

Highlights of the IAEA General Conference: 32nd regular session

States take important steps in several areas

Important steps in several areas of global nuclear co-operation were taken by Member States at the 32nd regular session of the IAEA General Conference, which concluded in Vienna on 23 September 1988. The Conference was attended by more than 600 delegates from 100 States. Elected as President of the Conference was Ambassador Abdul Halim bin Ali of Malaysia.

Resolutions were adopted on a wide range of subjects including the dumping of nuclear wastes; liability for nuclear damage; measures to strengthen international co-operation in nuclear safety and radiological protection; sustainable development; the IAEA budget for 1989; Israeli nuclear capabilities and threat; and South Africa's nuclear capabilities.

Dumping of nuclear waste. Citing concerns among States about toxic waste disposal practices within their territories, the General Conference adopted by consensus a resolution condemning practices that "would infringe upon the sovereignty of States" and/or "endanger the environment or public health". The resolution requests the IAEA Director General to set up a technical working group of experts to elaborate an internationally agreed code of practice for international transactions involving nuclear wastes. The code of practice would be based, among other things, on a review of current national and international laws and regulations on waste disposal.

Liability for nuclear damage. The Conference adopted a resolution requesting the IAEA Board of Governors to convene in 1989 an open-ended working group to study all aspects of liability for nuclear damage as part of its on-going consideration of nuclear liability. (See separate article in this edition on the adoption of a Joint Protocol on nuclear liability.)

Nuclear safety and radiological protection. The Conference adopted a resolution endorsing the Board of Governors' wish to maintain emphasis in these areas. Particularly mentioned were the IAEA's recently revised Nuclear Safety Standards (NUSS) Codes of Practice; the report of the IAEA's International Nuclear Safety Advisory Group (INSAG) on basic safety principles for nuclear power plants; and the Operational Safety Review Teams (OSARTs) that upon request assist national authorities in enhancing the safety of their nuclear power plants through on-site reviews.

Sustainable development. The adopted resolution requests the Director General to submit to the IAEA Board of Governors in February 1989 information on the contribution of the Agency's programme activities towards achieving the objectives of environmentally sound and sustainable development. The information will serve as a basis for a report to be submitted to the 44th session of the United Nations General Assembly in 1989.

IAEA budget for 1989. The adopted resolution authorizes expenditures of approximately US \$157 million for 1989 (at an exchange rate of 12.7 Austrian schillings to the dollar). This represents zero growth in real terms. Additionally, 47 Member States at the General Conference pledged contributions of more than US \$19 million toward a target of US \$42 million for the Agency's Technical Assistance and Co-operation Fund for 1989.

Israeli nuclear capabilities and threat. The adopted resolution *inter alia* "condemns the continued refusal by Israel to renounce the possession of nuclear weapons and to submit all its nuclear facilities to the Agency's safeguards". It requests the Director General to con-



Elected President of the 32nd regular session of the IAEA General Conference was Ambassador Abdul Halim bin Ali of Malaysia (center). Also shown are IAEA Director General Hans Blix (left), and Mr Muttusamy Sanmuganathan, Secretary, Policy-making Organs of the IAEA. (Credit: Katholitzky for IAEA)

tinue to report, as appropriate, to the IAEA Board of Governors and to the General Conference on this subject. It further requests the Director General, "pending the acceptance by Israel to place all its nuclear facilities under IAEA safeguards", to prepare a technical study on "different modalities of application of IAEA safeguards in the region".

South Africa's nuclear capabilities. Recalling the recommendation of the IAEA Board of Governors in 1987 to suspend South Africa from the exercise of the privileges and rights of membership in the Agency, the

General Conference resolved "to consider and take a decision" on the Board recommendation at its 33rd regular session (scheduled for 1989), at which an item on the matter is to be included on the agenda. It requests the Director General to continue to take "all possible measures" to ensure the full implementation of a 1986 General Conference resolution which, *inter alia*, demanded that South Africa "urgently submit" all of its nuclear installations and facilities to IAEA safeguards.

