

PLAN OF ACTIVITIES ON THE RADIATION PROTECTION OF THE ENVIRONMENT

A. Introduction

1. At present, the risk assessment and management of radionuclides entering or present in the environment is generally based on human health considerations alone. This is based on the belief that the level of protection afforded to humans under existing regulatory mechanisms also provides a level of protection to the environment which likely does not put non-human species at risk. However, there has been an increasing awareness of the vulnerability of the environment and of the need to be able to demonstrate that it is protected against the effects of industrial pollutants, including radionuclides. This has been reflected in new and developing international policies and legal instruments and agreements, beginning with the Declaration of the United Nations Conference on Environment and Development of 1992 (the Rio Declaration). These have set additional goals for protection that have led to a review of the current approach for assessing and controlling the impact of radionuclides in the environment. Policies and approaches that specifically address impacts of radioactive substances on non-human species are now being developed by a number of international, regional and national organizations.
2. The IAEA and other international organizations have actively fostered information exchange on this subject by organizing a series of international meetings that solicited views from stakeholders and Member States. The roles, responsibilities and relevant activities of the international organizations are outlined in more detail in Section B.
3. At its forty-sixth regular session (September 2002), the General Conference welcomed the steps taken by the Secretariat to assist in developing an international framework for the protection of the environment from ionizing radiation and looked forward to the International Conference on the Protection of the Environment from the Effects of Ionizing Radiation (GC(46)/RES/9). At its forty-seventh regular session (September 2003), the General Conference also encouraged Member States to participate actively in the deliberations of the International Conference on the Protection of the Environment from the Effects of Ionizing Radiation and requested the Director General to report to the Board and the General Conference on its findings (GC(47)/RES/7).
4. The International Conference took place in Stockholm, 6–10 October 2003, and had as its primary objective promoting the development of a coherent international policy on the protection of the environment from the effects of ionizing radiation. It was attended by participants from 38 countries and 11 organizations and included senior policy makers and technical experts from the wide range of backgrounds necessary to reflect all interests in environmental assessment and management¹. The findings of the Conference provided the basis for this Plan of Activities.
5. The Conference concluded that “While accepting that there remain significant gaps in knowledge and that there needs to be continuing research ... there was an adequate knowledge base to proceed and (the Conference) strongly supported the development of a framework for environmental radiation protection”. It also found that “the time is ripe for launching a number of international initiatives to consolidate the present approach to controlling radioactive discharges to the environment by taking explicit account of the protection of species other than humans”.

¹ For the purposes of this Plan of Activities, ‘environmental’ relates to living organisms at various organization levels (i.e. ecosystems, communities, populations, individual organisms).

6. At its forty-eighth regular session (September 2004), the General Conference encouraged the completion of the draft international action plan on the Radiological Protection of the Environment being prepared by the Secretariat and urged the Secretariat to submit a finalized action plan to the Board for approval as soon as possible in 2005 (GC(48)/RES/10).

B. Roles and Responsibilities of International Organizations

7. The international organizations actively participating in creation of a system for protection of the environment from the effect of ionizing radiation are the Agency, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the International Commission on Radiological Protection (ICRP), the International Union of Radioecology (IUR), and the Nuclear Energy Agency (NEA) of OECD. Their current relevant activities are briefly presented below and their actions in 2003-2007 are outlined in more detail in the Annex.

8. The Agency has unique statutory responsibilities within the United Nations family for establishing standards of radiation safety – and by implication for environmental radiation protection – and for providing for the application of those standards at the request of a State. The Agency has therefore a long history of activities in the field of environmental radiation protection; most recently it clarified the underlying principles in its publication IAEA-TECDOC-1270, Ethical Considerations in Protecting the Environment from the Effects of Ionizing Radiation (2002).

9. UNSCEAR assesses the sources and effects of ionizing radiation. It published a Scientific Report entitled Effects of Radiation on the Environment in 1996, and its current work programme includes identification of dose response relationships for effects on biota as well as case studies examining effects at contaminated sites. Its findings can be utilized as the authoritative scientific basis for the future international efforts in environmental radiation protection. A further report on UNSCEAR's work is expected in 2006.

10. ICRP is an independent advisory body providing recommendations and guidance on radiation protection. ICRP intends to publish new general recommendations in 2007, which will include a section on the protection of non-human species. To develop an environmental protection policy ICRP established a Task Group, the results of which were published in ICRP Publication No. 91, A Framework for Assessing the Impact of Ionising Radiation on Non-Human Species (2003). A new ICRP Committee 5 succeeded to the Task Group and has the remit to develop a system for radiological protection of biota. ICRP committee 5 will also provide an initial report giving more detailed recommendations for assessment of radiation effects on a limited number of Reference Animals and Plants.

