

U.S. Department of Energy
Washington, D.C.

ORDER

DOE 5480.4

5-15-84

**SUBJECT: ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH
PROTECTION STANDARDS**

1. PURPOSE. To specify and provide requirements for the application of the mandatory environmental protection, safety, and health (ES&H) standards applicable to all Department of Energy (DOE) and DOE contractor operations; to provide a listing of reference ES&H standards; and to identify the sources of the mandatory and reference ES&H standards.
2. CANCELLATION. DOE 5480.1A, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION PROGRAM FOR DOE OPERATIONS, Chapter I, of 8-13-81.
3. SCOPE. The provisions of this Order apply to all Departmental Elements and contractors performing work for the Department as provided by law and/or contract and as implemented by the appropriate contracting officer.
4. APPLICABILITY. This Order shall be followed during facility design, construction, operation, modification, and decommissioning. Facilities covered by this Order include those owned, leased, or otherwise controlled by the DOE or leased by DOE contractors for use in work for the DOE, and include those of either a permanent or temporary nature (e.g., trailers, rented spaces, and field sites). Specifically, this Order is applicable in all situations where, under the contractual arrangements for the work to be performed, DOE has authority to establish and enforce environmental protection, safety, and health protection program requirements.
 - a. This Order applies to Departmental Elements and DOE contractor organizations which are subject to the mandatory ES&H standards of this Order, as well as non-DOE legally required ES&H standards which are not included in this Order. For example, where a DOE contractor is also a Nuclear Regulatory Commission licensee, the DOE contractual relationship does not exempt the contractor from compliance with the Nuclear Regulatory Commission license or ES&H regulations. Similarly, where Department of Energy contractors are tenants on a Department of Defense installation and a host-tenant agreement has been executed, the DOE contractual relationship does not provide exemption from the ES&H standards required by the host. In such cases, both DOE and non-DOE ES&H requirements must be met.
 - b. This Order also applies to Departmental Elements and DOE contractor organizations at DOE-owned reactor plants which are prototype reactor plants for design and development of naval reactor plants, and which are concomitantly used for training of operators for naval nuclear propulsion plants. Since organizations at these plants have certain unique requirements because of their military application, all of them and their supporting laboratory facilities are under the cognizance of the Deputy

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INITIATED BY:
Assistant Secretary, Policy,
Safety, and Environment

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Assistant Secretary for Naval Reactors, NE-60, who jointly serves as the Director of the Naval Nuclear Program, U.S. Navy. Accordingly, the Deputy Assistant Secretary for Naval Reactors is responsible for assuring that adequate standards are applied for emergency preparedness, environmental protection, nuclear safety, and health protection for organizations at naval reactor prototype plants and supporting laboratory facilities owned by DOE.

- c. In instances where both DOE and non-DOE ES&H standards are applicable and mandatory and there are conflicts between such standards, the ES&H standards providing greater protection shall govern. Similarly, where there are conflicts between the mandatory ES&H standards of this Order, or between those of this Order and other DOE Orders or requirements, the mandatory ES&H standards or requirements providing the greater protection shall govern.

5. BACKGROUND REGARDING EXEMPTIONS FROM MANDATORY ES&H STANDARDS.

- a. General Information. Depending on the origin of ES&H standards, non-compliance with a requirement of these standards is referred to as an exemption, variance, exception, interim order, waiver, or deviation. In virtually all cases, the definition of such non-compliance is essentially the same: a temporary or permanent release from the requirements of a statute, code, directive, regulation, order, or manual. For the purposes of this Order, a temporary or permanent release from the mandatory ES&H standards of Attachments 1 and 2 is termed an "exemption." Since this term may conflict with terms used in other DOE Orders or requirements, which DOE organizations may be subject to, the purposes of this background paragraph are to provide guidance and clarification in determining applicability of this Order or other mandatory ES&H requirements and procedures to be followed in requesting releases from these mandatory ES&H requirements.

- b. Specific Information.

- (1) DOE and DOE contractor organizations subject to this Order and DOE 5483.1A (Applicable to DOE contractor employee safety and health programs which are not subject to U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) jurisdiction. A listing of these contractors is maintained by the Office of Operational Safety, PE-24):
 - (a) DOE 5480.4 and DOE 5483.1A require compliance with the following OSHA standards: Title 29 CFR 1910, Title 29 CFR 1915, Title 29 CFR 1918, Title 29 CFR 1926, and Title 29 CFR 1928. In DOE 5483.1A, releases from these standards are termed "variances and exceptions."
 - (b) DOE and DOE contractor organizations subject to this Order and DOE 5483.1A must follow the procedures of DOE 5483.1A to request variances from, or exceptions to, the OSHA standards required by either of these Orders.

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- (2) DOE contractor organizations subject to this Order (but not subject to DOE 5483.1A), and also directly subject to OSHA jurisdiction (or State jurisdiction where required by an agreement between OSHA and a State) for employee safety and health (all DOE contractors not included on the listing of contractors maintained by the Office of Operational Safety, PE-24):
 - (a) OSHA (or a State, as appropriate) requires compliance with applicable OSHA (or State) safety and health standards. Releases from these standards are termed "variances or interim orders."
 - (b) DOE contractor organizations directly subject to OSHA (or State) jurisdiction must follow the procedures required by either OSHA (Title 29 CFR 1905), or a State, as appropriate, to request variances or interim orders from the OSHA (or State) standards.
- (3) DOE Organizations subject to this Order and DOE 3790.1 (Applicable to the occupational safety and health program for Federal employees, which is subject to U.S. Department of Labor, Occupational Safety and Health Administration jurisdiction):
 - (a) DOE 3790.1 requires compliance with the OSHA standards of Title 29 CFR 1960. Releases from these standards are termed "variances or interim orders."
 - (b) The DOE Federal employees safety and health program is subject to DOE 3790.1 and Title 29 CFR 1960. Therefore, for DOE Federal employee safety and health program matters, DOE organizations must follow the procedures of DOE 3790.1 and Title 29 CFR 1960 to request variances from or interim orders for the OSHA standards required by DOE 3790.1.
- (4) DOE and DOE contractor organizations subject to this Order and DOE 5480.1A, Chapter III (Applicable to the programs for assuring the safe packaging of fissile and other radioactive materials):
 - (a) DOE 5480.1A, Chapter III, requires compliance with several transportation and packaging standards, including Department of Transportation hazardous materials regulations, Title 49 CFR 100-199. Releases from these regulations are termed "exemptions," and are covered by 49 CFR 107 (Hazardous Materials Program Procedures).
 - (b) DOE and DOE contractor organizations subject to Title 49 CFR 100-199 must follow the procedures of 49 CFR 107 and DOE 5480.1A, Chapter III, to request exemptions from those requirements. For releases from all other mandatory standards of DOE 5480.1A, Chapter III, follow the procedures of either Attachment 1 or Attachment 2, as appropriate.

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- (5) DOE and DOE contractor organizations subject to this Order and non-DOE Federal or State ES&H statutes or implementing requirements (e.g., Department of Defense, Department of Transportation, Environmental Protection Agency, or Nuclear Regulatory Commission), excluding the OSHA standards and regulations of Title 49 CFR 107:
 - (a) Follow the procedures of the appropriate Federal or State agency to request the exemption from the statute or implementing requirement.
 - (b) Irrespective of whether the statute or implementing requirement is included in Attachment 1, follow the procedures of Attachment 1 to notify the Assistant Secretary, Policy, Safety, and Environment, PE-1, and the appropriate program Secretarial Officer(s) of the exemption request and the final disposition of the request.
- (6) DOE and DOE contractor organizations subject to (required as a matter of DOE policy, but not required as a matter of Federal or State statutes or implementing requirements) the mandatory ES&H standards of this and other Orders (except for DOE 3790.1, DOE 5480.1A, Chapter III as it pertains to 49 CFR 107, and DOE 5483.1A) must follow the procedures of Attachment 2 to request exemptions from these mandatory ES&H standards.
- (7) DOE and DOE contractor organizations subject to the "U.S. Department of Energy Explosives Safety Manual" (see Attachment 2, page 4, subparagraph 2e(6)(a)), must follow the procedures of that manual to request exemptions from the mandatory explosives safety standards of the manual.
- (8) DOE and DOE contractor organizations subject to this Order and the requirements of the Naval Reactor Program (at the DOE-owned prototype reactor plants for design and development of naval reactor plants (page 1, subparagraph 4b)) must follow the procedures required by the Deputy Assistant Secretary for Naval Reactors to request exemptions from the mandatory standards in the categories of emergency preparedness, environmental protection, nuclear safety, and health protection. For exemptions from mandatory ES&H standards in all other categories, follow the procedures of either Attachment 1 or Attachment 2, as appropriate.

6. REFERENCES.

- a. DOE 3790.1, OCCUPATIONAL SAFETY AND HEALTH PROGRAM FOR FEDERAL EMPLOYEES, of 12-11-80, which establishes the policy for the implementation and administration of the occupational, safety, and health program for Federal Employees.

