal Compliance with Pollution Control Standards (Executive Order 12088) (OMB).
- (3) The following standards, regulations, and guidelines promulgated pursuant to Federal environmental legislation:

(a) Air

- 1 New Source Performance Standards (40 CFR 60).
- 2 National Hazardous Air Pollutant Standards (40 CFR 61).
- 3 Regulations Designating Air Quality Control Regions (40 CFR 81).
- 4 Implementation of the National Environmental Policy Act, DOE 5440.1.
- 5 Facilities General Design Criteria, DOE N 1321.96.

(b) Water

- 1 Discharge of Oil (40 CFR 110).
- 2 Oil Pollution Prevention (40 CFR 112).
- 3 National Oil and Hazardous Substances Contingency Plan (40 CFR 1510).
- 4 Water Quality Standards Approved by the Federal Government (40 CFR 120).
- 5 National Pollutant Discharge Elimination System (40 CFR 122).

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- 6 Policies and Procedures for the National Pollutant Discharge Elimination System (40 CFR 125).
- 7 General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR 403).
- 8 Secondary Treatment Information (40 CFR 133).
- 9 Transportation for Dumping, and Dumping of Material into Ocean Waters (40 CFR 220-230).
- 10 Cooling Water Intake Structures (40 CFR 401.14) (General Provisions for Effluent Guidelines and Standards - 40 CFR 401).
- 11 Facilities General Design Criteria, DOE N 1321.96.

(c) Drinking Water

- 1 National Interim Primary Drinking Water Regulations (40 CFR 141).
- 2 National Interim Primary Drinking Water Regulations Implementation (40 CFR 142).

(d) Solid Waste

- 1 Guidelines for the Thermal Processing of Solid Wastes and for the Land Disposal of Solid Wastes (40 CFR 240 and 241).
- 2 Solid Waste Storage and Collection (40 CFR 243).

(e) Radiation

- 1 Requirements for Radiation Protection, Chapter XI of this Order.
- 2 "Performance Testing and Procedural Specifications for Thermoluminescence Dosimetry (Environmental Applications)" ANSI N 545-1975 (ANSI).

(f) Pesticides

- 1 Environmental Safeguards on Activities for Animal Damage Control on Federal Lands (Executive Order 11870) (OMB).

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- 2 Regulations for Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 162).
- 3 Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticide Containers (40 CFR 165).
- 4 Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions (40 CFR 166).
- 5 Worker Protection Standards for Agricultural Pesticides (40 CFR 170)
- 6 Certification of Pesticide Applicators (40 CFR 171).

(4) Environmental Protection, Safety and Health Protection Reporting Requirements, DOE 5484.1.

(5) Requirements for Radiation Protection, Chapter XI, of this Order.

b. Recommended Standards.

- (1) Standard Methods for the Examination of Water and Wastewater (AWWA).
- (2) Guide for Use of Insecticides, Handbook 290 (USDA).
- (3) Manual of Septic Tank Practice, Publication No. 526 (USPHS).
- (4) Sanitary Landfill Design and Operation Publication No. SW-65ts. (EPA).
- (5) Interim Guide of Good Practice for Incineration at Federal Facilities, Publication No. AP-46 (USPHS).
- (6) Incinerator Guidelines, Publication No. 2012 (USPHS).
- (7) Air Pollution Engineering Manual, Publication No. AP-40 (USPHS).
- (8) Compilation of Air Pollutant Emission Factors (EPA).

6. FIRE PROTECTION.

a. Prescribed Standards.

- (1) Fire Protection, Chapter VII of this Order.

- (2) Facilities General Design Criteria, DOE N 1321.96.
 - (3) National Fire Codes (NFPA).
 - (4) Standard for Fire Protection of AEC Electronic Computer Data Processing Systems, WASH 1245-1. (Compliance with this standard satisfies the requirements for NFPA-75).
 - (5) Product Directories of Underwriters Laboratories together with the periodic supplements (UL).
 - (6) Factory Mutual Approval Guide (FM).
 - (7) TP20-11 General Fire Fighting Guidance for Nuclear Weapons.
- b. Recommended Standards.
- (1) Handbook of Fire Protection (NFPA).
 - (2) Loss Prevention Data Sheets (FM).

