SETTING THE PACE

NEW DIRECTIONS STRENGTHEN IAEA SAFETY STANDARDS

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Developing new standards for nuclear, radiation, waste, and transport safety — and the revision of existing ones — are high-priority activities of the IAEA and its Member States.

Pursuant to its Statute, the IAEA has established an extensive body of safety standards in these fields. The standards have tended to follow a common general pattern — a set of basic requirements supported by a number of documents containing detailed guidance.

Over the years, more than 200 safety standards have been published in the IAEA's ***Safety Series*** of publications. They can be grouped into four main families:

- the Nuclear Safety Standards (NUSS);
- the *International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources* (the Basic Safety Standards), with supporting documents;
- the Radioactive Waste Safety Standards (RADWASS); and
- the *Transport Regulations*, with supporting documents.

This article presents an overview of the IAEA's safety standards programme, focusing on recent new developments and approaches to the uniform preparation, review, and publication of the standards in various fields.

NEW PROCESS OF PREPARATION & REVIEW

On 1 January 1996, the IAEA modified its managerial structure, creating a separate Department of Nuclear Safety with the specific responsibility of organizing the preparation and review of the IAEA's safety standards, a high priority objective. A renewed uniform preparation and review process was introduced, covering all areas in which the IAEA establishes safety standards.

As part of the new process, it was decided to create a set of advisory bodies. *(See box, page 7.)* They have harmonized terms of reference to assist the Secretariat in preparing and reviewing all safety standards documents. The bodies are the:

- ***Advisory Commission on Safety Standards (ACSS)***
- ***Nuclear Safety Standards Advisory Committee (NUSSAC)***
- ***Radiation Safety Standards Advisory Committee (RASSAC)***
- ***Waste Safety Standards Advisory Committee (WASSAC)***
- ***Transport Safety Standards Advisory Committee (TRANSSAC).***

The new preparation and review process involves: advisory body approval of a work plan, organizing expert group meetings to draft or revise documents when necessary; submitting documents to the relevant advisory committees (NUSSAC, RASSAC, WASSAC or TRANSSAC) for review; submitting draft texts to the IAEA's Member States for comment; obtaining the (internal) IAEA Publications Committee's approval of each document in order to ensure compliance with the IAEA's editorial policy; submitting the standards to the Director General or, as appropriate, to the Board of Governors for approval after endorsement by the ACSS. IAEA technical officers are responsible for ensuring that documents are prepared or reviewed expeditiously and that they are technically sound. They are also responsible for ensuring that documents are circulated to Member States for comment at an early stage of preparation or review.

NEW APPROACH TO PUBLICATIONS

Following the introduction of the new preparation and review process, the IAEA's Safety Series is being replaced by two new series of safety-related publications, namely:

- the ***Safety Standards Series***; and
- the ***Safety Reports Series***.

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The purpose is to separate those IAEA safety standards publications which spell out safety objectives, concepts, principles, requirements and guidance — as a basis for national regulations, or as an indication of how various safety requirements may be met — from those publications which are issued for the purpose of fostering information exchange in safety.

The publications in the Safety Standards Series will be issued pursuant to the IAEA's statutory function to establish safety standards. The publications in the Safety Reports Series will be issued for the purpose of providing information on ways of ensuring safety (essentially, they will replace the IAEA's Safety Practices documents and other publications).

The change took effect in 1996, with the publication in the Safety Standards Series of the latest edition of the *Regulations for the Safe Transport of Radioactive Material* as Safety Standards Series No. ST-1.

The Safety Standards Series comprises the following levels of documents:

- ***Safety Fundamentals***
- ***Safety Requirements***
- ***Safety Guides***

The Series will cover nuclear safety, radiation safety, waste safety, and transport safety. It also covers general topics (such as governmental organization, quality assurance, and emergency preparedness) relevant to all four of those fields which will be dealt with in a separate category of general safety documents. All documents at the level of Safety Fundamentals and Safety Requirements require the approval of the IAEA Board of Governors before publication. Safety Guides are issued under the authority of the IAEA Director General.