- b. DOE 5480.1A, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION PROGRAM FOR DOE OPERATIONS, of 8-13-81, which establishes the environmental protection, safety, and health protection program for DOE operations.
- c. DOE 5483.1A, OCCUPATIONAL SAFETY AND HEALTH PROGRAM FOR DOE CONTRACTOR EMPLOYEES AT GOVERNMENT-OWNED CONTRACTOR-OPERATED FACILITIES, of 6-22-83, which provides requirements and procedures for the GOCO safety and health program.
- d. DOE PR 9-50.704-2(a), which specifies the standard clause used in contracts where DOE elects to enforce occupational safety and health requirements.
- e. DOE PR 9-50.704-2(b), which specifies the standard clause used in contracts where DOE elects to enforce radiation protection and nuclear criticality safety requirements.
- f. Title 49 CFR 107, "Hazardous Materials Program Procedures," which provides Federal requirements for the safe transportation of hazardous materials.
- g. Public Law 91-596, "Occupational Safety and Health Act of 1970," which establishes Federal requirements for assuring occupational safety and health protection for employees.
- h. Title 29 CFR 1910, "Occupational Safety and Health Standards," which provides general industry safety and health standards pursuant to Public Law 91-596.
- i. Title 29 CFR' 1915, "Occupational Safety and Health Standards for Shipyard Employees', which provides shipyard safety and health standards pursuant to Public Law 91-596.
- j. Title 29 CFR 1928, "Occupational Safety and Health Standards for Agriculture," which provides agricultural safety and health standards pursuant to Public Law 91-596.
- k. Title 29 CFR 1905, "Rules of Practice for Variances, Limitations, Variations, Tolerances, and Exemptions under the Williams-Steiger Occupational Safety and Health Act of 1970," which provides rules and procedures for obtaining variances from or interim Orders for OSHA standards pursuant to Public Law 91-596.
- l. Title 29 CFR 1926, "Safety and Health Regulations for Construction," which provides construction safety and health standards pursuant to Public Law 91-596.

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- m. Title 29 CFR 1918, "Safety and Health Regulations for Longshoring," which provides longshoring safety and health standards pursuant to Public Law 91-596.
- n. Title 29 CFR 1960, "Safety and Health Provisions for Federal Employees," which provides the regulations and guidelines for the implementation of the DOE Federal Employee Safety and Health Program pursuant to Public Law 91-596.

7. DEFINITIONS.

- a. Contractor, for purposes of this Order, includes any DOE prime contractor or subcontractor subject to the contractual provisions of DOE PR-50.704.2(a) or specific negotiated contract provisions indicating DOE's decision to enforce environmental protection, safety, and health protection requirements.
- b. Field Level Exemption is an interim release from a mandatory standard, granted by the field organization after a request for a temporary or permanent exemption. Such exemptions shall not exceed 180 days and are not renewable.
- c. Field Organization is a Departmental Element located outside the Washington, D.C. geographical area.
- d. Line Organization includes the program Secretarial Officer, the program office, and the field organization responsible for the management of a given DOE operation.
- e. Mandatory Standards are those standards of this Order adopted by DOE that define the minimum requirements that DOE and its contractors must comply with to the extent they apply to the activities being conducted.
- f. Occupational Safety and Health Administration (OSHA) is an agency of the U.S. Department of Labor, established under Public Law 91-596 with major responsibilities to promulgate, prescribe, and enforce occupational safety and health standards.
- g. Operations are those activities funded by DOE for which DOE has responsibility for environmental protection, safety, and health protection.
- h. Permanent Exemption is a release from a mandatory standard of this Order. Such exemptions are not time-specified.
- i. Program Office is a Headquarters organization which is responsible for assisting and supporting field organizations in safety and health, administrative, management, and technical areas, and reports to the cognizant program Secretarial Officer.

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- j. Program Secretarial Officer means an outlay program manager, which includes the Assistant Secretaries for Conservation and Renewable Energy, Fossil Energy, Defense Programs, and Nuclear Energy, and the Director of Energy Research.
- k. Reference Standards are those guides or standards of this Order adopted by DOE that DOE and its contractors should consider for guidance, as applicable, in addition to the mandatory standards.
- l. Standard means a specified set of rules or conditions concerned with: the class of components; delineation of procedures; definition of terms; specifications of materials, performance, design, or operations; or measures of quality in describing materials, products, systems, services or practices. Standards may be specified as mandatory or reference.
- m. Temporary Exemption is a short-term release from a mandatory standard of this Order. Such exemptions shall not exceed 1 year, except that in unusual cases a renewal may be granted, not to exceed an additional year.

8. RESPONSIBILITIES AND AUTHORITIES.

a. Program Secretarial Officers shall:

- (1) Assure compliance with the mandatory standards of this Order.
- (2) Review, coordinate with, and submit to the Assistant Secretary for Policy, Safety, and Environment, PE-1, requests for exemptions from the mandatory standards, as delineated by the exemption procedures of Attachment 2.
- (3) Prescribe, as appropriate, additional or more stringent standards for individual facilities after appropriate consultation with PE-1, field organization management, and, as appropriate, other program Secretarial Officers.
- (4) Identify needs to PE-1 for new standards to address environment, safety, and health concerns.

b. Heads of Field Organizations shall:

- (1) Assure compliance with the mandatory standards of this Order.
- (2) Notify PE-1 and the appropriate program Secretarial Officers of requests for exemptions from non-DOE Federal or State mandatory ES&H statutes or implementing directives and the final disposition of such requests, as delineated by Attachment 1.
- (3) Review, coordinate with, and submit to the appropriate program Secretarial Officers requests for exemptions from the mandatory standards as delineated by the exemption procedures of Attachment 2.

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- (4) Assure that the level of performance of safety and health is maintained consistent with the intent of the mandatory standards, for those activities under their direction.
- (5) Prescribe, as appropriate, additional or more stringent standards, based on the determination that such standards are essential to safety and proper performance of their function.
- (6) Identify needs to PE-1 for new standards to address environment, safety, and health concerns.

c. Assistant Secretary, Policy, Safety, and Environment shall:

- (1) Provide independent overview to assess the degree of compliance with the mandatory ES&H standards. Where non-compliance is noted, recommend corrective action and provide appropriate follow-up to assist DOE management in achieving compliance.
- (2) Maintain cognizance of requests for exemptions from the standards which are mandatory as a result of ES&H statutes or implementing requirements in Attachment 1.
- (3) Review, approve, or deny, as appropriate, and respond to requests for exemptions from the standards which are mandatory as a matter of DOE policy, as delineated by the exemption procedures of Attachment 2.
- (4) Review nationally recognized environment, safety and health requirements, guides, codes, and standards and prescribe those applicable to DOE activities, following appropriate review and comment by affected Departmental Elements.
- (5) Determine the need for, and develop or promote the development of, new or revised standards applicable to environment, safety, and health.
- (6) Act as liaison, as appropriate, with voluntary standards bodies and other Federal agencies, on environment, safety, and health standards to reflect DOE needs and requirements.
- (7) Develop and assure appropriate mechanisms for maintaining and revising the standards listings of Attachment 1, Attachment 2, and Attachment 3.
- (8) Provide interpretations of this Order.

BY ORDER OF THE SECRETARY OF ENERGY:



WILLIAM S. HEFFELFINGER
Director of Administration

MANDATORY ES&H STANDARDS (STATUTORY REQUIREMENTS)

1. This Attachment addresses those standards that are mandatory as a result of non-DOE Federal or State ES&H statutes and/or implementing requirements. Additional ES&H standards may be mandatory as a result of applicable Federal or State ES&H statutes and/or implementing requirements. These additional mandatory ES&H standards are to be treated the same as those that are listed in paragraph 2 of this Attachment, in terms of conformance therewith and exemption notification procedures therefor. The abbreviated source names expressed parenthetically at the end of references may be used with Attachment 4 to locate copies of the referenced documents.
2. Standards that are mandatory as a result of non-DOE Federal ES&H statutes and/or implementing requirements include:
 - a. Emergency Preparedness. None
 - b. Environmental Protection.
 - (1) Executive Orders (E.O.).
 - (a) E.O. 11987, "Exotic Organisms" (EPA).
 - (b) E.O. 11644, "Floodplain Management" (EPA).
 - (c) E.O. 11989 and E.O. 11988, "Off-Road Vehicles on Public Lands" (EPA).
 - (d) E.O. 11990, "Protection of Wet Lands" (EPA).
 - (e) E.O. 11514 and E.O. 11991, "Protection and Enhancement of Environmental Quality" (EPA).
 - (f) E.O. 12088, "Federal Compliance with Pollution Control Standards" (EPA).
 - (g) E.O. 12286, "Response to Environmental Damage" (EPA).
 - (h) E.O. 12342, "Environmental Safeguards on Activities for Animal Damage Control on Federal Lands" (EPA).
 - (2) The National Historic Preservation Act of 1966. Title 36 CFR 800, "Protection of Historic and Cultural Properties" (EPA).
 - (3) Title 42 U.S.C. 7401, Et Seq., "Clean Air Act."
 - (a) Title 40 CFR 50, "EPA Regulations on National Primary and Secondary Ambient Air Quality Standards" (EPA).

