

Preface

The National Council on Radiation Protection and Measurements (NCRP) has published many reports and commentaries on environmental contamination resulting from releases of radioactive materials from radiological facilities and operations, such as nuclear facilities, power reactors, medical facilities, and particle accelerators, and the exposures and radiological risks to members of the public and natural biota. These include NCRP Report No. 92, *Public Radiation Exposure from Nuclear Power Generation in the United States* (1988); NCRP Report No. 109, *Effects of Ionizing Radiation on Aquatic Organisms* (1991); and NCRP Commentary No. 14, *A Guide for Uncertainty Analysis in Dose and Risk Assessments Related to Environmental Contamination* (1996). NCRP publications in the area of environmental contamination include reports on releases of specific radionuclides resulting from nuclear operations and the production and utilization of nuclear fuels [e.g., NCRP Report No. 75, *Iodine-129: Evaluation of Releases from Nuclear Power Generation* (1983) and NCRP Report No. 154, *Cesium-137 in the Environment: Radioecology and Approaches to Assessment and Management* (2006)]. In addition, reports have been published on measurements and modeling of environmental contamination resulting from the release of radioactive materials [e.g., NCRP Report No. 50, *Environmental Radiation Measurements* (1976); NCRP Report No. 76, *Radiological Assessment: Predicting the Transport, Bioaccumulation, and Uptake by Man of Radionuclides Released to the Environment* (1984); and NCRP Report No. 123, *Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground* (1996)].

This Report represents an important advance in assessing and managing contamination resulting from releases of radionuclides to the environment. The Report provides a comprehensive description of the key elements of procedures to be used in establishing effective radiological effluent monitoring and environmental surveillance programs at nuclear facilities and the surrounding environment. The Report describes the required radiation detection equipment and state-of-the-art modeling approaches for determining radionuclide transport pathways in the atmosphere, surface water, groundwater, and soil. Methods are presented for estimating potential doses to members of the public and natural ecosystems

resulting from releases of radionuclides to the environment. Quality assessment and control procedures that must be incorporated into effective radiological effluent monitoring and environmental surveillance programs, and the applicable regulatory requirements, are described in detail.

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