The ***Safety Fundamentals*** documents are the "policy documents" of the IAEA Safety Standards Series. They state the ***basic objectives, concepts and principles*** involved in ensuring protection and safety in the development and application of atomic energy for peaceful purposes. They will state — without providing technical details and, as a rule, without going into the application of principles — the rationale for actions necessary in meeting Safety Requirements.

Three Safety Fundamentals publications already exist in the Safety Series. They relate to the safety of nuclear installations; radiation protection and the safety of radiation sources; and the safe management of radioactive waste. In response to suggestions made in the IAEA Board of Governors, these three publications are in the process of revision with a view to their amalgamation into a single Safety Fundamentals document to be published in the Safety Standards Series.

The ***Safety Requirements*** will deal with the ***basic requirements which must be met in order to ensure the safety of particular activities***. These requirements are governed by the basic objectives, concepts and principles presented in the Safety Fundamentals documents. The written style (with "shall" statements) will be that of regulatory documents so that the Safety Requirements may be adopted by States, at their own discretion, as national regulations.

The ***Safety Guides*** documents will contain ***recommendations*** (with "should" statements), based on international experience, regarding measures to ensure that the Safety Requirements are met. But unless alternative equivalent measures are implemented, the "should" statements become "shall" requirements.

PLAN OF ACTION

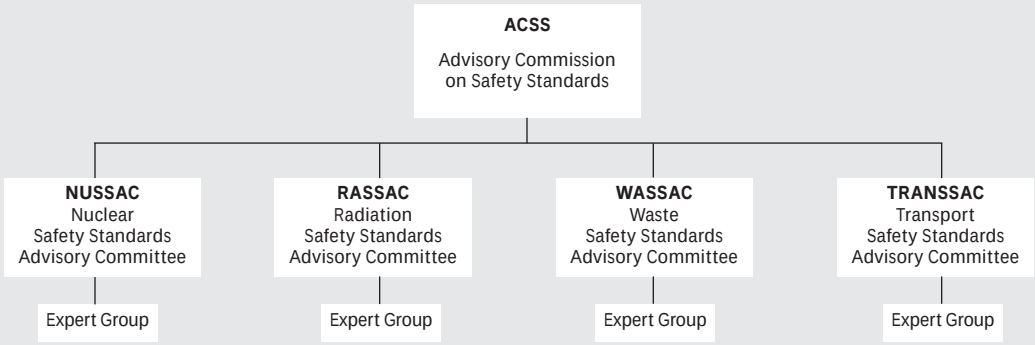
The IAEA has assigned the highest priority to the development of safety standards. A concerted effort is being devoted to make the standards available in the six official languages of the IAEA, to cut the lag time between their approval and publication in the IAEA's official languages to a minimum, and to make them more easily available to the actual users in the Member States.

In each of the four fields of safety, documents are being reviewed, revised, or newly prepared. *(See the Supplement in this edition, for a full listing in each field.)*

The new advisory bodies have been carrying out the following activities.

Advisory Commission on Safety Standards (ACSS). One of the first activities of the Commission was the review and endorsement of the 1996 edition of the *Transport Regulations*, which were then submitted to the Board of Governors for approval. In its meetings in 1996 the Commission endorsed the plans for development of safety standards submitted by the four Advisory Committees, and recommended the preparation

THE NEW ADVISORY BODIES FOR IAEA SAFETY STANDARDS



A number of advisory bodies have been set up for the preparation and review of IAEA safety standards.

The *Advisory Commission on Safety Standards (ACSS)* is a standing body of senior government officials holding national responsibilities for establishing standards and other regulatory documents relevant to nuclear, radiation, waste and transport safety. It has a special overview role with regard to the IAEA's safety standards and provides advice to the Director General on the overall programme related to safety standards.

The functions of the ACSS are to:

- provide guidance on the approach and strategy for establishing the IAEA's safety standards, particularly in order to ensure coherence and consistency between them;
- resolve outstanding issues referred to it by any of the Advisory Committees; to endorse, in accordance with the IAEA's safety standards preparation and review process, the texts of the Safety Fundamentals and Safety Requirements to be submitted to the Board of Governors for approval and determine the suitability of Safety Guides to be issued under the responsibility of the Director General; and
- provide general advice and guidance on safety standards issues, relevant regulatory issues and the IAEA's safety standards activities and related programmes, including those for promoting the worldwide application of the standards.