The Conference also adopted resolutions relating to the status and implementation of international conventions for which the IAEA is depositary; the financing of technical assistance; staffing of the Agency's Secretariat; and composition of the Board of Governors.

IAEA Board of Governors 1988-89

The IAEA's newly constituted Board of Governors for 1988-89 has elected as its Chairman Ambassador Michael Shenstone of Canada. He succeeds Dr Reinhard Loosch of the Federal Republic of Germany. Elected Vice-Chairmen are Dr Georg Sitzlack, President of the German Democratic Republic's National Board for Atomic Safety and Radiation Protection, and Ambassador Hocine Mesloub, Algeria's Resident Representative to the IAEA.

The 35 Member States on the Board for 1988-89 are Algeria, Argentina, Australia, Brazil, Canada, China, Colombia, Côte d'Ivoire, Cuba, Denmark, Egypt, France, German Democratic Republic, Federal Republic of Germany, Ghana, Hungary, India, Indonesia, Japan, Republic of Korea, Kuwait, Libyan Arab Jamahiriya, Malaysia, Mexico, Netherlands, Pakistan, Peru, Senegal, Spain, Switzerland, Turkey, USSR, United Kingdom, United States, and Yugoslavia.

Highlights of the Director General's statement to the IAEA General Conference

Citing increasing global energy demands and growing concerns about environmental pollution caused by the burning of fossil fuels, Director General Hans Blix urged countries to "critically examine" energy needs and policies for industrial and social development, particularly in connection with electricity production.

"It is already clear that we shall need an expansion of the electricity generating capacity in the world," he said. In industrialized and developing countries, he noted, electricity consumption continues to grow in line with growing gross national product, a key indicator of economic development. "A key question is, therefore, how is all this electricity to be generated?", he said. He emphasized that nuclear power — which already accounts for more than 16% of the world's total electricity production — has a significant role to play on both economic and environmental grounds.

"There is now a greatly increased public and political awareness of environmental problems...notably the enormous emissions of carbon dioxide inevitably linked to the burning of fossil fuels and absent in nuclear power," he said. "When authorities and utilities are examining possible sources of expanded electricity production, they chiefly look to fossil fuels, notably coal, and nuclear power."

In confronting the serious problems of energy and environment, the Director General stressed that concerted action "may be indispensable" and can only come from common convictions and a mutual accommodation that emerge from a discussion between the world's governments. The IAEA, he said, has an important role to play "in contributing expert knowledge to such a discussion".

Regarding other aspects of the IAEA's work and items on the General Conference agenda, Dr Blix announced that the Board of Governors has approved the voluntary offer safeguards agreement between China and the IAEA. Agreements have thus been concluded by the Agency and all five nuclear-weapon States. All countries in which a nuclear reactor is operating have now accepted safeguards on all or part of their nuclear activities, he said.

Concerning nuclear non-proliferation, he said that the Agency will closely follow the preparations and proceedings of the Fourth Review Conference on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) to be held in 1990, which will decide whether the Treaty shall continue in force indefinitely or shall be extended for an additional fixed period or periods. This

Journalist encounter on safeguards and nuclear non-proliferation

Some 30 representatives of national and international news media attended a journalist encounter in Vienna on Sunday, 18 September 1988 to examine the role and functions of the IAEA safeguards system. The encounter provided an opportunity for frank and open discussions among journalists, international experts, and Agency officials. The journalist encounter was held on the eve of the 32nd Regular Session of the Agency's General Conference from 19-23 September 1988.

Dr Hans Blix, Director General, opened the meeting with a presentation stating that the safeguards verification operated by the Agency is a part of a much larger effort to avoid even more States acquiring nuclear weapons. He expressed the hope that the encounter would help to provide a greater understanding of the safeguards system and the role of the Agency in the non-proliferation issue. He stressed that the system is not an "infringement on national sovereignty", because States voluntarily assume the obligation to achieve a "maximum of confidence" that their nuclear energy programmes do not contribute to a nuclear weapons capacity. This confidence is achieved through a combination of inspections, electronic surveillance, and other technical measures to verify the peaceful uses of nuclear materials and installations.

