



# REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

## REGULATORY GUIDE 8.2

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# ADMINISTRATIVE PRACTICES IN RADIATION SURVEYS AND MONITORING

## A. INTRODUCTION

This regulatory guide provides guidance acceptable to the U.S. Nuclear Regulatory Commission (NRC) staff for use in complying with the NRC's regulations for administrative practices associated with surveys and monitoring of ionizing radiation arising from licensed activities; it is intended primarily for administrative and management personnel in organizations that are involved in, or are planning to initiate, activities involving the handling of radioactive materials or radiation. This guide replaces the existing Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring" (Ref. 1), issued February 1973.

The regulatory requirements for radiation surveys and monitoring that are applicable to all licensees are specified in Title 10 of the *Code of Federal Regulations*, Part 20, "Standards for Protection against Radiation" (10 CFR Part 20) (Ref. 2). In 10 CFR 20.1101, "Radiation Protection Programs," the NRC requires licensees to develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with 10 CFR Part 20. In 10 CFR 20.1501, "General," the NRC requires surveys to be made in order to comply with the regulations. In 10 CFR 20.1502, "Conditions Requiring Individual Monitoring of External and Internal Occupational Dose," the NRC requires licensees to monitor occupational exposure to radiation sources sufficient to demonstrate compliance with regulatory occupational dose limits. Also, the regulations in 10 CFR 20.2102, "Records of Radiation Protection Programs," and 10 CFR 20.2103, "Records of Surveys," require licensees to maintain records of surveys and radiation exposures to individuals.

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The NRC issues regulatory guides to describe and make available to the public methods that the NRC staff considers acceptable for use in implementing specific parts of the agency's regulations, techniques that the staff uses in evaluating specific problems or postulated accidents, and data that the staff needs in reviewing applications for permits and licenses. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions that differ from those set forth in regulatory guides will be deemed acceptable if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public.

Regulatory guides are issued in 10 broad divisions—1, Power Reactors; 2, Research and Test Reactors; 3, Fuels and Materials Facilities; 4, Environmental and Siting; 5, Materials and Plant Protection; 6, Products; 7, Transportation; 8, Occupational Health; 9, Antitrust and Financial Review; and 10, General.

Electronic copies of this guide and other recently issued guides are available through the NRC's public Web site under the Regulatory Guides document collection of the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/doc-collections/> and through the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>, under Accession No. ML110460093. The regulatory analysis may be found in ADAMS under Accession No. ML110460099.

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The NRC issues regulatory guides to describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to applicants. Regulatory guides are not substitutes for regulations and compliance with them is not required.

This regulatory guide contains information collection requirements covered by 10 CFR Part 20 that the Office of Management and Budget (OMB) approved under OMB control number 3150-0014. The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid OMB control number. The OMB has determined that NRC's Regulatory Guides are not "major" rules under the Congressional Review Act.

## **B. DISCUSSION**

The NRC's regulations require that NRC licensees establish and maintain radiation protection programs which achieve occupational doses and doses to members of the public that are within the applicable regulatory limits and as low as is reasonably achievable. Radiation surveys and monitoring are important elements in the overall requirements for an effective radiation protection program.

In 10 CFR 20.1003, "Definitions," the NRC defines "survey" as "an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present." Section 20.1003 defines "monitoring" as "the measurement of radiation levels, concentrations, surface area concentrations, or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses."

The NRC initially issued Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring," in February 1973, using the same title as the original standard developed by the American National Standards Institute (ANSI) N13.2-1969, "Guide for Administrative Practices in Radiation Monitoring," issued February 1969 (Ref. 3). The standard was reaffirmed in 1982, but there has not been a revision since its inception. The standard refers to obsolete technical practices as well as outdated requirements and is no longer endorsed in this guide.

