



Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation



Final Report



U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Washington, DC 20555-0001



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Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation

Final Report

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ABSTRACT

This document, NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation," consolidates guidance into a single comprehensive source by reference to numerous guidance documents. It complements the NUREG-1556 series, "Consolidated Guidance about Materials Licenses." Since Part 20 applies to all NRC licensees, in varying degrees, it extends beyond the materials scope of NUREG-1556. Each section in this document provides the following:

- A statement of the requirement (reflecting revisions published in the *Federal Register* through October 13, 1999);
- A discussion of the requirement;
- A statement of the requirement's applicability;
- A guidance statement;
- A list of existing regulatory guidance (Regulatory Guides, NUREG reports);
- A list of existing implementation guidance (Information Notices, health physics positions, Part 20 questions and answers, etc.).

NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation," also identifies prior guidance that is now outdated and in some cases subject to withdrawal or revision.

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FOREWORD

The United States Nuclear Regulatory Commission (NRC) has produced a series of technical reports (NUREG-1556 series, "Consolidated Guidance About Materials Licenses") providing program-specific guidance. These reports (the series contains 20 volumes) are intended to facilitate the processes of license application, NRC review of applications, renewal of licenses, and NRC inspection of licenses. This series of reports also provides a comprehensive source of reference information, about materials regulation, for those involved in various aspects of licensed materials utilization. NRC expects that persons preparing applications for materials licensure will reference appropriate volumes of this series, to facilitate the licensing process.

This document, NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation," consolidates numerous guidance documents into a single, comprehensive source. It complements the NUREG-1556 series. Since Part 20 applies to all NRC licensees, in varying degrees, the applicability of this document extends beyond the materials scope of the NUREG-1556 series. This document is intended for use by applicants, licensees, Part 76 certificate holders, NRC license reviewers and inspectors, and other NRC personnel. It combines references to the guidance for applicants and licensees previously found in various Regulatory Guides, NUREG reports, Information Notices, etc.

Each section provides the following:

- A statement of the requirement (reflecting revisions published in the *Federal Register* through October 13, 1999);
- A discussion of the requirement;
- A statement of the requirement's applicability;

- A guidance statement;
- A list of existing regulatory guidance (Regulatory Guides, NUREG reports);
- A list of existing implementation guidance (Information Notices, health physics positions, Part 20 questions and answers, etc.).

This document also identifies prior guidance that is now outdated and superseded by the guidance listed herein.

Part 20 was revised in its entirety in 1991, including a renumbering of sections. Some of the existing regulatory guidance and existing implementation guidance listed in this document was produced prior to 1991 and refers to sections in the earlier version of Part 20. The sections of the current Part 20 to which such guidance applies should be apparent from the sections of this document in which such guidance is listed. However, a technical report is available that provides conversions of prior version section numbers to current version section numbers, along with comparison of contents. It is NUREG-1446, "Standards for Protection Against Radiation-10 CFR Part 20: A comparison of the Existing and Revised Rules," and it is available

FOREWORD

electronically on the NRC's web site, <<http://www.nrc.gov>> in the Reference section, Technical Reports.

A team of NRC staff from Headquarters and Regional Offices developed this document. This team drew upon their collective experience in radiation safety for creating this guidance document. A representative of NRC's Office of the General Counsel provided a legal perspective.

This document represents a step in the transition from the current paper-based process to the new electronic process. This document is available on the NRC's web site at the following address: <http://www.nrc.gov/NRC/NUREGS/indexnum.html#_1_3>.

NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation," dated October 2001, is not a substitute for NRC regulations, and compliance is not required.

A handwritten signature in black ink, appearing to read "Donald A. Cool", is written over a horizontal line.