- (b) Title 40 CFR 53, "EPA Regulations on Ambient Air Monitoring Reference and Equivalent Methods" (EPA).
 - (c) Title 40 CFR 55, "EPA Regulations on Energy Related Authority" (EPA).
 - (d) Title 40 CFR 58, "EPA Ambient Air Quality Surveillance Regulations" (EPA).
 - (e) Title 40 CFR 60, "EPA Regulations on Standard of Performance for New Stationary Sources" (EPA).
 - (f) Title 40 CFR 61, "EPA Regulations on National Emission Standards for Hazardous Air Pollutants" (EPA).
 - (g) Title 40 CFR 65, "EPA Regulations on Delayed Compliance Order Under the Clean Air Act" (EPA).
 - (h) Title 40 CFR 81, "EPA Regulations Designating Areas for Air Quality Planning Purposes" (EPA).
- (4) Title 33 U.S.C. 1251, Et Seq, "Clean Water Act."
- (a) Title 33 CFR 153-157, "Coast Guard Regulations on Control of Pollution by Oil and Hazardous Substances" (DOT).
 - (b) Title 33 CFR 159, "Coast Guard Regulations on Marine Sanitation Devices" (DOT).
 - (c) Title 33 CFR 320, 322-329, "Army Corps of Engineers Permit Programs Regulations" (DOD).
 - (d) Title 40 CFR 110, "EPA Regulations on Discharge of Oil" (EPA).
 - (e) Title 40 CFR 112, "EPA Regulations on Oil Pollution Prevention" (EPA).
 - (f) Title 40 CFR 113, "EPA Regulations on Liability Limits for Small Onshore Storage Facilities" (EPA).
 - (g) Title 40 CFR 114, "EPA Interim Regulations on Penalties; Oil Pollution Prevention Regulations" (EPA).
 - (h) Title 40 CFR 116, "EPA Designation of Hazardous Substances" (EPA).
 - (i) Title 40 CFR 117, "EPA Regulations on Determination of Reportable Quantities for Hazardous Substances" (EPA).

- (j) Title 40 CFR 120, "EPA Regulations on Water Quality Standards" (EPA).
- (k) Title 40 CFR 121, "EPA Regulations on State Certification of Activities Requiring a Federal License or Permit" (EPA).
- (l) Title 40 CFR 122, "EPA Regulations on Consolidated Permit Program" (EPA).
- (m) Title 40 CFR 125, "EPA Regulations on Criteria and Standards for the Pollutant Discharge Elimination System" (EPA).
- (n) Title 40 CFR 129, "EPA Regulations on Toxic Pollutant Effluent Standards" (EPA).
- (o) Title 40 CFR 133, "EPA Regulations on Secondary Treatment Information" (EPA).
- (p) Title 40 CFR 136, "EPA Regulations on Test Procedures for the Analysis of Pollutants" (EPA).
- (q) Title 40 CFR 140, "EPA Regulations on Marine Sanitation Device Standard" (EPA).
- (r) Title 40 CFR 220-225, 227-229, "EPA Ocean Dumping Regulations and Criteria" (EPA).
- (s) Title 40 CFR 230, "EPA Guideline on Discharge of Dredged or Fill Material into Navigable Waters" (EPA).
- (t) Title 40 CFR 231, "EPA Regulations on Disposal Site Determinations Under Clean Water Act" (EPA).
- (u) Title 40 CFR 401, "EPA Regulations on General Provisions for Effluent Guidelines and Standards" (Note: Title 40 CFR 401.14, "Cooling Water Intake Structures") (EPA).
- (v) Title 40 CFR 403, "EPA Pretreatment Regulations for Existing and New Sources of Pollution" (EPA).
- (w) Title 40 CFR 413, "EPA Regulations for Electroplating Point-Source Category" (EPA).
- (x) Title 40 CFR 423, "EPA Regulations - Guidelines and Standards for Steam Electric Power Generation" (EPA).
- (y) Title 40 CFR 457, "Effluent Guidelines and Standards for Explosive Manufacturing" (EPA).

- (z) Title 40 CFR 459, "Effluent Guidelines for Photographic Processing" (EPA).
- (aa) Title 40 CFR 542, "Financial Responsibilities for Water Pollution" (EPA).
- (bb) Title 40 CFR 149, "Protection of Sole Source Aquifers" (EPA).
- (5) Title 42 U.S.C. 300f, Et Seq., "Safe Drinking Water Act."
 - (a) Title 40 CFR 141, "EPA National Interim Primary Drinking Water Regulations" (EPA).
 - (b) Title 40 CFR 142, "EPA National Interim Primary Drinking Water Regulations Implementation" (EPA).
 - (c) Title 40 CFR 143, "EPA National Secondary Drinking Water Regulations" (EPA).
 - (d) Title 40 CFR 146, "EPA Criteria and Standards for Underground Injection Control Program" (EPA).
- (6) Title 16 U.S.C. 1451, Et Seq., "Coastal Zone Management Act of 1972."
 - (a) Title 15 CFR 921, "NOAA Guidelines on Estuarine Sanctuaries" (DOC).
 - (b) Title 15 CFR 923, "NOAA Coastal Zone Management Program Approval Regulations" (DOC).
 - (c) Title 15 CFR 930, "NOAA Regulations on Federal Consistency with Approved Coastal Management Program" (DOC).
 - (d) Title 15 CFR 931, "NOAA Regulations on Coastal Energy Impact Program" (DOC).
- (7) Radiation.
 - (a) Title 10 CFR 712, "Grand Junction Remedial Action Criteria" (DOE).
 - (b) Title 40 CFR 192, "EPA Standards for Protection Against Uranium Mill Tailings" (EPA).
- (8) Title 42 U.S.C. 9615 (Superfund), "Comprehensive Environmental Response, Compensation, and Liability Act of 1980," Title 40 CFR 300, Hazardous Substances; National Oil and Hazardous Substances Pollution Contingency Plan" (EPA).

- (9) Title 16 U.S.C. 1531, Et Seq., "Endangered Species Act of 1973,"
Title 50 CFR 17, "Fish and Wildlife Service List of Endangered and
Threatened Wildlife and Plants" (DOI).
- (10) Title 7 U.S.C. 136, Et Seq., "Federal Insecticide, Fungicide, and
Rodenticide Act."
 - (a) Title 40 CFR 162, "EPA Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act" (EPA).
 - (b) Title 40 CFR 165, "EPA Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticides Containers" (EPA).
 - (c) Title 40 CFR 166, "EPA Regulations for Exemptions of Federal and State Agencies for Use of Pesticides Under Emergency Conditions" (EPA).
 - (d) Title 40 CFR 170, "EPA Regulations for Worker Protection Standards for Agricultural Pesticides" (EPA).
 - (e) Title 40 CFR 171, "EPA Regulations for Certification of Pesticides Applicators" (EPA).
- (11) Title 42 U.S.C. 6901, Et Seq., "Resource Conservation and Recovery
Act of 1976."
 - (a) Title 40 CFR 240 and 241, "EPA Guidelines for the Thermal Processing of Solid Waste and for Land Disposal of Solid Wastes" (EPA).
 - (b) Title 40 CFR 243, "EPA Guidelines for Solid Waste Storage and Collection" (EPA).
 - (c) Title 40 CFR 244, "EPA Guidelines for Beverage Containers" (EPA).
 - (d) Title 40 CFR 245, "EPA Guidelines for Resource Recovery Facilities" (EPA).
 - (e) Title 40 CFR 246, "EPA Guidelines for Resource Separation for Material Recovery" (EPA).
 - (f) Title 40 CFR 247, "EPA Guidelines for Procurement of Products that Contain Recycled Material" (EPA).
 - (g) Title 40 CFR 256, "EPA Guidelines for Identification of Site Solid Waste Management Plans" (EPA).

- (h) Title 40 CFR 257, "EPA Regulations on Criteria for Classification of Solid Waste Disposal Facility" (EPA).
- (i) The following hazardous waste regulations are mandatory except for activities conducted under the authority of the Atomic Energy Act:
 - 1 Title 40 CFR 260, "EPA General Regulations for Hazardous Waste Management" (EPA).
 - 2 Title 40 CFR 261, "EPA General Regulations for Identifying Hazardous Waste" (EPA).
 - 3 Title 40 CFR 262, "EPA Regulations for Hazardous Waste Generators" (EPA).
 - 4 Title 40 CFR 263, "EPA Regulations for Hazardous Waste Transporters" (EPA).
 - 5 Title 40 CFR 264, "EPA Regulations for Owners and Operators of Permitted Hazardous Waste Facilities" (EPA).
 - 6 Title 40 CFR 265, "EPA Interim Standards for Owners and Operators of Permitted Hazardous Waste Facilities" (EPA).
 - 7 Title 40 CFR 267, "EPA Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities" (EPA).
- (12) Title 15 U.S.C. 2601, Et Seq., "Toxic Substances Control Act," Title 40 CFR 761, "EPA Regulations on Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions" (EPA).
- (13) Title 42 U.S.C. 4901, Et Seq., "Noise Control Act of 1972" (EPA).
- c. Fire Protection. None.
- d. Occupational Health Protection.
 - (1) Radiation Protection. None.
 - (2) Occupational Medicine. None.
 - (3) Industrial Hygiene. None.
- e. Occupational Safety.
 - (1) General Safety. None.