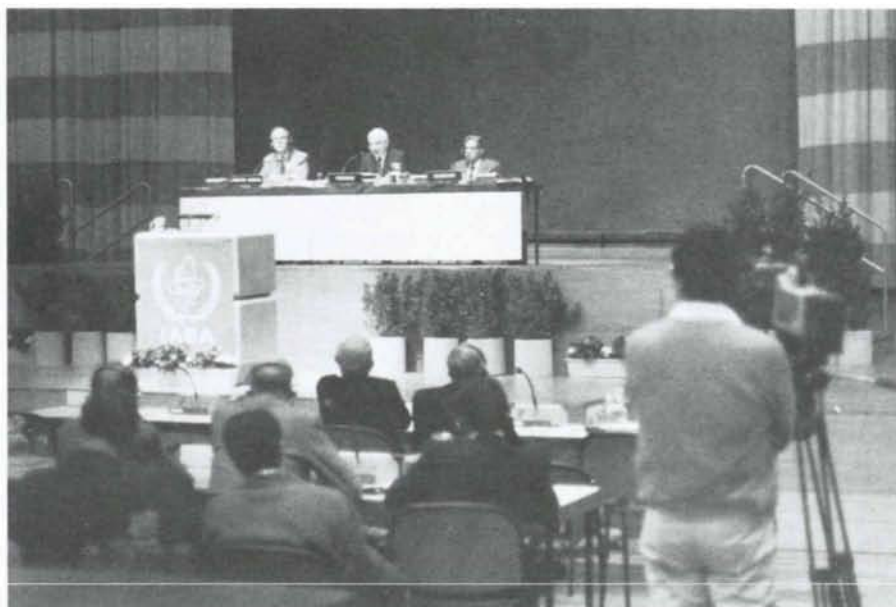
An overview of the history and origin of the safeguards system was provided by Mr Myron Kratzer, Senior Associate Consultant and Chairman of the Advisory Board of the Energy and Environment Group of ERC International (USA). Mr Jon Jennekens, Deputy Director General for Safeguards, provided a technical overview of the safeguards system. Also attending were safeguards inspectors, who responded to questions from journalists. An exhibit and demonstration of safeguards equipment and inspection tools provided further clarification of the implementation of the safeguards programme.

Panel discussions included presentations on the following issues: "Developing countries and the IAEA safeguards", Mr Djali Ahimsa, Director General, National Atomic Energy Agency (Indonesia); "Why the USSR is interested in IAEA safeguards", Mr Mikhail Ryzhov, Deputy Director, International Relations Department,

USSR State Committee on the Utilization of Atomic Energy; "Why France is interested in IAEA safeguards", Mr Bertrand de Galassus, Deputy to the Director of International Relations, Commissariat à l'énergie atomique (France); "Japan and IAEA safeguards", Mr Mitsuho Hirata, Director General, Oharai Research Establishment, Japan Atomic Energy Research Institute; "The importance of safeguards in the nuclear industry", Mr Reinhard Loosch, Director, International Relations, Federal Ministry for Research and Technology (Federal Republic of Germany); and "My experience in IAEA safeguards", Mr Peter Tempus, Special Adviser to the President, Board of the Swiss Federal Institutes of Technology (Switzerland).

A total of 28 journalists representing the following news media outlets attended the encounter: Clarin (Argentina); Radio Austria International, Information Service IWAG, and Die Vereinten Nationen und Oesterreich (Austria); Belgian Radio and Television (Belgium); Jornal do Brasil (Brazil); Xin Hua News Agency (China); Jyllands-posten (Denmark); Libération (France); Der Spiegel and B.P.A. Schreiber (Federal Republic of Germany); Press Trust of India (India); The Asahi Shimbun (Japan); Dutch and Belgium media (Netherlands); The Pakistan Times (Pakistan); Przegląd Tygodniowy (Poland); Svenska Dagbladet (Sweden); Neue Zürcher Zeitung (Switzerland); TASS (USSR); The Times (United Kingdom); Christian Science Monitor, Mutual Broadcasting System, Radio Free Europe, Nucleonics Week, Associated Press, Nuclear Control Institute Bulletin (United States); and Delo (Yugoslavia).