Donald A. Cool, Director

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ABBREVIATIONS

AEA	Atomic Energy Act of 1954, as amended
AEC	United States Atomic Energy Commission
ALARA	as low as is reasonably achievable
ALI	annual limit on intake
ANSI	American National Standards Institute
APF	assigned protection factor
bkg	background
BPR	business process redesign
Bq	Becquerel
CDE	committed dose equivalent
CEDE	committed effective dose equivalent
CFR	Code of Federal Regulations
Ci	Curie
cm	centimeters
cpm	counts per minute
DAC	derived air concentration
DDE	deep-dose equivalent
DOE	United States Department of Energy
DOELAP	Department of Energy Laboratory Accreditation Program
DOP	dioctyl phthalate
DOT	United States Department of Transportation
DPW	declared pregnant woman
EDO	Executive Director for Operations, United States Nuclear Regulatory Commission
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FDA	United States Food and Drug Administration
G	giga (10^9), a prefix
G-M	Geiger-Mueller
gm	gram
GPO	Government Printing Office

ABBREVIATIONS

Gy	Gray
HEPA	high efficiency particulate (air)
HPPOS	NUREG/CR-5569, ORNL/TM-12067, Rev. 1, "Health Physics Positions Database"
HRA	high radiation area
ICRP	International Commission on Radiological Protection
ISFI	independent spent fuel storage installation
IN	Information Notice
k	kilo (10^3), a prefix
LDE	lens-dose equivalent
LSA	low specific activity
LTP	license termination plan
MARSSIM	multi-agency radiation survey and site investigation manual
mg	milligrams
mGy	milligray
MMR	mask mounted regulator
mR	milliroentgen
mrem/yr	millirem(s) per year
MSA	Mine Safety Appliance Company
MSHA	Mine Safety and Health Administration
mSv	millisievert
NARM	naturally occurring and accelerator-produced radioactive material
NCRP	National Council on Radiation Protection and Measurements
ND	not determined
NESHAPS	National Environmental Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NMSS	Office of Nuclear Materials Safety and Safeguards
NOED	notice of enforcement discretion
NORM	naturally occurring radioactive material
NOV	notice of violation

ABBREVIATIONS

NR	not recorded
NRC	United States Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
PAPR	powered air purifying respirator
PSE	planned special exposure
PWR	pressurized water reactor
Q&A	NUREG/CR-6204, "Questions and Answers Based on Revised 10 CFR Part 20"
QA	quality assurance
QLFT	qualitative fit test
QNFT	quantitative fit test
R	Roentgen
RG	Regulatory Guide
RQ	reportable quantities
RSO	radiation safety officer
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SDE	shallow-dose equivalent
SDMP	Site Decommissioning Management Plan
SI	International System of Units (abbreviated SI from the French Le Système Internationale d'Unites)
SSD	sealed source and device
std	standard
STP	Office of State and Tribal Programs
Sv	Sievert
TAR	technical assistance request
TEDE	total effective dose equivalent
TI	transportation index
TLD	thermoluminescent dosimeters
TODE	total organ dose equivalent

ABBREVIATIONS

VHRA	very high radiation area
WL	working level
WLM	working level month

USING THE INTERNET TO OBTAIN COPIES OF NRC DOCUMENTS AND OTHER INFORMATION

In an effort to make NRC documents and information readily available to licensees and the general public, NRC is placing documents and information on its internet web site.

Many of the reference sections of this NUREG refer to a world wide web address on the internet (e.g., <<http://www.nrc.gov>>). Applicants and licensees who have internet access may use the referenced address to find more information on a topic, the referenced document, or information on obtaining the referenced document.

To access the referenced site, type the address into the location box of the internet browser software and press the [enter] key. Sometimes the given address does not go directly to the necessary page; however, the addressed page will have links to the information referenced in this NUREG. Generally, links appear either as blue text or as a picture in the document. To use a link, place the pointer on the blue text or picture. The pointer will change from an arrow to a hand with the index finger extended. By double-clicking the mouse on the blue text or picture, the internet browser will go to the selected page. For example, if you wanted to review the definitions in 10 CFR Part 20, type <<http://www.nrc.gov>> in the location box of your browser and press the [enter] key. After the NRC home page comes up, place the pointer on the reference library icon. The arrow will change to a hand with the index finger extended. Double-click the pointing device button. Next, place the pointer on the blue text, "Title 10 of the Code of Federal Regulations," and double-click the mouse. Place the pointer on the blue text "20" and double-click. Finally, place the pointer on the blue text "Definitions" and double-click.