7. HEALTH PROTECTION.

a. Radiation Protection.

(1) Prescribed Standards.

- (a) Requirements for Radiation Protection, Chapter XI of this Order.
- (b) Environmental Protection, Safety and Health Protection Reporting Requirements, DOE 5484.1.
- (c) Performance Specifications for Direct Reading and Indirect Reading Pocket Dosimeters for X and Gamma Radiation, ANSI N13.5-1972 (ANSI).
- (d) Radiation Symbol, ANSI N2.1-1969 (ANSI).
- (e) Radiological Safety in the Design and Operation of Particle Accelerators, ANSI N43.1-1978 (ANSI).
- (f) Specification and Performance of On-site Instrumentation for Continuously Monitoring Radioactivity in Effluents, ANSI N13.10-1974 (ANSI).
- (g) Personnel Neutron Dosimeters (Neutron Energies Less Than 20 MeV), ANSI N319-1976 (ANSI).

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- (h) Performance Criteria for Instrumentation Used for Inplant Plutonium Monitoring, ANSI N317-1978 (ANSI).
 - (i) "Inspection and Test Specifications for Direct and Indirect Reading Quartz Fiber Pocket Dosimeters," ANSI N322-1975. (ANSI).
- (2) Recommended Standards.
- (a) Applicable (FRC) Reports (#1-1960, #2-1962, #5-1964, #7-1965, #8 (Revised) (EPA).
 - (b) Handbooks, NCRP Recommendations (NBS).
 - (c) Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, ANSI N13.1-1969 (ANSI).
 - (d) Criteria for Film Badge Performance, ANSI 13.7-1972 (ANSI).
 - (e) Radiation Protection Instrumentation Test and Calibration, ANSI N323-1978 (ANSI)
 - (f) Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry: Environmental Applications, ANSI N545-1975 (ANSI).
 - (g) Standards for Protection Against Radiation (10 CFR 20).
 - (h) Radiation Protection Standards Reports (ICRP).
 - (i) Reports (ICRU)
 - (1) Report 20, 1971, Radiation Protection Instrumentation and Its Application.
 - (2) Report 19, 1968, Radiation Quantities and Units.
 - (3) Report 14, 1969, Radiation Dosimetry.
 - (j) Safety Series (IAEA).
 - (k) Electronic Product Radiation Control, Subpart 3 of P.L. 90-602, as amended on October 18, 1968.
 - (l) Technical Considerations in Emergency Instrumentation Preparedness, BNWL-1742, 1974. (DOE)

- (1) Phase II-C - Emergency Radiological and Meteorological Instrumentation for Fuel Reprocessing Facilities, BNWL-1857, 1976.
- (2) Phase II-D - Evaluation Testing and Calibration Methodology for Emergency Radiological Instrumentation, BNWL -1991, 1976.
- (3) Phase II-B - Emergency Radiological and Meteorological Instrumentation for Mixed Fuel Fabrication Facilities, BNWL-1742, 1974.
- (4) Phase II-A - Emergency Radiological and Meteorological Instrumentation Criteria for Reactors, BNWL-1635, 1972.

b. Occupational Medicine.

(1) Prescribed Standards.

- (a) Department of Energy Contractor Occupational Medical Program, Chapter VIII of this Order.

(2) Recommended Standards.

- (a) Scope, Objectives, and Functions of Occupational Health Programs, OUCH-213 (AMA).
- (b) Occupational Health Services for Employees, U.S. Department of Health, Education, and Welfare. Public Health Service Publication No. 1041 (May 1963)(USPHS).
- (c) An Administrative Guide for Federal Occupational Health Units, HEW, Public Health Service Publication No. 1325-A (March 1966), (USPHS).
- (d) Epidemiology in Occupational Disease and Injury, OUCH-290 (AMA).
- (e) Medical Aspects of Radiation Accidents Handbook, Eugene Saenger, M.D., Editor (GPO).

c. Industrial Hygiene.

(1) Prescribed Standards.