Most participants found the encounter to be informative and useful, and they encouraged the organization of similar meetings with the international press on other key issues of common concern. In response, the IAEA Divisions of Public Information and Nuclear Safety jointly organized a one-day seminar for journalists on 5 December 1988 on radiation "in perspective". Mr Myrddin Davies, Technical Assistant to Lord Marshall, Chairman, United Kingdom Central Electricity Generating Board, was scheduled to attend the seminar as a guest speaker on the subject of radiation from our living environment.



Delegates from 100 States attended the IAEA General Conference, convened at the Austria Center in Vienna.

decision, he said, will affect the basis of much of the Agency's safeguards responsibility.

In reference to a General Conference agenda item on the subject, the Director General reported on his discussions with the Government of Israel on the subject of safeguards. In a letter to the Conference, Israel stated that "the issue of full-scope safeguards can be satisfactorily settled within a nuclear-weapon free zone". The Director General noted that Member States will want to "consider not only how agreement on such a zone can be negotiated, but also how full-scope safeguards might be established and operate in such a zone".

He also referred to an item relating to South Africa, which has announced its consideration of adherence to the NPT. He reiterated that "an agreement on full-scope safeguards, following a South African adherence to the NPT, should follow the same lines as the safeguards agreements which the Secretariat has negotiated with other NPT parties".

Concerning global co-operation in matters of nuclear plant safety, Dr Blix pointed out that "an expanding part" of the Agency's work is devoted to this area. He noted the importance of existing international conventions under Agency auspices, including those in fields of emergency planning and assistance, and the physical protection of nuclear material. He further cited the issuance of revised nuclear plant safety codes and basic safety principles for nuclear power plants under two Agency programmes, and the continued high interest among Member States in the IAEA's Operational Safety Review Teams (OSARTs). He also noted the launching of a programme to promote operational safety of the world's nuclear research reactors, which number 326 in 55 countries.

Regarding radioactive waste disposal, Dr Blix referred to reports of toxic wastes, including nuclear

wastes, being dumped in developing countries and said that the General Conference will be considering the matter in detail. He urged Member States to consider the idea of developing some Agency guidelines to be followed for international radioactive waste transactions.

In reporting on the Agency's work in the field of radiation protection, Dr Blix cited the latest report by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Although the installed electricity generating capacity of nuclear reactors worldwide has more than doubled since 1982, the Director General noted that the present annual per capita radiation doses received by the world's adult population from all activities in the nuclear fuel cycle are still a tiny fraction, namely 0.1% of the natural radiation doses to the population.

Concerning technical co-operation, Dr Blix said that significant experience and progress in IAEA regional agreements for Asia and the Pacific and Latin America will be applied elsewhere, notably Africa, when the possibilities are assessed for similar arrangements. He further noted the international conference on food irradiation to be convened this December (1988) in Geneva by the IAEA, FAO, WHO, and the International Trade Centre UNCTAD/GATT.

In reference to the Agency's budget and finances, he said financial problems continue to influence programmes. "While the budget is at zero real growth, the paid contributions regrettably show negative growth," he said. He said that further savings are attainable through more co-operative measures by governments and their authorities and through less demands in some administrative services.

Copies of the Director General's address are available from the IAEA Division of Public Information.

Scientific meeting on radiation protection

A special scientific meeting on radiation protection was held on 21 September in conjunction with the IAEA General Conference where scientists reviewed current issues of scientific and practical importance in radiation protection. The meeting focused on the need for better control of small radioactive sources used in industry; the work of the Agency in radiation protection; and the crucial issue of public perception of ionizing radiation and the distortion of the use of resources that can result from an exaggerated anxiety about the effects of small radiation exposures as compared with other sources of much greater public hazard.