- (2) Construction Safety. None.
- (3) Crane Safety. None.
- (4) Drilling Safety. None.
- (5) Electrical Safety. None.
- (6) Explosives Safety. None.
- (7) Firearms Safety. None.
- (8) Mine and Tunnel Safety. Public Law 91-173 88 Stat. 742-804 as amended by Public Law 95-164, "Federal Mine Safety and Health Act of 1977" (DOL).

f. Nuclear Safety.

- (1) Reactor Safety. None.
- (2) Nuclear Facility Safety. None.

g. Transportation Safety.

- (1) Aircraft Safety.
 - (a) Title 14 CFR Part 91 (DOT).
 - (b) Title 49 CFR Parts 171-179, and 397, "Hazardous Material Transportation Regulations" (DOT).
- (2) Motor Vehicle and Traffic Safety. None.
- (3) Vessels (Marine) Safety Standards. None.
- (4) Radioactive Material Packaging and Transportation Safety.
 - (a) Title 49 CFR 100-179, "Department of Transportation Hazardous Materials Regulations" (DOT).
 - (b) Title 10 CFR 71, "Packaging of Radioactive Materials for Transport (NRC).
- (5) Railroad Safety. Title 49 CFR 211-240, "Federal Railroad Administration" (DOT).

3. Exemption procedures for standards which are mandatory as a result of non-DOE Federal or State ES&H statutes and/or implementing requirements are as follows:

a. Temporary or Permanent Exemptions.

- (1) Heads of field organizations shall submit to PE-1 and the appropriate program Secretarial Officer(s), information copies of all requests to Federal or State agencies for temporary or permanent exemptions from the mandatory standards of this Attachment. The information copies should contain, as a minimum:
 - (a) A specification of the standard from which the field organization seeks an exemption.
 - (b) Detailed statements of why the field organization is unable to comply with the standard.
 - (c) A statement of the steps the field organization has taken and will take to provide protection from the hazard covered by the standard, to include the conditions the field organization must maintain and the practices, means, methods, operations, and processes which must be adopted and utilized to the extent they provide protection equivalent to that of the standard for which the exemption is requested.
 - (d) An analysis of the benefit to be gained from the exemption (or negative impact on program or activity if the exemption is not granted) versus negative impact on program or activity from the worst credible incident that might occur under the exemption.
 - (e) A statement of when the field organization will be able to comply with the standard and what steps have been taken and will be taken by the field organization to come into compliance with the standard.
- (2) The field organization shall take the lead role in coordinating the exemption request with the appropriate Federal or State agency responsible for the enforcement of the standard for which the exemption is being requested.

- b. Notification of Action Taken. After a determination has been made by the appropriate Federal or State agency, the field organization shall notify PE-1 and the appropriate program Secretarial Officer(s), of the disposition of the request.

MANDATORY ES&H STANDARDS (POLICY REQUIREMENTS)

1. The standards of this Attachment are mandatory as a matter of DOE policy. The abbreviated source names expressed parenthetically at the end of references may be used with Attachment 4 to locate copies of the referenced documents.
2. The list of these mandatory ES&H standards is as follows:
 - a. Emergency Preparedness. None.
 - b. Environmental Protection. The following hazardous waste regulations are mandatory for activities conducted under the Atomic Energy Act:
 - (1) Title 40 CFR 260, "EPA General Regulations for Hazardous Waste Management" (EPA).
 - (2) Title 40 CFR 261, "EPA General Regulations for Identifying Hazardous Waste" (EPA).
 - (3) Title 40 CFR 262, "EPA Regulations for Hazardous Waste Generators" (EPA).
 - (4) Title 40 CFR 263, "EPA Regulations for Hazardous Waste Transporters" (EPA).
 - (5) Title 40 CFR 264, "EPA Regulations for Owners and Operators of Permitted Hazardous Waste Facilities" (EPA).
 - (6) Title 40 CFR 265, "EPA Interim Standards for Owners and Operators of Permitted Hazardous Waste Facilities" (EPA).
 - (7) Title 40 CFR 267, "EPA Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities" (EPA).
 - c. Fire Protection.
 - (1) "National Fire Codes" (NFPA).
 - (2) "Standard for Fire Protection of AEC Electronic Computer Data Processing Systems." Compliance with this standard satisfies the requirements of NFPA-75 (WASH 1245.1) (DOE).
 - (3) "Product Directories of Underwriters Laboratories," together with the periodic supplements (UL).
 - (4) "Factory Mutual Approval Guide" (FM).
 - (5) "General Fire Fighting Guidance for Nuclear Weapons" (this document is Confidential Restricted Data) (TP20-11) (DOE).

- (6) DOE/EV-0043, 8-79, "Standard on Fire Protection for Portable Structures" (DOE).

d. Occupational Health Protection.

(1) Radiation Protection.

- (a) ANSI N13.5-1972, "Performance Specifications for Direct Reading and Indirect Reading Pocket Dosimeters for X and Gamma Radiation" (ANSI).
- (b) ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration" (ANSI).
- (c) ANSI N43.1-1978, "Radiological Safety in the Design and Operation of Particle Accelerators" (ANSI).
- (d) ANSI N42.18-1980, "Specifications and Performance of Onsite Instrumentation for Continuously Monitoring Radioactivity in Effluents" (ANSI).
- (e) ANSI N319-1976, "Personnel Neutron Dosimeters (Neutron Energies Less Than 20 MeV)" (ANSI).
- (f) ANSI N317-1980, "Performance Criteria for Instrumentation Used for Inplant Plutonium Monitoring" (ANSI).
- (g) ANSI N322-1975, "Inspection and Test Specifications for Direct and Indirect Reading Quartz Fiber Pocket Dosimeters" (ANSI).
- (h) ANSI N43.2-1977, "Radiation Safety for X-ray Diffraction and Fluorescence Analysis Equipment." [Same as NBS Handbook 114.] (ANSI).
- (i) ANSI N543-1974, "General Safety Standard for Installations Using Nonmedical X-ray and Sealed Gamma-Ray Sources" (ANSI).
- (j) ANSI N320-1979, "Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation" (ANSI).

(2) Occupational Medicine. None.

(3) Industrial Hygiene.

- (a) "TLVs^R Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes," most current edition (ACGIH).
- (b) ANSI Standard Z88.2 - 1980, "Practices for Respiratory Protection" (ANSI).

- (c) ANSI Standard Z136.1 - 1980, "Safe Use of Lasers" (ANSI).
- (d) ANSI Z117.1-1977, "Safety Requirements for Working in Tanks and Other Confined Spaces" (ANSI) (this subject is also covered by a DOE training film, "Two Breaths To.....," (Order No. A02687) (NAVC).
- (e) ANSI Standard C95.1-1982, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz" (ANSI).

e. Occupational Safety.

(1) General Safety.

- (a) "Forest Service Safety Standards" (USDA).
- (b) Sections I-XI, "Boiler and Pressure Vessel Code" (ASME).
- (c) Title 29 CFR 1910, "Occupational Safety and Health Standards" (OSHA).
- (d) Title 29 CFR 1915, "Occupational Safety and Health Standards for Shipyard Employees" (OSHA).
- (e) Title 29 CFR 1918, "Safety and Health Regulations for Longshoring" (OSHA).
- (f) Title 29 CFR 1928, "Safety and Health Standards for Agriculture" (OSHA).
- (g) Department of Navy Standards (for naval reactors program applications) (NAV).

(2) Construction Safety. Title 29 CFR 1926, "Safety and Health Regulations for Construction" (OSHA).

(3) Crane Safety.

- (a) ANSI B-30 Series (ANSI).
- (b) Specification No. 70, Crane Manufacturers Association of America (CMAA).

(4) Drilling Safety.

- (a) Petroleum Safety Orders, Administrative Code, Title 8, chapter 4, subchapter 14, State of California (except the requirement of subparagraph (b), section 6640, article 41 of the 1959 orders is permanently waived-API PR 98 applies) (CALIF).

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- (b) Applicable Division of Production Specifications and Recommended Practices on Oil Field Equipment (API).
- (c) RP-54, "Safety for Gas and Oil Well Drilling," first edition, 1-81 (API).
- (d) "Rotary Drilling Handbook on Accident Prevention and Safe Operation Practices" (IAODC).

(5) Electrical Safety.

- (a) ANSI/NFPA 70-1981, "National Electrical Code" (ANSI).
- (b) ANSI C2-1981, "National Electrical Safety Code" (ANSI).

(6) Explosives Safety.

- (a) DOE/EV 06194-1, "U.S. Department of Energy Explosives Safety Manual" (NTIS).
- (b) "Blasters Handbook" (DuPont).

(7) Firearm Safety.

- (a) GSA Handbook HB, "Federal Protective Service Uniformed Force Operations," PBS P5930.17 (GSA).
- (b) FM 23-25, 7-60, "Pistols and Revolvers" (AMC).
- (c) "Safety with Firearms Handbook" (NRA).
- (d) AR 385-63, MCO P3570.1A, "Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat" (DOD).

(8) Mine and Tunnel Safety.