The NRC staff has consolidated specific guidance for materials licensees (such as medical, academic, and industrial uses of byproduct material) on administrative practices for radiation surveys and monitoring, which is provided in NUREG-1556, "Consolidated Guidance about Materials Licenses," Volumes 1-18 and Volumes 20-21, with various issue dates (Refs. 4-23). Guidance pertinent to all licensees appears in NUREG-1736, "Consolidated Guidance: 10 CFR Part 20—Standards for Protection against Radiation," issued October 2001 (Ref. 24). These NUREGs provide useful additional information that is relevant to surveys and monitoring and may be used to supplement the guidance provided here.

## **C. REGULATORY POSITION**

Pursuant to 10 CFR 20.1101, 10 CFR 20.1501, 10 CFR 20.1502, and 10 CFR 20.2102-2103, licensees are required to implement an effective radiation survey and monitoring program to demonstrate compliance with NRC regulations. In complying with this requirement, licensees should consider the following items as possible elements in such a program. The list is not exhaustive, and some facilities

may find it necessary to incorporate additional elements into their programs. Also, some of the items may be suitable mainly for larger, more complex operations and may not be necessary for smaller operations.

- a. Ensure that the survey and monitoring program, which is usually part of the radiation protection program, is under management that is independent of the operations department, and reports directly to a sufficiently high level of the licensee's management.
- b. Ensure that the survey and monitoring program is incorporated into the initial design of the facility and its operating procedures.
- c. Ensure that the survey and monitoring program is designed to adequately characterize the radiological conditions and hazards.
- d. Establish and implement clear policies that stress the importance of the program in ensuring radiation safety and emphasizing management's commitment to its implementation and quality.
- e. Allocate adequate resources and funding to meet specified commitments of the survey and monitoring program, and ensure the availability of a sufficient number of qualified and trained staff.
- f. Specify the radiation safety officer (RSO)/radiation protection manager (RPM) who will be responsible for implementing the survey and monitoring program for the facility. The RSO/RPM should meet the minimum requirements for education, training, and experience specified in Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants" (Ref. 25).
- g. Ensure the availability of enough applicable instrumentation for use in surveying and monitoring, and establish a program that is devoted to the calibration, functional checks, and maintenance of such instrumentation.
- h. Ensure that instrumentation used for quantitative radiation measurements is calibrated in accordance with the manufacturer's recommendations.
- i. Develop and implement procedures that specify the types of and frequencies for performing special or nonroutine surveys and monitoring.
- j. Ensure that a system is in place indicating specific pre-job and post-job reviews of any task with a potential for a radiological hazard that exceeds predetermined levels.
- k. Conduct periodic training, as appropriate, to update the staff on changes in the program, equipment, and facility, to review past experience and industry events, and to emphasize any relevant aspects of program performance.
- l. Perform periodic independent audits, as appropriate, of the survey and monitoring program, possibly as part of an audit of the radiation protection program, to identify any weaknesses in that program as well as areas for improvement.
- m. Ensure survey and monitoring results are documented, maintained, and retrievable.

## **D. IMPLEMENTATION**

The purpose of this section is to provide information to applicants and licensees regarding the NRC's plans for using this regulatory guide. The NRC does not intend or approve any imposition or backfit in connection with its issuance.

In some cases, applicants or licensees may propose or use a previously established acceptable alternative method for complying with specified portions of the NRC's regulations. Otherwise, the methods described in this guide will be used in evaluating compliance with the applicable regulations for license applications, license renewal applications, and license amendment requests.