In addition, four advisory committees have been set up: the *Nuclear Safety Standards Advisory Committee (NUSSAC), the Radiation Safety Standards Advisory Committee (RASSAC),* the *Waste Safety Standards Advisory Committee (WASSAC),* and the *Transport Safety Standards Advisory Committee (TRANSSAC).* They are standing bodies of senior regulatory officials with technical expertise in nuclear safety, radiation safety, radioactive waste safety, and radioactive materials transport safety, respectively. They provide advice to the Secretariat on the overall programmes — and have the primary roles in the development and revision of the safety standards — in their respective areas of safety. The functions of these Advisory Committees are:

- to recommend the terms of reference of safety documents in the IAEA's programmes on nuclear safety, radiation safety, radioactive waste safety, and radioactive materials transport safety, and of the groups involved in the development and revision of those documents, in order to promote coherence;
- to agree on the texts both of standards to be submitted to the Board of Governors for approval and of Safety Guides to be issued under the responsibility of the Director General and to make recommendations to the ACSS, in accordance with the IAEA's safety standards preparation and review process;
- to provide advice and guidance on a continuous programme for reviewing and developing the safety standards and supporting documents; and
- to provide advice and guidance on safety standards in their respective fields, relevant regulatory issues, and activities for supporting the worldwide application of the IAEA's safety standards in those areas.

of material on topics of common interest to all Committees (i.e. governmental organization, quality assurance, emergency preparedness, glossary of terms) under a special category of general safety documents. Early in 1997, the Chairpersons of the Commission and the four Advisory Committees met and decided on a unified set of procedures for development of safety standards.

The Commission also considered topics that are of interest to more than one Advisory Committee and recommended the lead Committees for the development of these topics. *(See table.)*

ADVISORY COMMITTEES FOR SELECTED TOPICS

Topic of interest	Lead Committee	Participating Committees
Exemption levels	RASSAC	WASSAC, TRANSSAC
Very low level waste management (clearance levels)	WASSAC	RASSAC
Waste storage at reactor site	WASSAC	NUSSAC, RASSAC
Spent fuel storage	NUSSAC	
Spent fuel disposal	WASSAC	
Decommissioning/dismantling	WASSAC	NUSSAC
Control of discharges	RASSAC	WASSAC, NUSSAC
Environmental restoration	WASSAC	RASSAC

Note: RASSAC will take the lead in the preparation of documents on environmental monitoring and occupational radiation protection. The list has been prepared taking into account guidance provided to the Committees by the Commission. Contribution to the development of a topic is not exclusive to those listed in the last column.

In the immediate future the Commission is expected to consider a number of policy issues that have been raised in connection with the development of safety standards. These include issues such as co-sponsorship of standards, collaboration with other international organizations, potential exposures, exemption and exclusion, emergency preparedness, regulatory independence, quality assurance and decommissioning of non-reactor facilities.

In the next several years the Commission will be increasingly occupied with the review and endorsement of new and revised safety standards that have reached the final stage of their development. It is expected that in 1998 two Safety Requirements and a total of ten Safety Guides will be ready for final review and endorsement by the Commission.

In the category of general safety, the work has started for the development of a Safety Requirement on emergency preparedness and response; the document will be supplemented by the revision of existing Safety Guides on the topic (Safety Series Nos. 50-SG-G6, 50-SG-O6, 98 and 109). Another Safety Requirement on legal and governmental infrastructure for nuclear, radiation, radioactive waste, and transport safety is nearing completion. This document will be supplemented by the revision of existing NUSS programme documents on the topic (Safety Series Nos. 50-SG-G1, G2, G3, G4, G8 and G9); the scope of the revised Safety Guides will be broadened to include other large installations (such as waste repositories and research reactors) in addition to nuclear power plants. It is planned to develop a new Safety Guide to cover all aspects of licensing of radiation sources including safety assessment, inspection and enforcement. The latest edition of safety standards on quality assurance were published in 1996; no revision of the standards is foreseen prior to the year 2001.