11. The IUR coordinates scientific research relevant to environmental radiation protection. Presently, the IUR is establishing a network of research organizations to promote collaboration and the resource-effective research that will address general and specific gaps in the ICRP Reference Animals and Plants database.

12. The Nuclear Energy Agency of OECD assists its member countries in developing, through international cooperation, the scientific, technological and legal basis for the safe and economical use of nuclear energy for peaceful purposes. In the area of radiation protection of the environment the NEA has assisted ICRP in arranging relevant stakeholder reviews and building stakeholder confidence. The NEA is expected to continue these activities.

13. The present Plan takes account of the work undertaken by relevant international, regional and major national organizations. In this context, a substantial role is played by the European Commission

through its support to two research projects: FASSET (Framework for Assessment of Environmental Impact), which was completed in 2004, and ERICA (Environmental Risk from Ionising Contaminants: Assessment and Management), which started in 2004. In addition, a national initiative by the United States Department of Energy on the development and implementation of a graded approach to biota protection is to be noted.

C. Aims

14. The main aims of this Plan of Activities are to follow up on the findings of the Stockholm Conference with a view to:

- promoting collaborative work by relevant international organizations that enhances current approaches in radiation protection by taking explicit account of non-human species in developing an approach for the assessment and management of radionuclides entering or present in the environment;
- providing assistance to Agency Member States in their efforts to protect the environment by (a) development of a framework and methodologies to assess radiation impacts on biota, and (b) review of the corpus of radiation safety standards related to the assessment and management of radionuclides entering or present in the environment and revising them, as appropriate.

D. Principles of the Plan of Activities

15. Rigorous regulatory mechanisms are already in place to restrict both the release of radionuclides to the environment and their accumulation in the environment². The explicit consideration of possible impacts on non-human species will strengthen the conceptual basis of radiation protection. It will also address the additional requirements arising from environmental protection and nature conservation legislation.

16. The Agency will in a step by step manner continue its development of a framework, methods and models that provide for the practical application of the relevant approaches to controlling impacts on non-human species, and in particular of the approach recommended by the ICRP.

17. A framework for the radiation protection of the environment needs to be based on the best knowledge available, flexible, applicable in different contexts and be able to accommodate new scientific information. It should be practical and simple, avoid undue burdens on regulators and operators, allow for relevant stakeholder involvement, and allow for harmonization, to the extent possible, of the ICRP's system for the radiation protection of humans with analogous approaches for other pollutants.

18. Regulators and operators will have a key role in testing such a framework and in evaluating its potential implication on the existing radiation protection regimes.

19. It is important to communicate the scientific basis of the framework to decision-makers and the general public.

² For the purposes of this Plan of Activities, 'release' means authorized or accidental radioactive discharges as well as radioactive residues from past activities or accidents.

20. The activities proposed in the present Plan will be carried out within the Agency's approved programme for 2006-2007 and thereafter and within its regular budget.

E. Proposed Activities

21. The activities proposed in this Plan, and which will be implemented in the framework of the 2006-2007 programme and budget, develop further the present approach for assessing, managing and regulating radioactive releases to the environment, by taking explicit account of the protection of non-human species. This Plan of Activities focuses specifically on the actions of the Agency, while taking into account the contributions of other international organizations. It has been developed to allow flexibility in its implementation as work progresses in this area. An illustrative timetable relating to the preparation and initial implementation of this Plan is given in the Annex.

E.1. Coordination

22. In view of the complementary roles of several international and regional organizations as outlined in Section B, and the diversity of views on this rapidly developing subject, there is a need to establish a mechanism for coordination on this subject.

Activity: To establish a coordinating mechanism in order to facilitate coordination of work among international and regional organizations by reviewing their ongoing work on the protection of non-human species. This mechanism will involve coordination among the international and regional organizations identified in Section B (UNSCEAR, ICRP, IUR, IAEA, OECD/NEA and EC) and also national institutes active in the field.

Timing: Following adoption of the Plan of Activities.

E.2. Information Exchange

23. There are three main purposes for the Agency's work relevant to information exchange:

1. To clarify policy and scientific information relating to the protection of non-human species;
2. To inform Member States about the available tools, models and methods that may be used in the assessment of impacts on biota, to provide for intercomparison of methods and to advise on the possible implications of any revised standards for regulation of radionuclides entering or present in the environment;
3. To develop an international consensus on the need for, and, if necessary, the form and content of, standards that address the protection of non-human species.

Activity: To foster information exchange on the protection of non-human species to allow for early identification of issues by regulators, by national bodies of research and expertise in radiation protection and by other key stakeholders.

Timing: Continuously, following adoption of the Plan of Activities.

Activity: To establish a special web page, which will include timely summaries of relevant international activities, aimed at improving material availability to public and stakeholders.

Timing: Following adoption of the Plan of Activities.