## REFERENCES<sup>1</sup>

1. Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring," U.S. Nuclear Regulatory Commission, Washington, DC, February 1973.
2. 10 CFR Part 20, "Standards for Protection against Radiation," U.S. Nuclear Regulatory Commission, Washington, DC.
3. "ANSI N 13.2-1969" as referenced in the Discussion section of this Regulatory Guide, "Guide for Administrative Practices in Radiation Monitoring," American National Standards Institute, Washington, DC, February 1969, originated as United States of America Standards Institute (USA) standard N13.2-1969, reaffirmed by ANSI 1982,<sup>2</sup> but there has not been a revision since its inception.
4. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 1, "Program-Specific Guidance about Portable Gauge Licenses," Revision 1, U.S. Nuclear Regulatory Commission, Washington, DC, November 2001.
5. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 2, "Program-Specific Guidance about Industrial Radiography Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, August 1998.
6. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 3, "Applications for Sealed Source and Device Evaluation and Registration," Revision 1, U.S. Nuclear Regulatory Commission, Washington, DC, April 2004.
7. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 4, "Program-Specific Guidance about Fixed Gauge Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, October 1998.
8. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 5, "Program-Specific Guidance about Self-Shielded Irradiator Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, October 1998.
9. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 6, "Program-Specific Guidance about 10 CFR Part 36 Irradiator Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, January 1999.
10. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 7, "Program-Specific Guidance about Academic, Research and Development, and Other Licenses of Limited Scope Including Gas Chromatographs and X-Ray Fluorescence Analyzers," U.S. Nuclear Regulatory Commission, Washington, DC, December 1999.

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<sup>1</sup> Publicly available NRC published documents are available electronically through the electronic Reading room on the NRC's public Web site at: <http://www.nrc.gov/reading-rm/doc-collections/>. The documents can also be viewed on-line or printed for a fee in the NRC's Public Documents Room (PDR) at 11555 Rockville Pike, Rockville, MD; the mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; and e-mail [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov).

<sup>2</sup> Copies may be purchased from the American National Standards Institute (ANSI), 1819 L Street, NW Washington, DC 20036 [phone: 202-293-8020]. Purchase information is available through the NCRP Web site at <http://www.ansi.org/>.

11. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 8, "Program-Specific Guidance about Exempt Distribution Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, September 1998.
12. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 9, "Program-Specific Guidance about Medical Use Licenses," Revision 2, U.S. Nuclear Regulatory Commission, Washington, DC, January 2008.
13. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 10, "Program-Specific Guidance about Master Materials Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, December 2000.
14. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 11, "Program-Specific Guidance about Licenses of Broad Scope," U.S. Nuclear Regulatory Commission, Washington, DC, April 1999.
15. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 12, "Program-Specific Guidance about Possession Licenses for Manufacturing and Distribution," U.S. Nuclear Regulatory Commission, Washington, DC, December 2000.
16. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 13, "Program-Specific Guidance about Commercial Radiopharmacy Licenses," Revision 1, U.S. Nuclear Regulatory Commission, Washington, DC, November 2007.
17. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 14, "Program-Specific Guidance about Well Logging, Tracer, and Field Flood Study Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, June 2000.
18. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 15, "Guidance about Changes of Control and about Bankruptcy Involving Byproduct, Source, or Special Nuclear Materials Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, November 2000.
19. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 16, "Program-Specific Guidance about Licenses Authorizing Distribution to General Licensees," U.S. Nuclear Regulatory Commission, Washington, DC, December 2000.
20. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 17, "Program-Specific Guidance about Special Nuclear Material of Less than Critical Mass Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, November 2000.
21. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 18, "Program-Specific Guidance about Service Provider Licenses," U.S. Nuclear Regulatory Commission, Washington, DC, November 2000.
22. NUREG-1556, "Consolidated Guidance about Materials Licenses," Volume 20, "Guidance about Administrative Licensing Procedures," U.S. Nuclear Regulatory Commission, Washington, DC, December 2000.

23. NUREG-1556, “Consolidated Guidance about Materials Licenses,” Volume 21, “Program-Specific Guidance about Possession Licenses for Production of Radioactive Material Using an Accelerator,” U.S. Nuclear Regulatory Commission, Washington, DC, October 2007.
24. NUREG-1736, “Consolidated Guidance: 10 CFR Part 20—Standards for Protection against Radiation,” U.S. Nuclear Regulatory Commission, Washington, DC, October 2001.
25. Regulatory Guide 1.8, “Qualification and Training of Personnel for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, Washington, DC, May 2000.