- (a) Tunnel Safety Orders, Administrative Code, Title 8, chapter 4, subchapter 20, State of California (CALIF).
- (b) Mine Safety Orders, Administrative Code, Title 8, chapter 4, subchapter 12, State of California (CALIF).

f. Nuclear Safety. The hardware-oriented reactor safety and nuclear facility safety standards specified in this subparagraph shall be applied to DOE-owned nuclear reactors and facilities in either of the following cases: all new construction of nuclear reactors and facilities; or during nuclear reactor and nuclear facility modifications or repairs to safety or safety-related structures, systems, or components when the standard would be compatible with existing structures, systems, or components, and would increase the level of safety. Backfit to comply with these standards will also be required when the DOE determines that environmental safety or health protection can be significantly increased by the implementation of the standard.

(1) Reactor Safety.

- (a) ANSI/IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations" (ANSI).
- (b) "Boiler and Pressure Vessel Code" (ASME).
- (c) ANS 15.1-1983, "Development of Technical Specifications for Research Reactors" (ANS).
- (d) IEEE 308-1980, "Criteria for Class 1E Power Systems for Nuclear Power Generating Stations" (IEEE).
- (e) IEEE 603-1980, "Standard Criteria for Safety Systems for Nuclear Power Generating Stations" (IEEE).

(2) Nuclear Facility Safety.

- (a) ANSI/ANS-8.3-1979, "Criticality Accident Alarm System" (ANSI).
- (b) ANSI N16.1-1975, "Safety Standards for Operations with Fissionable Materials Outside Reactors" (ANSI).
- (c) ANSI/ANS 8.5-1979, "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Materials" (ANSI).

g. Transportation Safety.

- (1) Aircraft Safety. Title 14 CFR chapter 1 (Parts 1-199) excluding Parts 11, 13, 50-60, 123, 127, 129, 141, 143, 147, 149, and all of subchapters K, N, and O, "Federal Aviation Regulations" (DOT).
- (2) Motor Vehicle and Traffic Safety.
 - (a) "Motor Carrier Safety Regulations," Federal Highway Administration (DOT).
 - (b) Title 49 CFR 397, "Hazardous Materials Regulations" (DOT).
 - (c) "Manual on Uniform Traffic Control Devices for Streets and Highways," Bureau of Public Roads (DOT).
 - (d) ANSI D7.1-1973, "Inspection Requirements for Motor Vehicles, Trailers, and Semi-trailers Operated on Public Highways" (ANSI).
 - (e) "Uniform Vehicle Code" (NCUTLO).
 - (f) "A Policy on Geometric Design on Rural Highways" (AASHTO).

(3) Vessels (Marine) Safety Standards.

- (a) Booklet 258, U.S. Coast Guard, "Rules and Regulations for Uninspected Vessels" (DOT).
- (b) Booklet 267, U.S. Coast Guard, "Rules and Regulations for Numbering of Undocumented Vessels and the Reporting of Boating Accidents" (DOT).
- (c) Booklet 190, U.S. Coast Guard, "Equipment Lists" (DOT).
- (d) Booklet 115, U.S. Coast Guard, "Marine Engineering Regulations and Material Specifications" (DOT).
- (e) Booklet 395, U.S. Coast Guard, "Ventilation System for Small Craft" (DOT).

(4) Radioactive Material Packaging and Transportation Safety.

- (a) IAEA Safety Series No. 6, "Regulations for the Safe Transport of Radioactive Material," 1973 revised edition (as amended) (IAEA).
- (b) "International Air Transport Association Restricted Article Regulations" (IATA).

(5) Railroad Safety. None.

3. Exemption procedures for standards which are mandatory as a matter of DOE policy are as follows:

a. Temporary Exemptions.

- (1) Heads of Field Organizations shall submit to the appropriate program Secretarial Officers, a request for a temporary exemption from the mandatory standards of this Attachment. A request for a temporary exemption shall contain:
 - (a) A specification of the standard from which the field organization seeks an exemption.
 - (b) Detailed statements of why the field organization is unable to comply with the standard.
 - (c) A statement of the steps the field organization has taken and will take to provide protection from the hazard covered by the standard, to include the conditions the field organization must maintain and the practice, means, methods, operations, and processes which must be adopted and utilized to provide protection equivalent to that of the standard for which the exemption is requested.

- (d) An analysis of the benefit to be gained from the exemption (or negative impact on program or activity if the exemption is not granted) versus negative impact on program or activity from the worst credible incident that might occur under the exemption.
 - (e) A statement of when the field organization will be able to comply with the standard and what steps have been taken and will be taken by the field organization to come into compliance with the standard.
- (2) The program Secretarial Officer shall review the field organization's request and submit the request and the program Secretarial Officer's recommendation to PE-1 within 30 days of receipt of the request. After review and evaluation of the request and recommendation, PE-1 shall approve a temporary exemption if the request establishes that the field organization: is unable to comply with the standard because of unavailability of professional or technical personnel, materials, or equipment, funding needed to come into compliance with the standard, or because necessary construction or alteration of facilities must be completed in order to comply; is taking all available steps to provide environment, safety, and health protection which is equivalent to that provided by the standard; and has an effective program for coming into compliance with the standard as quickly as possible.
- (3) A temporary exemption may be in effect for no longer than the period needed by the field organization to achieve compliance with the standard or 1 year, whichever is shorter, except that in unusual circumstances (e.g., lack of programmatic funding) such a temporary exemption may be renewed not more than once. Such a renewal also shall be in effect for no longer than 1 year. An application for renewal must be filed and processed in the same manner specified in subparagraphs 3a(1) and 3a(2) of this Attachment, at least 90 days prior to expiration of the temporary exemption.
- (4) PE-1 shall inform the head of the field organization, through the appropriate program Secretarial Officer, of the approval or denial of the request for a temporary exemption or the extension thereof, within 180 days of receipt of the request.

b. Permanent Exemptions.

- (1) Heads of Field Organizations shall submit to the appropriate program Secretarial Offices, a request for a permanent exemption from the mandatory standards of this Attachment. The request for exemption shall contain the same information specified in subparagraphs 3a(1)(a) through (d) of this Attachment. The program Secretarial Officer shall review the field organization's request and submit the request and the program Secretarial Officer's recommendation to PE-1, within 30 days of receipt of the request. After review and

evaluation of the request and recommendation, PE-1 shall approve a permanent exemption if the field organization has demonstrated that the conditions, practices, means, methods, operations, or processes to be used will provide environment, safety, and health protection which is equivalent to that which would prevail if the field organization had complied with the standard.

- (2) PE-1 shall inform the Head of the Field Organization through the appropriate program Secretarial Officer of the approval or denial of the request for a permanent exemption within 180 days of receipt of the request.

- c. Field Level Exemptions. The Head of the Field Organization may grant field-level exemptions from the mandatory standards during the period of time in which the request for a temporary or permanent exemption is being processed by Headquarters. A field-level exemption shall be granted only where the head of the field organization has sufficient assurance that the environment, safety, and health protection provided will be equivalent to that provided by the standard(s) for which the temporary or permanent exemption is being requested. The field-level exemption is to be effective only until a decision on the issuance of an exemption is made by Headquarters, but in no case is a field level exemption to be effective for longer than 180 days, beginning with the date of PE-1'S receipt of the exemption request. A field-level exemption shall not be renewable.

REFERENCE ES&H STANDARDS

1. The standards and guidelines of this Attachment are not mandatory. They are provided as references on good practice and general ES&H informational purposes. The abbreviated source names expressed parenthetically at the end of references may be used with Attachment 4 to locate copies of the referenced documents.
2. The list of these reference ES&H standards and guidelines is as follows:
 - a. Emergency Preparedness. ANSI N2.3-1979, "Immediate Evaluation Signal for Use in Industrial Installations Where Radiation Exposure May Occur," (ANSI).
 - b. Environmental Protection.
 - (1) "Standard Methods for the Examination of Water and Wastewater" (AWWA).
 - (2) "Manual of Water Quality and Treatment" (AWWA).
 - (3) "Uniform Plumbing Code" (IAPMO).
 - (4) ANSI N 545 (1975), "Performance Testing and Procedural Specifications for Thermoluminescence Dosimetry (Environmental Applications)" (ANSI).
 - (5) Title 10 CFR part 20, "NRC Standards for Protection Against Radiation" (NRC).
 - (6) Applicable Federal Radiation Council Reports (NRC).
 - (7) Handbooks, "National Council on Radiation Protection and Measurement Recommendation" (NBS).
 - (8) DOE/EP-0023, "A Guide for: Environmental Radiological Surveillance at U.S. Department of Energy Installations," 9-81 (DOE).
 - (9) DOE/EP-0096, "A Guide for Effluent Radiological Measurements at DOE Installations," 9-83 (DOE).
 - (10) DOE/EP-0100, "A Guide for Radiological Characterization and Measurements for Decommissioning of U.S. Department of Energy Surplus Facilities," 8-83 (DOE).
 - c. Fire Protection.
 - (1) "Handbook of Fire Protection" (NFPA).

- (2) "Loss Prevention Data Sheets" (FM).
- (3) RP-1, U.S. Department of Commerce, National Fire Prevention and Control Administration, 8-78, "Standard Practice for the Fire Protection of Essential Electronic Equipment Operations" (DOC).

d. Health Protection.