Keynote speakers at the opening sessions included B. Lindell, former Director of the State Radiation Protection Institute, Sweden; R.H. Clarke, Director, National Radiological Protection Board, United Kingdom; D.J. Beninson, Director, Licensing of Nuclear Installations, National Atomic Energy Commission, Argentina; O. Ilari, Deputy Head, Division of Radiation Protection and Waste Management, Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (NEA/OECD); and L.A. Buldakov, Deputy Director, Institute of Biophysics, Ministry of Health, USSR.

Sir Edward Pochin, former Chairman of the International Commission on Radiological Protection (ICRP), and Chairman of the meeting and Rapporteur to the General Conference, summarized the meeting in a report to the General Conference. Excerpts of his report follow:

"First, I should mention the increasing precision with which the effects of low doses of radiation can be estimated, both from the unhappy experience in Hiroshima and Nagasaki, and from an increasing number of other sources of exposure of groups of people, commonly for medical reasons. There are several authoritative reports reviewing these sources of epidemiological data which are now nearing completion. They suggest that, for example, the frequency of fatal cancers that may be caused by radiation may prove to be two or three times as great as was considered 11 years ago. In the circumstances of exposure of those of working ages and at dose rates received occupationally, such a figure has been indicated by fuller information and by a more prolonged study of the way in which cancers continue to occur following an earlier radiation exposure. These studies will be complete at the end of this year by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), and, next year and later, in other studies of an authoritative character which are likely to have implications for review of the dose limits (those limits of the amounts of radiation that should not be exceeded either by any worker in the course of occupational exposure in any year or by the public). In the context of occupational exposure, this increasing precision of estimates of risk is less likely to have effects on working practice than on the dose limits them-

selves, simply because in most forms of occupational exposure, the average dose rate within the work force is commonly already less than about 1/20 of the dose limit for any year.

"There was also a useful review of the precautions that may be appropriate after any severe accident when, for example, the restriction of a food supply may be desirable to avoid unduly high doses to local populations or to the general population. In this situation, there will be harm — to the population by the restriction of a food supply (for example due to changes in diet in children, in members of the population, or in particular groups). There clearly will be some component of harm to the population resulting from a restriction of a food supply, but this harm should be less than the harm which is prevented by the use of such a restriction. Obviously, there will be an optimum balance so that you do not do more harm by restricting than you avoid by the use of that restriction. The corollary of this is that a restriction more severe than this estimated optimum level is not better protection, but worse protection.

"There was also discussion of levels of doses which are so extremely small that they properly could be regarded as exempt from certain considerations of calculation (e.g. very small doses to many members of a population, where the exposure is so minor in magnitude that the risk would ordinarily be regarded as trivial). The figure suggested for consideration as meriting exemption is 10 microsieverts (mSv) from any one source, which would give a radiation dose equal to what we receive in any two weeks of our life from natural sources. That particular figure might require further discussion; but, clearly there is some such figure at which the dose should quite properly be regarded as trivial.

"The second session, dealing with small industrial sources, showed that on 10 occasions during the last 28 years, such sources have been picked up, commonly and distressingly by children, after being found lying around having been negligently left on a building site, with the children and their family clearly unaware of the nature and the danger of these sources when removed from their shielding. In these 10 episodes, 26 deaths have occurred from the exposure of members of the family to an unrecognized source held within the household. This is all the more distressing due to the easy avoidability of an accident by better education and information of those responsible for the use of these sources in a wide field.

"The session also emphasized the need in many countries, and not only in developing countries, for help in the disposal of radium sources. Formerly used in medicine, but now no longer used for this purpose, they are often in a precarious state and liable to be leaking. It was good to hear that the Agency has published advice on dealing with these sources. I hope that international help, as well as international advice, will be available to provide small facilities in which the storage would be needed and to help the users who are con-



A special scientific meeting on radiation protection was convened during the IAEA General Conference. Chairman and Rapporteur was Sir Edward Pochin (above center), former Chairman of the International Commission on Radiological Protection (ICRP). Also shown are Dr Morris Rosen (right), Assistant Deputy Director General and Director of the IAEA Division of Nuclear Safety, and Dr Abel González, Head of the Division's Radiation Protection Section. (Credit: Katholitzky for IAEA)

cerned with the difficulty of making proper arrangements for disposal locally.