- (a) Current Threshold Limit Values (ACGIH).

- (b) Practices for Respiratory Protection, ANSI Z88.2-1969 (ANSI).

(2) Recommended Standards.

- (a) Hygienic Guide Series (AIHA).
- (b) Heating and Cooling for Man in Industry (AIHA).
- (c) Respirator Manual, LA-6370-M (DOE).
- (d) Industrial Ventilation Manual (ACGIH).
- (e) Industrial Noise Manual (AIHA).
- (f) Guide for Conservation of Hearing and Noise (AA00).
- (g) NIOSH Criteria Documents (NIOSH).

d. Public Health and Sanitation, Prescribed Standards

(1) Food

- (a) Food Service Sanitation Manual, DHEW Publication No. 78-2081 (FDA).
- (b) The Vending of Food and Beverages, USPHS Publication No. 546 (1965).

(2) Water

- (a) National Interim Primary Drinking Water Regulations, Publication No. EPA-57019-76-003 (EPA).
- (b) Manual for Evaluating Public Drinking Water Supplies, Publication No 1820 (EPA).
- (c) Manual of Individual Water Supply Systems, Publication No. 430 9/73-003 (EPA).
- (d) Quality Standards for Bottled Water (21 CFR 11).
- (e) Sanitary Standard for Manufactured Ice, USPHS 1183 (1964).
- (f) GSA Handbooks on Performance Standards for Cleaning Public Buildings (GSA).

8. OCCUPATIONAL SAFETY.a. General Safety.(1) Prescribed Standards.

- (a) Facilities General Design Criteria, DOE N 1321.96.
- (b) Forest Service Safety Standards (USDA).
- (c) Boiler and Pressure Vessel Code; Sections I-XI (ASME).
- (d) ANSI Standards for Safety, as applicable.
- (e) Occupational Safety and Health Program for Governemnt-Owned, Contractor-Operated Facilities, DOE 5483.1.
- (f) Occupational Safety and Health Standards, 29 CFR 1910.
- (g) Safety and Health Regulations for Construction, 29 CFR 1926.
- (h) Safety and Health Regulations for Ship Repairing, 29 CFR 1915.
- (i) Safety and Health Regulations for Shipbuilding, 29 CFR 1916.
- (j) Safety and Health Regulations for Shipbreaking, 29 CFR 1917.
- (k) Safety and Health Regulations for Longshoring, 29 CFR 1918.
- (l) Department of Defense Explosive Safety Board Standards (Ordnance Operations).
- (m) Department of Navy Standards (for Naval Reactors program applications) (NAV).

(2) Recommended Standards.

- (a) Chemical Rocket Propellant Hazards, JANNAF Propulsion Committee, Volume I-General Safety Engineering Design Criteria, NTIS-AD 889763, May 1970. Volume II-Solid Rocket Propellant Processing, Handling, Storage, and Transportation, NTIS-AD 870258, May 1970. Volume III-Liquid Propellant Handling, Storage, and Transportation, N.T.I.S.-AD 870259, May 1970. (Quantity distance tables are expected-OSHA/NFPA QD tables apply where appropriate).
- (b) Manual Sheets (MCA).

- (c) Chemical Safety Data Sheets (MCA).
- (d) Accident Prevention Manual for Industrial Operations (NSC).
- (e) Supervisor's Safety Manual (NSC).
- (f) Handbook of Laboratory Safety (CRC).
- (g) Handbook of Rigging, W.E. Rossnagel, McGraw-Hill Book Co., Inc., publishers. (McGraw).
- (h) Data Sheet Series (NSC).
- (i) Matheson Gas Data Book (MPD).
- (j) Handling Hazardous Materials, NASA SP-5032 (NASA).
- (k) Testing Materials Standards (those applicable to safety) (ASTM).
- (l) Handbook of Compressed Gases (CGA).
- (m) Service Station Safety, Accident Prevention Manual 5 (API).

b. Construction Safety.

(1) Prescribed Standards.

- (a) Construction Safety Programm, Chapter IX of this Order.
- (b) Pipeline Safety Standards (49 CFR 192).
- (c) Safety and Health Regulations for Construction (29 CFR 1926 Part A).
- (d) Prevention, Control, and Abatement of Environmental Pollution, Chapter XII of this Order.