(1) Radiation Protection.

- (a) Applicable (Federal Radiation Council) Reports (No. 1-1960, No. 2-1962, No. 5-1964, No. 7-1965, No. 8) (Revised) (EPA).
- (b) Handbooks, "National Council on Radiation Protection and Measurements Recommendations" (NBS).
- (c) ANSI N13.1-1969, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" (ANSI).
- (d) ANSI N13.7-1972, "Criteria for Film Badge Performance" (ANSI).
- (e) DOE/EV/1830-TS, 4-80, "A Guide for Reducing Radiation Exposure to As Low As Reasonably Achievable (ALARA)" (NTIS).
- (f) Title 10 CFR 20, "Standards for Protection Against Radiation."
- (g) "Radiation Protection Standards Reports" (ICRP).
- (h) Reports (ICRU).
 - 1 Report 20, 1971, "Radiation Protection Instrumentation and Its Application."
 - 2 Report 33, 19, "Radiation Quantities and Units."
 - 3 Report 14, 1969, "Radiation Dosimetry."
- (i) Safety Series (IAEA).
- (j) Subpart 3 of Public Law 90-602, as amended on 1018-68, "Electronic Product Radiation Control."
- (k) BNWL-1742, 1974 "Technical Considerations in Emergency Instrumentation Preparedness" (BATTELLE).
 - 1 BNWL-1857, 1876, Phase II-C, "Emergency Radiological and Meteorological Instrumentation for Fuel Reprocessing Facilities."

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

- (1) ANSI N343-1978, "Internal Dosimetry for Mixed Fission and Activation Products" (ANSI).
- (m) ANSI N 542-1977, "Sealed Radioactive Sources" (ANSI).
- (n) ANSI N 537-1976, "Radiological Safety Standard for the Design of Radiographic and Fluoroscopic Industrial X-Ray Equipment" (ANSI).
- (o) ANSI N 510-1980, "Testing of Nuclear Air Cleaning System" (ANSI).
- (p) ANSI N 512-1974, "Protective Coatings for the Nuclear Industries" (ANSI).
- (q) ANSI N13.4-1977, "Portable X-Ray or Gamma Radiation Survey Instruments" (ANSI).

(2) Occupational Medicine.

- (a) OOCH-213, "Scope, Objectives, and Functions of Occupational Health Programs" (AMA).
- (b) Public Health Service Publication No. 1041 (5-63), "Occupational Health Services for Employees, U.S. Department of Health, Education, and Welfare" (USPHS).
- (c) Public Health Service Publication No. 1325-A (3-66), "An Administrative Guide for Federal Occupational Health Units." (USPHS).
- (d) OOCH-290, "Epidemiology in Occupational Disease and Injury" (AMA).
- (e) "Medical Aspects of Radiation Accidents Handbook," Eugene Saenger, M.D., Editor (GPO).

(3) Industrial Hygiene.

- (a) American Industrial Hygiene Association, Hygiene Guide Series, volumes I and II (AIHA).
- (b) American Industrial Hygiene Association Workplace Environmental Exposure Level Guides (AIHA).
- (c) "Heating and Cooling for Man in Industry," second edition, 1975 (AIHA).
- (d) Manual, LA-6370-M, 8-76, "Energy Research and Development Administration, Division of Safety, Standards, and Compliance Respirator Manual" (NTIS).
- (e) "Industrial Ventilation, A Manual of Recommended Practice," seventeenth edition (ACGIH).
- (f) "Industrial Noise Manual," third edition, 1975 (AIHA).
- (g) "IES Lighting Handbook," sixth edition, vol. I and II (IES).
- (h) Department of Health and Human Services Publication (National Institute for Occupational Safety and Health) Nos. 77-157A, 77-157B, 77-157C, 78-175, and 79-141, "NIOSH Manual of Analytical Methods," vols. I-V (NIOSH).
- (i) Department of Health and Human Services, NIOSH Criteria Documents (NIOSH).
- (j) "Standards, Interpretation, and Audit Criteria for Performance of Occupational Health Programs, Occupational Health and Safety Programs, Accreditation Commission" (AIHA).

e. Occupational Safety.

(1) General Safety.

- (a) Manual Sheets (MCA).
- (b) Chemical Safety Data Sheets (MCA).
- (c) "Accident Prevention Manual for Industrial Operations" (NSC).
- (d) "Supervisor's Safety Manual" (NSC).
- (e) "Handbook of Laboratory Safety" (CRC).

- (f) "Handbook of Rigging," W. E. Rossnagel, third edition, McGraw-Hill Book Co., Inc., publishers (McGraw).
 - (g) Data Sheet Series (NSC).
 - (h) "Matheson Gas Data Book" (MPD).
 - (i) NASA SP-5032, "Handling Hazardous Materials" (NASA).
 - (j) "Testing Materials Standards" (those applicable to safety) (ASTM).
 - (k) "Handbook of Compressed Gases" (CGA).
 - (l) "Service Station Safety, Accident Prevention Manual 5" (API).
- (2) Crane Safety.
- (a) NE F 8-6, "Hoisting and Rigging of Critical Components and Related Equipment" (ORNL).
 - (b) "DOE Hoisting and Rigging Manual," 5-80 (EG&G).
 - (c) "Handbook of Rigging," W. E. Rossnagel, third edition (McGraw).
 - (d) "Crane Handbook," Construction Safety Association of Ontario (CSAO).
 - (e) "Rigging Manual," Construction Safety Association of Ontario (CSAO).
- (3) Drilling Safety.
- (a) Applicable Division of Production Bulletins (API).
 - (b) DOE Drilling Safety Manual (EG&G).
- (4) Electrical Safety.
- (a) CG-259, U.S. Coast Guard, "Electrical Engineering Regulations" (DOT).
 - (b) CG-193, U.S. Coast Guard, "Miscellaneous Electrical Equipment List" (DOT).
 - (c) NBS No. 81, "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (NBS).
 - (d) DOE/EV-0051/1, "Electrical Safety Criteria for Research and Development Activities" (DOE).

- (e) "Safety Guidelines for High Energy Accelerator Facilities" (TID 23992) (DOE).
- (f) Institute of Electrical and Electronics Engineers Standards (IEEE).

(5) Explosives Safety.

- (a) DARCOM-R 385-100, U.S. Army Material Development and Readiness Command, "Development and Readiness Command Safety Manual" (AMC).
- (b) DOD 5154-4S, "DOD Ammunition and Explosives Safety Standards" (DOD).
- (c) Pamphlet 5, "Rules for Storing, Transporting, and Shipping Explosives" (IME).
- (d) Pamphlet 17, "Safety in the Transportation, Storage, Handling, and Use of Explosives" (IME).
- (e) Department of the Army Technical Manual TM 5-1300, "Structures to Resist the Effects of Accidental Explosions" (AMC).
- (f) Pamphlet 20, "Safety Guide for the Prevention of Radio Frequency Radiation Hazards" (IME).
- (g) AD 871 194, "Evaluation of Explosive Storage Safety Criteria" (NTIS).

(6) Firearms Safety.

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

(7) Mine and Tunnel Safety. Bulletin 614, Bureau of Mines, "Tunneling: Recommended Safety Rules," (BUMINES).

f. Nuclear Safety.

(1) Reactor Safety.

- (a) "Applicable Nuclear Energy Reactor Development Technology (RDT) Standards" (see index of NE (RDT) standards) (DOE).
- (b) Title 10 CFR 50, "Licensing of Production and Utilization Facilities," and appendices, including regulatory guides issued to describe methods of implementing these regulations (NRC).

- (c) Title 10 CFR 55, "Operator's Licenses" (NRC).
- (d) Title 10 CFR 100, "Reactor Site Criteria" (NRC).
- (e) Safety Series No. 35, "Safe Operation of Critical Assemblies and Research Reactors," 1971 edition (IAEA).
- (f) Safety Series No. 31, "Safe Operation of Nuclear Power Plants" (IAEA).
- (g) Institute of Electrical and Electronics Engineers Standards, as follows:
 - 1 IEEE 317-1976, "Electrical Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations" (IEEE).
 - 2 IEEE 323-1974, "Qualifying Class 1E Equipment for Nuclear Power Generating Stations" (IEEE).
 - 3 IEEE 336-1980, "Installation, Inspection, and Testing Requirements for Class 1E Instrumentation and Electric Equipment at Nuclear Power Generating Stations" (IEEE).
 - 4 IEEE 338-1977, "Standard Criteria for the Periodic Testing of Nuclear Power Generating Station Class 1E Power and Protection Systems" (ANSI/IEEE).
 - 5 IEEE 344-1975, "Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations" (ANSI/IEEE).
 - 6 IEEE 352-1975, "Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Protection Systems" (ANSI/IEEE).
 - 7 IEEE 379-1977, "Standard Application of the Single-Failure Criterion to Nuclear Power Generating Station Class 1E Systems" (ANSI/IEEE).
 - 8 IEEE 382-1980, "Standard for Qualification of Safety-Related Valve Actuators" (IEEE).
 - 9 IEEE 384-1977, "Standard Criteria for Independence of Class 1E Equipment and Circuits" (IEEE).
 - 10 IEEE 387-1977, "Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations" (ANSI/IEEE).

