

RADIATION PROTECTION

*Principles of Environmental
Monitoring related to the Handling
of Radioactive Materials*

ICRP PUBLICATION 7

A Report by Committee 4 of the
International Commission on
Radiological Protection

Adopted by the Commission on September 13, 1965

PUBLISHED FOR
The International Commission on Radiological Protection
BY
PERGAMON PRESS
OXFORD • LONDON • EDINBURGH • NEW YORK
TORONTO • PARIS • BRAUNSCHWEIG

Pergamon Press Ltd., Headington Hill Hall, Oxford
4 & 5 Fitzroy Square, London, W.1
Pergamon Press (Scotland) Ltd. 2 & 3 Teviot Place, Edinburgh 1
Pergamon Press Inc., 44-01 21st Street, Long Island City, New York 11101
Pergamon of Canada Ltd., 6 Adelaide Street East, Toronto, Ontario
Pergamon Press S.A.R.L., 24 rue des Écoles, Paris 5^e
Friedr. Vieweg & Sohn Verlag, Postfach 185, 33 Braunschweig

Library of Congress Catalog Card No. 66-19542

PRINTED IN GREAT BRITAIN BY BELL AND BAIN LTD GLASGOW
(24/2871)

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PREFACE

IN May 1962 the International Commission on Radiological Protection established a new structure of committees and decided to appoint *ad hoc* task groups to deal with specific problems. Committee 4 on the Application of Recommendations decided at its first meeting in May 1963 to set up a Task Group on Environmental Monitoring. The Commission approved the formation of this Task Group with the following terms of reference and membership :

To review the objectives of environmental monitoring both in the vicinity of installations handling radioactive materials and more generally ;

To prepare a report setting out recommended policy for achieving these objectives.

Membership :

H. J. DUNSTER (<i>Chairman</i>)	Great Britain
D. BENINSON	Argentina
A. K. GANGULY	India
C. A. MAWSON	Canada
G. MICHON	France
C. P. STRAUB	U.S.A.
E. G. STRUXNESS	U.S.A.

R. Scott Russell (Great Britain) joined the Task Group in September 1963, as a representative of Committee 1.

This report of Committee 4 is the outcome of the work of the Task Group on Environmental Monitoring and deals with environmental monitoring in the vicinity of installations handling radioactive materials.

MEMBERSHIP OF COMMITTEE 4 (1962-1965)

H. JAMMET (<i>Chairman</i>) (France)	D. MECHALI (France)
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REPORT OF COMMITTEE 4

A. INTRODUCTION

(1) In this report, environmental *monitoring** means the measurement of radiation and radioactivity outside the boundaries of installations handling radioactive materials or radiation sources, and is restricted to measurements made necessary by the operation of these installations. Monitoring of the process and of the releases of waste are closely connected with any environmental program and, for the great majority of installations, provide sufficient information to make environmental monitoring unnecessary.

- (2) The broad objectives of environmental monitoring programs can be summarized as follows :
- (a) Assessment of the actual or potential exposure of man to radioactive materials or radiation present in his environment, or the estimation of the probable upper limits of such exposure.
- (b) Scientific investigation, sometimes related to the assessment of exposures, sometimes to other objectives.
- (c) Improved public relations.

Objective (a) is particularly important to the Commission because it is usually impracticable to assess doses to members of the public by personal monitoring methods.

(3) This report is therefore concerned primarily with those monitoring programs outside the boundaries of installations and with those investigations that are aimed at obtaining information essential to the assessment or control of the exposure of man to radiation or to radioactive materials, as described in objective (a) of paragraph 2. The aim of the report is to indicate general principles by which such programs can be designed and operated. Since the problems of fallout of debris from nuclear explosions have been the subject of detailed study by other bodies, notably the United Nations Scientific Committee on the Effects of Atomic Radiation,^(1, 2) this report deals only with environmental surveys related to the handling of radioactive materials and radiation sources. In many cases, however, the results can be interpreted only in conjunction with surveys of fallout of debris from nuclear explosions, and some mention is therefore made of such surveys.

(4) The details of the design and interpretation of an environmental monitoring program can be developed only in relation to the installations with which the survey is associated ; in particular in relation to the individual environments of these installations and the planned, or foreseen accidental, releases of radioactive material. The guidance in this report is intended primarily for those who are concerned with the design and operation of environmental monitoring programs. This guidance is necessarily of a general nature, but will be sufficient to provide a basis for decisions in each individual case. It will also provide an indication of the circumstances which make environmental monitoring necessary. The responsibility for carrying out the programs of monitoring and investigation will fall partly on the management of the installation and partly on public authorities. The demarcation of these responsibilities will depend on local and national arrangements, but in each situation should be clearly defined.

(5) For the purposes of this report, it is convenient to identify three types of environmental monitoring program :

* See Explanation of Terms, Section E. Terms explained in Section E are italicized on their first appearance in the text.