(2) Recommended Standards.

- (a) Manual of Accident Prevention in Construction (AGCA).
- (b) Guidelines for Minimizing Soil Erosion and Water and Air Pollution During Construction, Soil Conservation Service Engineering Memorandum 66, June 19, 1968 (USDA).

c. Crane Safety.(1) Prescribed Standards.

(a) ANSI Series B 30.

(b) Crane Manufacturers Association of America, Specification No. 70 (CMAA).

(2) Recommended Standard: Requirements for Hoisting and Rigging of Special Components and Equipment, RDT F8-6 (DOE).d. Drilling Safety.(1) Prescribed Standards.

(a) Petroleum Safety Orders, Administrative Code, Title 8, Chapter 4, Subchapter 14, State of California (except the requirement of paragraph (b) Section 6640, of article 41 of the 1959 orders is permanently waived-API PR 9B applies). (CALIF)

(b) Applicable Division of Production Specifications and Recommended Practices on Oil Field Equipment (API).

(c) Safe Practices in Drilling Operations, Third Edition, 1967, RP 2010 (API).

(2) Recommended Standards.

(a) Rotary Drilling Handbook on Accident Prevention and Safe Operating Practices (IAODC).

(b) Applicable Division of Production Bulletins (API).

e. Electrical Safety.(1) Prescribed Standards.

(a) National Electrical Code, ANSI/NFPA No. 70-1978.

(b) National Electrical Safety Code (ANSI-C2-1977).

(2) Recommended Standards.

(a) Electrical Engineering Regulations, CG-259, U.S. Coast Guard (DOT).

- (b) Miscellaneous Electrical Equipment List, CG-293, U.S. Coast Guard (DOT).
- (c) Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines, NBS No. 81.
- (d) Electrical Safety Guides for Research, Safety, and Fire Protection, Bulletin No. 13 (DOE).
- (e) Safety Guidelines for High Energy Accelerator Facilities, TID 23992 (DOE).
- (f) IEEE Standards for Safety (IEEE).

f. Explosives Safety.

(1) Prescribed Standards.

- (a) Development and Readiness Command Safety Manual, DARCOM 385-100, U.S. Army Materiel Development and Readiness Command. (AMC)
- (b) DOD Ammunition and Explosives Safety Standards, DOD 5154.4S (DOD).
- (c) Blaster's Handbook (DuPont).
- (d) Facilities General Design Criteria, DOE 6430 (to be issued).

(2) Recommended Standards.

- (a) Rules for Storing, Transporting, and Shipping Explosives, Pamphlet 5 (IME).
- (b) Safety in the Transportation, Storage, Handling, and Use of Explosives, Pamphlet 17 (IME).
- (c) Structures to Resist the Effects of Accidental Explosions, Department of the Army Technical Manual TM5-1300 (AMC).
- (d) Safety Guide for the Prevention of Radio Frequency Radiation Hazards, Pamphlet 20 (IME).
- (e) Evaluation of Explosive Storage Safety Criteria, May 1970, AD 871 194 (NTIS).

g. Firearm Safety.(1) Prescribed Standards.

- (a) GSA Handbook HB, Federal Protective Service Uniformed Force Operations, PBS P5930.17.
- (b) Pistols and Revolvers, FM 23-35, 7-60 (AMC).
- (c) Safety with Firearms Handbook (NRA).

(2) Recommended Standards.

- (a) Education and Training Security Police, Training Course AMCP 621-1 (AMC).
- (b) Military Police Preservation of Order Activities, AMCR 190-3, 12-71 (AMC).

h. Mine and Tunnel Safety.(1) Prescribed Standards.

- (a) P.L. 91-173 88 Stat. 742-804 as amended by P.L. 95-164, Federal Mine Safety and Health Act of 1977.
- (b) Tunnel Safety Orders, Administrative Code, Title 8, Chapter 4, Subchapter 20, State of California (CALIF).
- (c) Mine Safety Orders, Administrative Code, Title 8, Chapter 4, Subchapter 12, State of California (CALIF).

