

used in its measurement. Our evaluation is concentrated on the present-day aspects of low-level methodology. The book may be useful for all who need highly sensitive analysis of natural or artificial radioactivity both within and outside the nuclear field.

The attempt of this book is to summarize the sources of environmental radioactivity and their possible radiological impacts in terms of resulting doses to the population, and to present a sound review of the measuring methods and techniques for the evaluation of low-level radioactivities encountered in both the environment and in a number of applications where radioactive sources are used as a means of obtaining important information.”

Sandwiched in the middle of the very long (129 pp.) first chapter, entitled “Radionuclides and Radiation Emitted,” is an excellent discussion of the radiation emitted by nuclear power plants, fuel cycle, etc. Also discussed are the several nuclear accidents that have occurred during the 50 years of the nuclear industry (the first accident was Canada’s NRX reactor; the last was Chernobyl). The release rate and human exposure impact of the Chernobyl accident are discussed in some depth. I was surprised that in spite of its severity, only 410 radiation-induced cancers are expected in the USSR and 55 outside of the country.

Also, the authors discuss the medical uses for radionuclides, which they categorize into three groups: (1) diagnostic evaluation, (2) radiation therapy and (3) nuclear medicine.

“In addition to the nuclear industry and nuclear-related activities and applications, there are some other practices and fields, essentially *non-nuclear*, where radioactive materials are used or unintentionally generated,” such as luminescent paints and smoke detectors. Even coal combustion emits significant amounts of radioactivity in the fly ash.

The second (of only three in the book) chapter is entitled “Experimental Arrangements for Low Radioactivities.” The main focus of this chapter is on measuring low level activity. The chapter includes a discussion of different types of instruments.

The third (and final) chapter of the text discusses “Selected Fields of Low-Level Radiation.” In this chapter the authors briefly present further examples (beyond those discussed in the first chapter) of low-level fields. Discussed are the transport of radionuclides in the environment (air, water and soil), radiochronology (determination of age by means of the measurement of specific activity of radionuclides), activation analysis, whole body counting, field and area monitors, assessment of radon and its decay products.

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*Operation of Spent Fuel Storage Facilities*, International Atomic Energy Agency, Vienna, Austria, 1995 (Safety Series No. 117), 240 Austrian Shillings, 54 pp., ISBN: 92-0-105094-1

This Safety Guide was prepared by the IAEA through a series of meetings of technical experts. Their goal was to provide guidance for spent fuel storage to provide

“features which will be effective in maintaining fuel subcritical, removing residual heat, providing radiation protection, and containing radioactive materials for the lifetime of the facility.” This guide is designed for use by the nuclear power industry in identifying and managing all relevant issues on the operational aspects “for the safe interim storage” of spent fuel from nuclear power plants.

The booklet has thirteen short sections:

1. Introduction
2. Key Operational Activities
3. Basic Safety Considerations for Operation
4. Management
5. Training and Qualifications
6. Commissioning
7. Operational Limits and Conditions
8. Operating Procedures
9. Maintenance, Testing, Examination and Inspection
10. Radiation and Environmental Protection
11. Quality Assurance
12. Safeguards and Physical Protection
13. Decommissioning.

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*International Basic Safety Standards for Protection Against Ionizing Radiation of and for the Safety of Radiation Sources*, International Atomic Energy Agency, Vienna, Austria, 1994 (Safety Series No. 115-1, Interim Edition), 1160 Austrian Schillings, 387 pp., ISBN: 92-0-100195-9

The purpose of the IAEA Standards is to establish the basic requirements for protection against the risks associated with “ionizing radiation and for the safety of radioactive sources that may deliver such exposure.” The Standards are limited to specifying basic requirements of radioactive protection and safety with some guidance on how to apply them.

The Standards are comprised of a Preamble, Principal Requirements (General Requirements; Requirements for Practices; and Intervention), Appendices (Occupational Exposure; Medical Exposure; Public Exposure; Potential Exposure; Safety of Sources; Emergency Exposure Situations; and Chronic Exposure Situations) and Schedules (Exemptions; Dose limits; Guidance levels of dose, dose rate and activity for medical exposure; Dose levels at which intervention is expected to be undertaken under any circumstances; Guidelines for intervention levels in emergency exposure situations; and Guidelines for action levels in chronic exposure situations), and, finally, a Glossary.

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