- 11 IEEE 450-1980, "Recommended Practice for Large Lead Storage Batteries for Generating Stations and Substations" (revision of ANSI/IEEE Std 450-1975) (IEEE).
- 12 IEEE 467-1980, "Standard Quality Assurance Program Requirements for the Design and Manufacture of Class 1E Instrumentation and Electric Equipment for Nuclear Power Generating Stations" (IEEE).
- 13 IEEE 484-1975, "Recommended Practice for Installation Design and Installation of Large Lead Storage Batteries for Generating Stations and Substations" (ANSI/IEEE).
- 14 IEEE 498-1980, "Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in the Construction and Maintenance of Nuclear Power Generating Stations" (IEEE).
- 15 IEEE 567, "Trial-Use Standard Criteria for the Design of the Control Room Complex for a Nuclear Power Generating Station" (ANSI/IEEE).
- 16 Other IEEE Standards, if required.

(h) American Nuclear Society (ANS) Standards as follows:

- 1 ANS-2.2-1978, "Earthquake Instrumentation Criteria for Nuclear Power Plants" (Revision 1 of N18.5-1974).
- 2 ANS-2.17-1980, "Evaluation of Radionuclide Transport in Ground Water for Nuclear Power Sites."
- 3 ANS-3.5-1979, "Nuclear Power Plant Simulators for Use in Operator Training."
- 4 ANS-3.7.2-1979, "Emergency Control Centers for Nuclear Power Plants."
- 5 ANS-4.1-1978, "Design Basis Criteria for Safety Systems in Nuclear Power Generating Stations."
- 6 ANS-4.5-1980, "Criteria for Accident Monitoring Functions in Light-Water-Cooled Reactors."
- 7 ANS-6.4-1977, "Guidelines on the Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants."
- 8 ANS-11.13/N101.6-1972, "Concrete Radiation Shields."

- 9 ANS-14.1/N394-1975, "Operation of Fast Pulse Reactors."
 - 10 ANS-15.2/N398-1974, "Quality Control for Plate-Type Uranium-Aluminum Fuel Elements."
 - 11 ANS-15.3/N399-1974, "Records and Reports for Research Reactors."
 - 12 ANS-15.8/N402-1976, "Quality Assurance Program Requirements for Research Reactors."
 - 13 ANS-15.11-1977, "Radiological Control at Research Reactor Facilities."
 - 14 ANS-15.12-1977, "Design Objectives for and Monitoring of Systems Controlling Research Reactor Effluents."
 - 15 ANS-15.15-1978, "Criteria for the Reactor Safety System of Research Reactors."
 - 16 ANS-15.16-1978, "Emergency Planning for Research Reactors."
 - 17 ANS-15.18-1979, "Administrative Controls for Research Reactors."
 - 18 ANS-59.1-1979, "Safety-Related Cooling Water Systems in Nuclear Power Plants."
 - 19 ANS-59.3-1977, "Safety-Related Control Air Systems."
 - 20 ANS-59.4-1979, "Generic Requirements for Light Water Nuclear Power Plant Fire Protection."
 - 21 ANS-59.51/N195-1976, "Fuel Oil Systems for Standby Diesel-Generators."
- (i) BNL-50831-I, "Design Guide; Critical Facilities" (BNL).
 - (j) BNL-50831-II, "Design Guide; Light and Heavy Water Cooled Reactors" (BNL).
 - (k) BNL-50831-III, "Design Guide; Pool Type Reactors" (BNL).
 - (l) BNL-50831-IV, "Design Guide; Liquid Metal Reactors" (BNL).
 - (m) BNL-50831-V, "Design Guide; Transient Reactors" (BNL).
 - (n) BNL-50831-VI, "Design Guide; Air Cooled Graphite Reactors" (BNL).

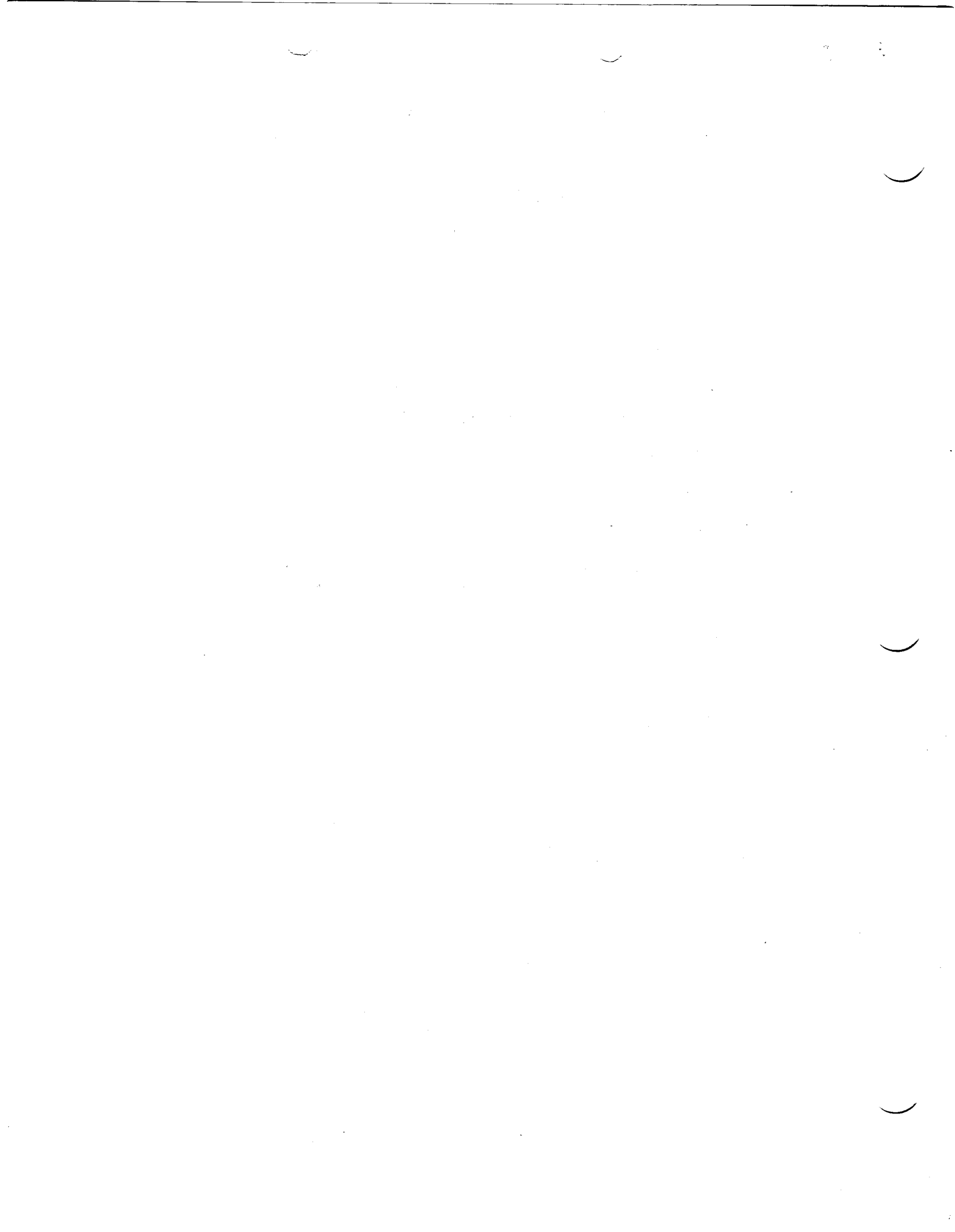
(2) Nuclear Facility Safety.

- (a) "Nuclear Safety Guide" (TID-7016) (DOE).
- (b) "Critical Dimensions of Systems Containing Uranium-235, Plutonium-239, and Uranium-233" (TID-7028) (DOE).
- (c) DuPont-1014, "Critical and Safe Masses and Dimensions of Lattices of U and UO₂ in Water" (DUPONT).
- (d) Handbook 1 (first revision), "United Kingdom Atomic Energy Authority Handbook of Criticality Data, AHSB(S)" (AHSB).
- (e) ARH-600 (3 volumes), "Criticality Handbook" (NTIS).
- (f) American Nuclear Society (ANS) Standards as follows:
 - 1 ANS-8.6/N16.3-1975, "Safety in Conducting Subcritical Neutron Multiplication Measurements in Situ" (revision of N16.3-1969).
 - 2 ANS-8.7/N16.5-1975, "Guide for Nuclear Criticality Safety in the Storage of Fissile Materials."
 - 3 ANS-8.9-1978, "Nuclear Criticality Safety Guide for Pipe Intersections Containing Aqueous Solutions of Enriched Uranyl Nitrate."
 - 4 ANS-8.10/16.8-1975, "Criteria for Nuclear Criticality Safety Controls in Operations Where Shielding Protects Personnel."
 - 5 ANS-8.11/N16.9-1975, "Validation of Computational Methods for Nuclear Criticality Safety."
 - 6 ANS-8.12-1978, "Nuclear Criticality Control and Safety of Homogeneous Plutonium-Uranium Fuel Mixtures Outside Reactors."
 - 7 ANS-57.7-1982, "Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type)."
 - 8 ANS-58.3-1977, "Physical Protection for Systems and Components Important to Safety."
 - 9 ANS-59.3-1977, "Safety-Related Control Air Systems."
- (g) Title 10 CFR 50, "Licensing of Production and Utilization Facilities" (NRC).