(2) Recommended Standard: Tunneling: Recommended Safety Rules, Bulletin 644, Bureau of Mines. (BUMINES)9. NUCLEAR SAFETY.a. Reactor Safety.(1) Prescribed Standard: Safety of Department of Energy Owned Reactors, Chapter VI of this Order.(2) Recommended Standards.

- (a) Applicable Nuclear Energy (RDT) Standards (See index of NE (RDT) Standards) (DOE).

- (b) Licensing of Production and Utilization Facilities, 10 CFR 50 and appendixes, including safety guides issued to described methods of implementing these regulations.
- (c) Operators' Licenses, 10 CFR 55.
- (d) Reactor Site Criteria, 10 CFR 100.
- (e) Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements, 10 CFR 115.
- (f) Safe Operation of Critical Assemblies and Research Reactors, 1971 Edition, Safety Series No. 35 (IAEA).
- (g) Safe Operation of Nuclear Power Plants, Safety Series 31 (IAEA).
- (h) IEEE Standards for Safety,(IEEE).
- (i) ANSI Series 15 (ANSI).

b. Nuclear Criticality Safety.

- (1) Prescribed Standard: Nuclear Criticality Safety, Chapter IV of this Order.
- (2) Recommended Standards.
 - (a) Nuclear Safety Guide, TID-7016 (DOE)
 - (b) Criticality Accident Alarm System, ANSI/ANS-8.3-1979 (ANSI).
 - (c) Safety Standards for Operations with Fissionable Materials Outside Reactors, ANSI N16.1-1975 (ANSI).
 - (d) Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Materials, (ANSI/ANS 8.5-1979) (ANSI).
 - (e) Critical Dimensions of Systems Containing Uranium-235, Plutonium-239, and Uranium-233, TID-7028 (DOE).
 - (f) Critical and Safe Masses and Dimensions of Lattices of U and UO₂ in Water, DuPont-1014 (DUPONT).

- (g) United Kingdom Atomic Energy Authority Handbook of Criticality Data, AHSB(S), Handbook 1 (1st Revision).
- (h) Criticality Handbook, ARH-600, (3 volumes).
- (i) ANSI Series 16.
- (j) "Immediate Evacuation Signal for Use in Industrial Installations," ANSI/ANS-N2.3-1979 (ANSI).

c. Facility Safety.

(1) Prescribed Standards.

- (a) Safety of Nonreactor Nuclear Facilities, Chapter V of this order.
- (b) Part II, Section A, Unirradiated Enriched Uranium Storage Facilities, DOE 6430 (to be issued).
- (c) Criteria for Plutonium Storage Facilities (AEC Deputy General Manager's Letter of March 18, 1971) (DOE).
- (d) Part II, Section B, Facilities General Design Criteria, DOE N 1321.96.

(2) Recommended Standards.

- (a) Licensing of Production and Utilization Facilities, (10 CFR 50).
- (b) Special Nuclear Material (10 CFR 70).
- (c) Rules of General Applicability to Licensing of Byproduct Material (10 CFR 30).
- (d) Licensing of Source Material (10 CFR 40).
- (e) Operators' Licenses (10 CFR 55).
- (f) Appropriate Portions of Reactor Site Criteria (10 CFR 100).
- (g) Nuclear Air Cleaning Handbook ERDA 76-21, (DOE).

10. TRANSPORTATION SAFETY.

a. Aircraft Safety.

(1) Prescribed Standards.

- (a) Federal Aviation Regulations (DOT).
- (b) Aviation Safety, Chapter XIII of this Order.

(2) Recommended Standard: Aviation Ground Operation Safety Handbook (NSC).

b. Motor Vehicle and Traffic Safety.

(1) Prescribed Standards.

- (a) Motor Carrier Safety Regulations, Federal Highway Administration (DOT).
- (b) Hazardous Materials Regulations (49 CFR 397) (DOT).
- (c) Manual on Uniform Traffic Control Devices for Streets and Highways, Bureau of Public Roads (DOT).
- (d) Inspection Requirements for Motor Vehicles, Trailers and Semi-trailers Operated on Public Highways, ANSI D7.1-1973 (ANSI).
- (e) Uniform Vehicle Code (NCUTLO).
- (f) A Policy on Geometric Design on Rural Highways (AASHTO).