There are two documents that are referenced repeatedly in Implementing Guidance lists for the various chapters. One is NUREG/CR-6204, "Questions and Answers Based on Revised 10 CFR Part 20," published in May, 1994. References from this publication are abbreviated as "Q&A." The other is NUREG/CR-5569, Rev. 1, "Health Physics Positions Data Base," published in February, 1994. References from this publication are abbreviated as "HPPOS." Both references are available at the above web site, in the "Radiation Protection and Emergency Response" section.

1 PURPOSE OF REPORT

This report consolidates numerous guidance documents relating to 10 CFR Part 20, "Standards for Protection Against Radiation," into a single, comprehensive source by reference to numerous guidance documents. NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 – Standards for Protection Against Radiation," applies to all NRC licensees, in varying degrees. The report, once published in final form, is intended for use by applicants, licensees, NRC license reviewers and inspectors, and other NRC personnel.

The format within this document, for each section in Part 20, is as follows:

- A statement of the requirement (reflecting revisions published in the *Federal Register* through October 13, 1999);
- A discussion of the requirement;
- A statement of its applicability;
- A guidance statement;
- A list of existing regulatory guidance (Regulatory Guides, NUREG reports);
- A list of existing implementation guidance (Information Notices, health physics positions, Part 20 questions and answers, etc.).

In this document, "dose" or "radiation dose" means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent. These terms are defined in Part 20. Rem and its SI equivalent Sievert (1 rem = 0.01 Sievert (Sv)) are used to describe units of radiation exposure or dose. This is because Part 20 sets dose limits in terms of rem, not rad or roentgen.

Part 20 was revised in its entirety in 1991, including a renumbering of sections. Some of the existing regulatory guidance and existing implementation guidance listed in this document was produced prior to 1991 and refers to sections in the earlier version of Part 20. The sections of the current Part 20 to which such guidance applies should be apparent from the sections of this document in which such guidance is listed. However, a technical report is available that provides conversions of prior version section numbers to current version section numbers, along with comparison of contents. It is NUREG-1446, "Standards for Protection Against Radiation-10 CFR Part 20: A comparison of the Existing and Revised Rules," and it is available electronically on the NRC's web site, <<http://www.nrc.gov>> in the Reference section, Technical Reports.

2 AGREEMENT STATES

Certain states, called Agreement States (see Figure 2.1), have entered into agreements with NRC that give them the authority to license and to inspect byproduct, source, or special nuclear materials used or possessed within their borders. Agreement State licensees with specific questions on guidance referenced in this NUREG should contact the responsible officials in their Agreement State. Agreement State contacts are listed on the Office of State and Tribal Programs' web site at <<http://www.hsr.d.ornl.gov/nrc/home.html>>.

In general, NRC's materials licensees who wish to conduct operations at temporary job sites in an Agreement State should contact that State's radiation control program office for information about State regulations. To ensure compliance with Agreement State reciprocity requirements, a licensee should request authorization well in advance of scheduled use.

In the special situation of work at Federally-controlled sites in Agreement States, it is necessary to know the jurisdictional status of the land to determine whether NRC or the Agreement State has regulatory authority. NRC has regulatory authority over land determined to be "exclusive Federal jurisdiction," while the Agreement State has jurisdiction over non-exclusive Federal jurisdiction land. Licensees are responsible for finding out, in advance, the jurisdictional status of the specific areas where they plan to conduct licensed operations. NRC recommends that licensees ask their local contact for the Federal Agency controlling the site (e.g., contract officer, base environmental health officer, district office staff member) to help determine the jurisdictional status of the land and to provide the information in writing, so that licensees can comply with NRC or Agreement State regulatory requirements, as appropriate. Additional guidance on determining jurisdictional status is found in the All Agreement States Letters, SP-96-022, dated February 16, 1996, and STP-01-010, dated February 2, 2001, which are available from NRC upon request.