- (h) Title 10 CFR 70, "Special Nuclear Material" (NRC).
- (i) Title 10 CFR 30, "Rules of General Applicability to Licensing of Byproduct Material" (NRC).
- (j) Title 10 CFR 40, "Licensing of Source Material" (NRC).
- (k) Title 10 CFR 55, "Operators' Licenses" (NRC).
- (l) Title 10 CFR 100, "Reactor Site Criteria" (NRC).
- (m) ERDA 76-21, "Nuclear Air Cleaning Handbook" (NTIS).

g. Transportation Safety.

- (1) Aircraft Safety. "Aviation Ground Operation Safety Handbook" (NSC)
- (2) Motor Vehicle and Traffic Safety.
 - (a) "Traffic Engineer's Handbook" (ITE and NSC).
 - (b) "Motor Fleet Safety Manual" (NSC).
 - (c) "Traffic Accident Investigator's Manual for Police," The Traffic Institute, Northwestern University (NWU).
 - (d) "Handbook of Highway Safety Design and Operating Practices" (DOT).
- (3) Vessels (Marine) Safety. None.
- (4) Radioactive Material Packaging and Transportation Safety.
 - (a) ORNL-NSIC-68, 1970, "Cask Designers Guide" (ORNL).
 - (b) ORNL-TM-1312, volumes I through X, "Structural Analysis of Shipping Casks" (ORNL).
 - (c) ANSI N14.1-1971, "Packaging of Uranium Hexafluoride for Transport" (ANSI).
 - (d) NRC Guide 7.4, "Leakage Tests for Shipment of Radioactive Materials" (NRC).
 - (e) NRC Guide 7.9, "Standard Format and Content of Part 71 Applications for Approval of Type B Packaging" (NRC).
 - (f) NRC Guide 7.10, "Establishing Quality Assurance Programs for Packaging" (NRC).



SOURCES OF ES&H STANDARDS

1. American Association of State Highway and Transportation Officials
444 North Capitol Street, NW.
Washington, DC 20001 AASHTO
2. American Conference of Government Industrial Hygienists
Department E
Building D-5
6500 Glenway Avenue
Cincinnati, OH 45211 ACGIH
3. Committee on Industrial Ventilation
P.O. Box 16153
Lansing, MI 48901 ACGIH
4. Associated General Contractors of America, Inc.
1957 E Street, NW.
Washington, DC 20006 AGCA
5. Authority Health & Safety Branch
UKAEA
11 Charles II Street
London, S.W.I. AHSB
6. American Industrial Hygiene Association
475 Wolf Ledges Parkway
Akron, OH 44311 AIHA
7. American Medical Association
535 N. Dearborn Street
Chicago, IL 60610 AMA
8. United States Department of the Army
Headquarters, U.S. Army Materiel Development and
Readiness Command
5001 Eisenhower Avenue
Alexandria, VA 22333 AMC
9. American Nuclear Society
555 N. Kensington Avenue
LaGrange Park, IL 60525 ANS
10. American National Standards Institute
1430 Broadway
New York, NY 10018 ANSI
11. American Petroleum Institute
2101 L Street, NW.
Washington, DC 20037 API

12. American Society of Mechanical Engineers, Inc.
345 East 47th Street
New York, NY 10017 ASME
13. American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103 ASTM
14. American Water Works Association, Inc.
666 Quincy Street
Denver, CO 80235 AWWA
15. Battelle Memorial Institute
Pacific Northwest Laboratories
Richland, WA 99352 BATTELLE
16. Brookhaven National Laboratory
Associated Universities, Inc.
Upton, NY 11973 BNL
17. Publications Section
U.S. Bureau of Mines
4800 Forbes Avenue
Pittsburgh, PA 15213 BUMINES
18. State of California
General Services Publications
P.O. Box 1015
North Highland, CA 95660 CALIF
19. Compressed Gas Association, Inc.
500 Fifth Avenue
New York, NY 10036 CGA
20. Crane Manufacturers Association of America, Inc.
1326 Freeport Road
Pittsburgh, PA 15238 CMAA
21. Construction Safety Association of Ontario
74 Victoria Street
Toronto, Ontario
Canada M5C2AS CSAO
22. C. R. C. Press, Inc.
2000 NW. 24th Street
Baco Raton, FL 33431 CRC
23. Department of Commerce
Room 1617 M
14th & E Street, NW.
Washington, DC 20230 DOC

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| 24. Department of Defense
The Pentagon
Washington, DC 20301 | DOD |
| 25. Office of Operational Safety, PE-24
Department of Energy
Washington, DC 20545 | DOE |
| 26. Department of Interior
1800-1900 C Street, NW.
Washington, DC 20240 | DOI |
| 27. Department of Labor
200 Constitution Avenue, NW.
Washington, DC 20210 | DOL |
| 28. Coast Guard
Department of Transportation
2100 2nd Street, SW.
Washington, DC 20593 | DOT |
| 29. E. I. duPont de Nemours and Company
Petrochemicals Department
Wilmington, DE 19898 | DUPONT |
| 30. Environmental Protection Agency
401 M Street, SW.
Washington, DC 20460 | EPA |
| 31. EG&G Idaho, Inc.
Idaho Falls, ID 83415 | EG&G |
| 32. Food and Drug Administration
5600 Fishers Lane
Rockville, MD 20857 | FDA |
| 33. Factory Mutual Engineering Division
1151 Boston-Providence Turnpike
Norwood, MA 02062 | FM |
| 34. Superintendent of Documents
United States Government Printing Office
Washington, DC 20402 | GPO |
| 35. General Services Administration
General Services Building
18 and F Street, NW.
Washington, DC 20405 | GSA |

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| 36. | UNIPUB
P.O. Box 433, Murray Hill Station
New York, NY 10016 | IAEA |
| 37. | International Association of Plumbing and Mechanical
Officials
5032 Alhambra Avenue
Los Angeles, CA 90032 | IAPMO |
| 38. | International Air Transport Association
1115 Mansfield Street
Montreal 113
Quebec, Canada M5C2AS | IATA |
| 39. | Illuminating Engineering Society
345 East 47th Street
New York, NY 10017 | IES |
| 40. | International Committee on Radiation Protection
4201 Lexington Avenue
New York, NY 10017 | ICRP |
| 41. | International Commission on Radiation Units and
Measurements
7910 Woodmont Avenue, NW.
Washington, DC 20014 | ICRU |
| 42. | Institute of Electrical and Electronic Engineers, Inc.
345 East 47th Street
New York, NY 10017 | IEEE |
| 43. | Institute of Makers of Explosives
420 Lexington Avenue
New York, NY 10017 | IME |
| 44. | Institute of Transportation Engineers, Inc.
Suite 905, 1815 North Fort Myer Drive
Arlington, VA 22209 | ITE |
| 45. | Chemical Manufacturers Association
1825 Connecticut Avenue, NW.
Washington, DC 20009 | MCA |
| 46. | McGraw-Hill Book Company, Inc.
1221 Avenue of Americas
New York, NY 10020 | MCGRAW |
| 47. | G. D. Searle and Company
Will Ross, Inc./Matties or Products Division
P.O. Box 85
East Rutherford, NJ 07073 | MPD |

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| 48. National Aeronautics and Space Administration
400 Maryland Avenue, SW.
Washington, DC 20546 | NASA |
| 49. Commanding Officer
(Code 512) Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120 | NAV |
| 50. National Audio Visual Center
General Services Administration
Washington, DC 10409 | NAVC |
| 51. National Bureau of Standards
Department of Commerce
Washington, DC 20234 | NBS |
| 52. National Committee on Uniform Traffic Laws and
Ordinances
1776 Massachusetts Avenue, NW.
Washington, DC 20036 | NCUTLO |
| 53. National Fire Protection Association
Batterymarch Park
Quincy, MA 02269 | NFPA |
| 54. Publications
NIOSH (MSR6)
4676 Columbia Parkway
Cincinnati, OH 45226 | NIOSH |
| 55. National Rifle Association
1600 Rhode Island Avenue, NW.
Washington, DC 20036 | NRA |
| 56. National Safety Council
444 North Michigan Avenue
Chicago, IL 60611 | NSC |
| 57. National Technical Information Service
Department of Commerce
5285 Port Royal Road
Springfield, VA 22161 | NTIS |
| 58. Traffic Institute
Northwestern University
405 Church Street
Evanston, IL 60201 | NWU |

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| 59. Nuclear Standards Management Center
Oak Ridge National Laboratory
Oak Ridge, TN 37830 | ORNL |
| 60. U.S. Department of Labor, Occupational
Safety and Health Administration
200 Constitution Avenue, NW.
Washington, DC 20210 | OSHA |
| 61. Underwriters' Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062 | UL |
| 62. Department of Agriculture
Washington, DC 20250 | USDA |
| 63. Public Health Service
Office of Public Affairs, Room 7406
100 Independence Avenue, SW.
Washington, DC 20201 | USPHS |