(2) Recommended Standards.

- (a) Traffic Engineer's Handbook (ITE and NSC).
- (b) Traffic Engineering, Matson, Smith and Hurd. McGraw-Hill Book Company, Inc., publishers (McGraw)
- (c) Motor Fleet Safety Manual (NSC).
- (d) Traffic Accident Investigator's Manual for Police, The Traffic Institute, Northwestern University (NWU).

(e) Handbook of Highway Safety Design and Operating Practices (DOT).

c. Vessels (Marine) Safety Prescribed Standards:

- (1) Rules and Regulations for Uninspected Vessels, Booklet 258, U.S. Coast Guard (DOT).
- (2) Rules and Regulations for Numbering of Undocumented Vessels and the Reporting of Boating Accidents, Booklet 267, U.S. Coast Guard (DOT).
- (3) Equipment Lists, Booklet 190, U.S. Coast Guard (DOT).
- (4) Marine Engineering Regulations and Material Specifications, Booklet 115, U.S. Coast Guard (DOT).
- (5) Ventilation System for Small Craft, Booklet 395, U.S. Coast Guard (DOT).

d. Transportation of Radioactive Material

(1) Prescribed Standards.

- (a) Safety Standards for the Packaging of Radioactive and Fissile Materials, Chapter III of this Order.
- (b) Nuclear Criticality Safety, Chapter IV of this Order (applies for fissionable materials).
- (c) Department of Transportation Hazardous Materials Regulations (49 CFR 100-179).
- (d) Packaging of Radioactive Materials for Transport (10 CFR 71).
- (e) Physical Protection of Special Nuclear Material, (DOE ORDER 5632.2).

(2) Recommended Standards.

- (a) Cask Designers Guide ORNL-NSIC-68, 1970 (DOE)
- (b) Structural Analysis of Shipping Casks, ORNL-TM-1312, Volumes I through X (DOE).
- (c) Packaging of Uranium Hexafluoride for Transport, ANSI N14.1-1971 (ANSI).

e. Railroad Safety Prescribed Standard: Federal Railroad Administration, (49 CFR 211-240)

SOURCES OF SUPPLY FOR STANDARDS

1. AA00 American Academy of Ophthalmology and Otolaryngology
15 Second Street, S.W.
Rochester, Minnesota 55901
2. AASHTO American Association of State Highway and Transportation
Officials
444 North Capitol Street, N.W.
Washington, D.C. 20001
3. ACGIH American Conference of Governmental Industrial Hygienists
2205 South Road
Cincinnati, Ohio 45238
4. AGCA Associated General Contractors of America, Inc.
1957 E Street, N.W.
Washington, D.C. 20006
5. AIHA American Industrial Hygiene Association
475 Wolf Ledges Parkway
Akron, Ohio 44311
6. AMC United States Department of the Army
Headquarters, U.S. Army Material Development and
Readiness Command
Pentagon
Washington, D.C. 20310
7. ANSI American National Standards Institute
1430 Broadway
New York, New York 10018
8. API American Petroleum Institute
2101 L Street N.W.
Washington, D.C. 20037
9. ASME American Society of Mechanical Engineers, Inc.
345 East 47th Street
New York, New York 10017
10. ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, Pennsylvania 19103

11. AWWA American Water Works Association, Inc.
666 Quincy Steeet
Denver, Colorado 80235
12. BUMINES Publications Section
U.S. Bureau of Mines
4800 Forbes Avenue
Pittsburgh, Pennsylvania 15213
13. CALIF State of California
General Services Publications
P.O. Box 1015
North Highland, California 95660
14. CGA Compressed Gas Association, Inc.
500 Fifth Avenue
New York, New York 10036
15. CMAA Crane Manufacturers Association of America, Inc.
1326 Freeport Road
Pittsburgh, Pennsylvania 15238
16. CRC C. R. C. Press, Inc.
2000 N.W. 24th Street
Boco Raton, Florida 33431
17. DOD Department of Defense
The Pentagon
Washington, D.C. 20301
18. DNA Field Command
Defense Nuclear Agency
Albuquerque, New Mexico
19. DOT Department of Transportation
400 7th Street, S.W.
Washington, D.C. 20590
20. DOT Coast Guard
Department of Transportation
400 7th Street, S.W.
Washington, D.C. 20590
21. DUPONT E.I. duPont de Nemours and Company
Petrochemicals Department
Wilmington, Delaware 19898