E.3. Agency's Safety Standards

24. The Agency's Safety Standards addressing radiation protection are based on human health considerations derived from ICRP Publication 60 (1991). This basic ICRP document assumes that the level of protection afforded to humans under existing regulatory mechanism also provides a level of protection to the environment which likely does not put non-human species at risk. This assumption is presently under review by the ICRP.

25. The Agency's Safety Standards are issued in a hierarchical series of three categories: Safety Fundamentals, Safety Requirements and Safety Guides. The Safety Fundamentals include a principle **that due consideration is to be given to the possible consequences of a practice for the environment, including species other than humans**. However the Safety Requirements and Guides do not take explicit account of the protection of non-human species at present. Consequently, there is value in establishing an iterative process to determine the need for, and if necessary, the form and content of, additional or revised standards.

Activity: To support Member States in developing an understanding and experience in the practical implementation of the framework for the radiation protection of the environment.

Timing: Following adoption of the Plan of Activities.

Activity: To review existing Agency safety standards with a view to determine the implications of including radiation protection of non-human species in these standards.

Timing: Following adoption of the Plan of Activities. This activity will depend on the timescale of other international and regional organizations as outlined in the Annex.

Activity: To develop, as appropriate, Safety Requirements for the radiation protection of the environment and related safety guides.

Timing: This activity is dependent on the timescales of other international and regional organizations, as outlined in the Annex, and will be completed following relevant publications by UNSCEAR and ICRP.

Activity: To develop a technical framework and methodology for drafting procedures that may be used to demonstrate compliance with the objectives of radiation protection of the environment.

Timing: This work is dependent on the Agency's previous activities and on timescales of other international and regional organizations, as outlined in the Annex. In developing guidance on the application of the environmental radiation protection framework, it will be important to provide means to support the capabilities of Member States in the consideration of impacts on non-human species. This might include revision of Safety Report Series No. 19 and modification of guidance on monitoring methods and techniques.

Activity: To provide for the application of Safety Standards. This will include assistance to Member States in the development of national capabilities to conduct assessments for non-human species through case studies and model intercomparisons, training in application of technical means developed by the Agency, as well as appraisal and elaboration of national methodologies upon request.

Timing: Dependent on the development of a technical framework and relevant methodology and on priorities in the application of the Agency's safety standards. This activity started in the framework of the Agency's current EMRAS programme.

Time		Activities	
Preparation of the Plan of Activities	2003	IV	IAEA-UNSCEAR-ICRP-IUR: International Conference on the Protection of the Environment from the Effects of Ionizing Radiation, Stockholm.
	2004	I	UNSCEAR: 1st draft on effects to biota IAEA: Consultants' Meeting to draft the Plan of Activities
		II	UNSCEAR: Committee Meeting, review of the 1st draft on assessment of exposures to biota from radionuclides discharged to the environment IAEA: Technical Meeting to comment on the Plan of Activities
		III	ICRP: Creation of Committee 5 on the protection of the environment IAEA: EMRAS working group on the modeling of biota exposure
		IV	IRSN-ICRP-IUR: Conference ECORAD 2004, the scientific basis for environment protection against radioactivity, Aix en Provence
	2005	I	ICRP: draft on the concept and use of reference Animals and Plants for comment
		II	UNSCEAR: 2nd draft for comment on assessment of exposures to biota from radionuclides discharged to the environment IAEA: Plan of Activities sent to Member States for comment
		III	UNSCEAR: Committee Meeting, review of the 2nd draft on effects to biota ICRP: meeting of Committee 5 to finalize the report on the concept and use of reference animals and plants
		IV	IAEA: EMRAS working group on the modeling of biota exposure IAEA: establishment of the Plan of Activities coordinating mechanism IAEA: start implementation of activities included in the Plan, part E.1 and E.2 IUR: 2nd International Conference on Radioactivity in the Environment, Nice, in cooperation with IAEA
	Implementation of the Plan of Activities	2006	I
II			UNSCEAR: Committee Meeting, review of the final draft on effects to biota ICRP: Concept and use of reference Animals and Plants published IAEA: Implementation of activities of E.1 and E.2, continuing
III			IAEA: EMRAS working group on the modeling of biota exposure IAEA: Implementation of activities of E.1 and E.2, continuing; starts implementation of E.3 ICRP: Basic new recommendations on human and environmental radiation protection adopted
IV			IAEA: Implementation of activities of the Plan continuing UNSCEAR: publication of the report on assessment of exposures to biota from radionuclides released to the environment
2007		I	IAEA: Implementation of activities of the Plan continuing
		II	IAEA: Implementation of activities of the Plan continuing IAEA: Conference on Radioactivity in the Environment: from measurements to assessment and regulation, Vienna
		III	IAEA: Implementation of activities of the Plan continuing
		IV	ICRP: Basic new recommendations on human and environmental radiation protection published IAEA: Implementation of activities of the Plan continuing