"The third session, on the work of the Agency, showed a very impressive and valuable range of important activities, advice, and co-operation. Several points of general value were raised: the value of there being a national protection structure or organization in all countries to act as an interface between international advice, and national review and acceptance of aspects of such advice. There is much international advice, as well as that from the Agency and from the International Commission on Radiological Protection (ICRP), which reviews appropriate measures for ensuring proper safety of occupational and public activities involving radiation exposure. The ICRP is active in this way; UNSCEAR gives authoritative reviews every few years of the amounts of radiation from different sources and the amounts of risk incurred by exposure to those sources; and the Agency offers its valuable advice on many practical issues. These international sources should interface within each nation, as appropriate, with some scientific advisory group to Government, with Government establishing policy and maintaining a regulatory service to impose the necessary precautions.

"Finally, a very perceptive session reviewed the communication and acceptance of information on safety

procedures which involve, clearly, the continuing need for increased education at various levels of the public, in schools and in the media, and among decision-makers in Government, on the necessary technical issues involved in radiation and radiation protection. Points were raised, for example, in regard to the disposal of wastes, where the opinion was expressed that much of the problem and the difficulty is political rather than technical. Also, that in the public and in the media, the evaluation of the importance of risk is determined much more by the source or cause of the risk (which is an important factor) than by the size of the risk which, as a doctor of medicine and with concern for public health, I regard as equally important and as a necessary corollary. The size is as important as the nature of the risk in making decisions. And as a consequence of the sometimes confused attitude towards the size of risks, we must note the much greater expense, and much greater expenditure of national resources at present, to prevent a single death from radiation, than to prevent, commonly, many deaths from the more familiar hazards of modern civilization and of life. The anxiety about radiation was interestingly illustrated by Academician Romanenkov, Public Health Minister for the Ukrainian (Soviet Socialist Republic), by the frequency with which common symptoms and diseases in Kiev following the

Chernobyl accident were attributed to radiation for the first two months but returned, largely, to normal frequencies within something like six months.

“Finally, the meeting expressed the hope, in which I join, that similar scientific sessions might become the pattern in future years.”

Meeting of senior nuclear safety officials

In connection with the IAEA General Conference, senior officials of nuclear regulatory and safety agencies met for closed informal sessions focusing on basic safety principles for nuclear power plants, operational safety, and severe accident management. Session chairmen were M. Laverie of France, L. Zech of the USA, and S. Havel of Czechoslovakia.

The first session focused on the International Nuclear Safety Advisory Group (INSAG) Basic Safety Principles published this year and how to apply and verify the principles to achieve enhanced safety. The INSAG report was prepared in an effort to formulate where possible commonly shared safety concepts and addressed the nuclear community as a whole. Mr Laverie said that it was clear that the report was “of great value as an international reference point” which complements and supplements the work done by the Nuclear Safety Standards Advisory Group on the NUSS series of safety codes and guides.

A number of participants raised the possibility that the INSAG report be combined with comments to form a new document which would provide a fundamental philosophy of safety which could, after an international consensus, form an integral part of the NUSS system. Specific working groups to elaborate some practical ways and dispositions to improve implementation of the principles were also suggested in areas such as operational safety, accident management, probabilistic safety assessment, and training. Mr Laverie pointed out that quite a lot of the 50 specific principles will provide “useful food for thought”. As for whether it could be revised to form part of the NUSS series, which are approved by the Board of Governors and thereby acquire “authority”, E. Ryder, UK NII, suggested that the INSAG report seems to be getting such a “good reception that it will generate its own authority”.

There was a general consensus that the document should be promoted to become an integral part of the decision-making process in national safety-related organs and that it should be used as a tool to help improve the public perception of nuclear safety.

The second session of the meeting centred on operational safety as a major component of nuclear safety being addressed by the Agency and the new World Association of Nuclear Operators (WANO). A presentation on the results of the first 25 IAEA operation safety review team (OSART) assessments was followed by an expert panel and floor discussion of qualitative and quantitative operational safety assessment methods.