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22. EPA Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
23. FDA Food and Drug Administration
5600 Fishers Lane
Rockville, Maryland 20857
24. FEMA Federal Emergency Management Agency
Administrative Services Division
Printing and Publications Branch
Room 404
Washington, D.C. 20472
25. FM Factory Mutual Engineering Division
1151 Boston-Providence Turnpike
Norwood, Massachusetts 02062
26. GPO Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402
27. GSA General Services Administration
General Services Building
18 and F Street, N.W.
Washington, D.C. 20405
28. IAEA UNIPUB
P.O. Box 433, Murray Hill Station
New York, New York 10016
29. ICRP International Committee on Radiation Protection
4201 Lexington Avenue
New York, New York 10017
30. ICRU International Commission on Radiation Units
and Measurements
7910 Woodmont Avenue
Washington, D.C. 20014
31. IEEE Institute of Electrical and Electronic
Engineers, Inc.
345 East 47th Street
New York, New York 10017
32. IME Institute of Makers of Explosives
420 Lexington Avenue
New York, New York 10017

33. IRI Industrial Risk Insurers
85 Woodland Street
Hartford, Connecticut 06102
34. ISO International Standards Organization
c/o American National Standards Institute
1430 Broadway
New York, New York 10018
35. ITE Institute of Transportation Engineers, Inc.
Suite 905, 1815 North Fort Myer Drive
Arlington, Virginia 22209
36. MCA Chemical Manufacturers Association
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009
37. MCGRAW McGraw-Hill Book Company, Inc.
1221 Avenue of Americas
New York, New York 10020
38. MPD G. D. Searle and Company
Will Ross, Inc./Matties or Products Division
P.O. Box 85
East Rutherford, New Jersey 07073
39. NASA National Aeronautics and Space Administration
400 Maryland Avenue, S.W.
Washington, D.C. 20546
40. NAV Commanding Officer
(Code 512) Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, Pennsylvania 19120
41. NBS National Bureau of Standards
Department of Commerce
Washington, D.C. 20234
42. NCRP National Council on Radiation Protection and
Measurement
7910 Woodmont Avenue, Suite 1016
Bethesda, Maryland 20014
43. NCUTLO National Committee on Uniform Traffic Laws
and Ordinances
1776 Massachusetts Avenue, N.W.
Washington, D.C. 20036

44. NFPA National Fire Protection Association
470 Atlantic Avenue
Boston, Massachusetts 02210
45. NIOSH Publications
NIOSH (MSR6)
4676 Columbia Parkway
Cincinnati, Ohio 45226
46. NRA National Rifle Association
1600 Rhode Island Avenue, N.W.
Washington, D.C. 20036
47. NSC National Safety Council
444 North Michigan Avenue
Chicago, Illinois 60611
48. NTIS National Technical Information Service
Department of Commerce
Springfield, Virginia 22151
49. NWU Traffic Institute
Northwestern University
405 Church Street
Evanston, Illinois 60201
50. OMB Office of Management and Budget
Old Executive Office Building
17th and Pennsylvania Avenue, N.W.
Washington, D.C. 20503
51. OSHA OSHA Publications Office
U.S. Department of Labor
Room S1212
3rd Street and Constitution Avenue, N.W.
Washington, D.C. 20210
52. UL Underwriters' Laboratories, Inc.
207 East Ohio Street
Chicago, Illinois 60611
53. USDA Department of Agriculture
Washington, D.C. 20250
54. USPHS Public Health Service
Office of Public Affairs
100 Independence Avenue, S.W.
Room 7406
Washington, D.C. 20201