Nuclear Safety Standards Advisory Committee. Members have agreed on a programme of work covering the next three to four years. This involves an ambitious plan for the revision and updating of the existing NUSS documents in the areas of nuclear power plant operation, design and siting. The topics of quality assurance and governmental organization are now considered to fit more appropriately into the new general safety category. The first-priority document, the Safety Requirements document on nuclear power plant operation, has been sent to all Member States for review and comment. The Safety Guides related to nuclear power plant operation (Safety Series Nos 50-SG-O1 to O12) are at various stages of revision, two new Safety Guides dealing with fire safety during operation and modifications to nuclear power plants are being developed. The revision of safety standards in design and siting areas is at the same stage

as that of the operations area; a new safety guide dealing with software for computer-based systems important to safety is being developed in the design area. NUSSAC is also involved in the revision of safety standards for research reactors.

The aim is to have a completely revised set of documents by the year 2001. This process, already a high priority, has been given added impetus by the recent entry into force of the Convention on Nuclear Safety. It seems likely that the IAEA standards will eventually be used in the Contracting Party discussions. Another important reason for updating these standards is that they are needed for internal IAEA use in providing safety review services and assistance to Member States under the Technical Co-operation programme.

Radiation Safety Standards Advisory Committee. A priority is to complete the development of guidance for implementing the requirements of the Basic Safety Standards. In the near future, three draft Safety Guides on occupational exposure control and assessment will be submitted to the ACSS for endorsement, and draft guidance for the uranium mining industry will be circulated to Member States for comment. Also, it is expected that Safety Guides relating to consumer products containing radioactive material and to radiation sources will be completed in the near future. Guidance for occupational physicians on the health surveillance of radiation workers is to be published in the Safety Reports Series. A start has been made with the development of guidance on applying the concepts of exclusion, exemption, and clearance, on preventing, detecting, and responding to illicit trafficking in radioactive materials, on environmental and effluent monitoring, and on medical exposures to ionizing radiation; drafts of the documents in question will be reviewed by RASSAC in 1998.

Waste Safety Standards Advisory Committee. The priority in 1997 was the finalization of Safety Requirements and a Safety Guide on the near-surface disposal of radioactive waste. In addition, work on Safety Requirements for the pre-disposal of radioactive waste and a number of Safety Guides reached an advanced stage. Special emphasis is being placed on the development of criteria for the exemption of low-level waste from regulatory control; a subgroup of WASSAC is examining proposals for a unified approach to this subject. Issues relating to the long-term safety of geological repositories are being considered by another subgroup, whose conclusions will serve as a basis for the drafting of standards for the geological disposal of radioactive waste.

Transport Safety Standards Advisory Committee. Following publication of the revised *Transport Regulations*, which have the status of Safety Requirements, TRANSSAC has recommended rapid completion of the current work on the supporting documents: *Advisory Material for the Regulations for the Safe Transport of Radioactive Material* (ST-2) and *Emergency Response Planning and Preparedness for Transport Accidents involving Radioactive Material* (ST-3).

TRANSSAC also has recommended a review of the process for revising the *Transport Regulations*, and a group of consultants has started reviewing the process. A programme of implementation support, training, and information services has been drawn up by the IAEA Secretariat and endorsed by TRANSSAC.

Ongoing Support and Guidance. The IAEA Director General appointed the Advisory Committee members in 1995 for three-year terms expiring at the end of 1998. The members of the ACSS were appointed in 1995 for four-year terms expiring at the end of 1999. Consequently, the Agency's Secretariat this year will invite Member States to nominate senior experts in the respective fields for membership of the advisory committees during 1999-2001. The experts should represent the views of the competent national regulatory organizations.

With the support of Member States through the provision of experts to serve in drafting groups and of timely comments on draft texts, the preparation and review of many safety standards will be completed by the year 2001.

The IAEA Secretariat will monitor how Member States use the IAEA's safety standards and, when necessary, initiate the preparation of supplementary documents to assist Member States in using them. The safety standards in each field will be reviewed periodically in order to ensure complete coverage of the topics involved. ❑