Table 2.1 provides a quick way to determine which Agency has regulatory authority.

Table 2.1 Who Regulates the Activity?

Applicant and Proposed Location of Work	Regulatory Agency
Federal Agency, regardless of location (except that, under most circumstances, Department of Energy [DOE] and its prime contractors are exempt from licensing [e.g., 10 CFR 30.12, 40.11, 70.11])	NRC
Non-Federal entity in non-Agreement State, U.S. territory, or possession	NRC
Non-Federal entity in Agreement State at non-Federally controlled site	Agreement State
Non-Federal entity in Agreement State at Federally-controlled site not subject to exclusive Federal jurisdiction	Agreement State
Non-Federal entity in Agreement State at Federally-controlled site subject to exclusive Federal jurisdiction	NRC

AGREEMENT STATES

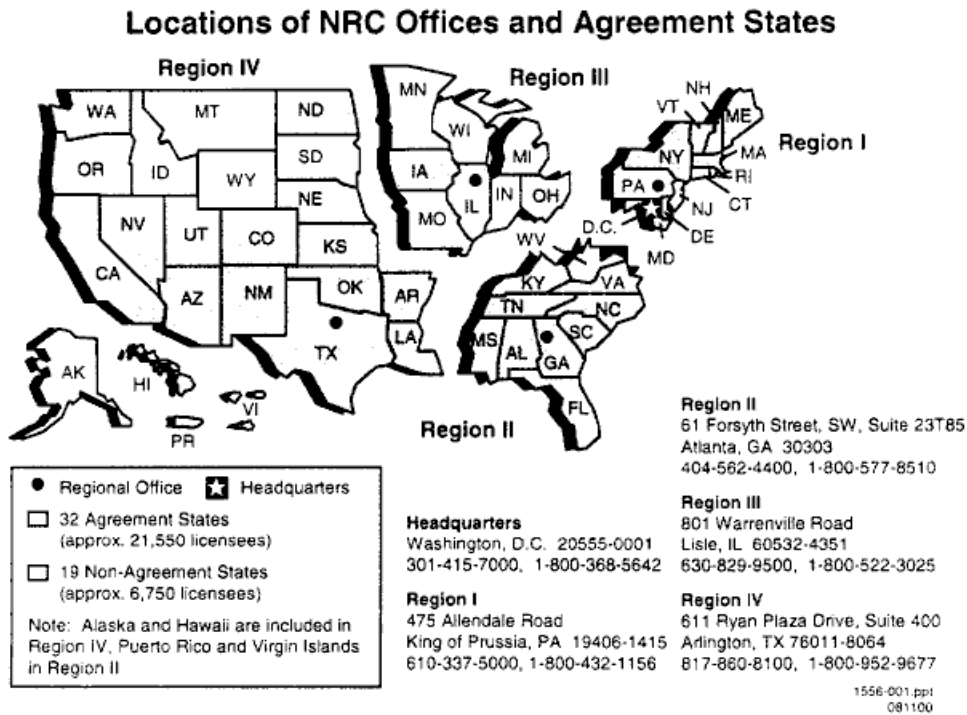


Figure 2.1 U.S. Map. Location of NRC Offices and Agreement States.

Reference: A current list of Agreement States (including names, addresses, and telephone numbers of responsible officials) is available by choosing "Directories" on the NRC Office of State and Tribal Programs' (STP's) Home Page, <<http://www.hsrdo.nrc.gov/nrc/home.htm>>, or by requesting the list from NRC's Regional Offices.

The All Agreement States Letters, SP-96-022, on determining jurisdictional status at a Federal facility, dated February 16, 1996, and STP-01-010, on jurisdictional status on American Indian land, dated February 2, 2001, are available on STP's Home Page, <<http://www.hsrdo.nrc.gov/nrc/home.htm>>. From the Home Page, choose "NRC-State and then do a search for key word "jurisdictional" by year or time interval to locate both of these Letters. Applicants can also request the letters from STP by calling NRC's toll free number, (800) 368-5642, extension 415-3340.