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## Book Reviews

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**NCRP Report No. 154, Cesium-137 in the Environment: Radioecology and Approaches to Assessment and Management**, National Council on Radiation Protection and Measurements, 2006, 382 pp. (hardcover), \$100, \$80 as PDF; <http://www.ncrppublications.org/>; ISBN-13: 978-0-929600-91-8.

FROM THE National Council on Radiation Protection and Measurements (NCRP) and the Executive Summary:  $^{137}\text{Cs}$  is the most important long-term contributor to the environmental radiation dose received by humans and other organisms as a result of nuclear reactor operations and weapons testing. Over the past few decades,  $^{137}\text{Cs}$  has been the most abundant residual radionuclide at many facilities in the nuclear weapons complex of the United States Department of Energy (U.S. DOE), at nuclear fuel reprocessing facilities, at nuclear reactor sites, at many radioactive waste disposal sites, in soils worldwide as a result of global fallout from historic nuclear weapon testing, in the former Soviet Union and other locales in Europe as a result of the Chernobyl accident, and the new concern about the use of  $^{137}\text{Cs}$  by terrorists to create a so-called “dirty bomb.”

The overall goals of this Report are to summarize the current state of knowledge on radiocesium in the environment and to identify future management issues concerning  $^{137}\text{Cs}$  contaminated ecosystems. Current knowledge and concepts are described concerning sources, levels in the general environment and at selected U.S. DOE sites, environmental transport processes, parameters and models, and the management or mitigation of contaminated environments.

This Report does not represent a comprehensive and exhaustive treatise on cesium in the environment. Rather, it is intended to

provide a general review of knowledge about sources and levels, natural processes that explain the highly varied behavior of radiocesium in aquatic and terrestrial ecosystems, guidance for choosing transport parameters for dose and risk assessment models, and practical approaches that have been used to mitigate the impacts of significant levels of contamination. The Report focuses on general environmental transport concepts and the ranges of parameter values that have been empirically measured or estimated in different situations. In many cases, the Report provides likely reasons for the wide ranges of parameter values that have been published. In practice, it is generally believed that site- and condition-specific measurements lead to the most credible assessments, so this approach is strongly recommended when possible.

As an environmental health physicist, I found this Report to be a very valuable compendium of essential technical and practical facts regarding the characteristics of  $^{137}\text{Cs}$  in the environment. These include the chemical properties of cesium itself, its behavior in the environment (giving three in-depth examples at the Savannah River Site, Oak Ridge and Hanford), as well as the management of contaminated ecosystems. In discussion of the latter area, the “No-Action Alternative” was stressed as a viable alternative, if supported by valid site-specific risk assessments. That which is not directly addressed in the Report itself can be found in the extensive reference section. This Report will occupy a prominent space on my bookshelf for years to come.

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