L. Zech, Chairman of the US Nuclear Regulatory Commission, noted three important themes in discus-

sions on nuclear safety. First, there was clear recognition that safety of nuclear power plant operations should remain a top priority of the IAEA and its members. Second, there was general agreement on the usefulness of team assessments of operational safety at each plant by competent people from outside that plant's operating organization — by the utility itself and others in the industry, as well as by national regulatory and international organizations. Although the difficulties in directly assessing the INSAG principles of a “safety culture” were recognized, efforts to pursue this goal were considered important and worthwhile. And third, there seemed to be considerable interest in the value of supplementing team assessments by the careful use of effective indicators which would provide a trend of safety performance.

The concluding session dealt with severe accident management providing a review of different approaches being derived in various countries. S. Havel, Czechoslovakia, pointed out three important aspects shared by the panelists. The prevention aspect of accident management were deemed most important. These include all actions taken to prevent core melt down by activating powerful plant system capabilities; if this cannot be achieved, focus should be on depressurization of the system; and preserving containment integrity highlighting that in some cases the concept of filter and venting containment deserve consideration.

The panel discussion deemed it obvious that any accident management action currently being considered or examined to be included for future use must be based on the probabilistic best estimate analysis, including plant specifics.

Citing examples from the USA, Sweden, FRG, USSR, and France, he pointed out that plant specific accident management procedures would include examination of the plant vulnerabilities to severe accidents, to further reduce the activated core melt frequencies, to utilize all available sources to shut the reactor down, to cool the core, and to preserve containment integrity. This cannot be achieved, it was expressed, by developing generic procedures, but can be achieved in the long term by developing plant specific accident management procedures.

Additionally, it was expressed that plant specific accident management must include the human factor element, training, and retraining of plant management and operating staff. The discussions resulted in certain specific recommendations to increase international co-operation in the field of severe accident management to be reviewed by the Agency.

Status of International Conventions under IAEA Auspices

Convention on the Physical Protection of Nuclear Material Status (as of 28 October 1988): 47 signatories, 24 parties

State/Organization	Date of signature	Place	Means and date of expression of consent to be bound	Entry into force
Australia	22 Feb 1984	Vienna	ratified: 22 Sep 1987	22 Oct 1987
Austria	3 Mar 1980	Vienna		
Argentina	28 Feb 1986	Vienna		
Belgium*	13 Jun 1980	Vienna		
Brazil	15 May 1981	Vienna	ratified: 17 Oct 1985	8 Feb 1987
Bulgaria	23 Jun 1981	Vienna	ratified: 10 Apr 1984	8 Feb 1987
Canada	23 Sep 1980	Vienna	ratified: 21 Mar 1986	8 Feb 1987
Czechoslovakia	14 Sep 1981	Vienna	ratified: 23 Apr 1982	8 Feb 1987
Denmark*	13 Jun 1980	Vienna		
Dominican Republic	3 Mar 1980	New York		
Ecuador	26 Jun 1986	New York		
EURATOM	13 Jun 1980	Vienna		
Finland	25 Jun 1981	Vienna		
France*	13 Jun 1980	Vienna		
German Democratic Republic	21 May 1980	Vienna	ratified: 5 Feb 1981	8 Feb 1987
Germany, Federal Republic of*	13 Jun 1980	Vienna		
Greece	3 Mar 1980	Vienna		
Guatemala	12 Mar 1980	Vienna	ratified: 23 Apr 1985	8 Feb 1987
Haiti	9 Apr 1980	New York		
Hungary	17 Jun 1980	Vienna	ratified: 4 May 1984	8 Feb 1987
Indonesia	3 Jul 1986	Vienna	ratified: 5 Nov 1986	8 Feb 1987
Ireland*	13 Jun 1980	Vienna		
Israel	17 Jun 1983	Vienna		
Italy*	13 Jun 1980	Vienna		
Japan			accession: 28 Oct 1988	27 Nov 1988
Korea, Republic of	29 Dec 1981	Vienna	ratified: 7 Apr 1982	8 Feb 1987
Liechtenstein	13 Jan 1986	Vienna	ratified: 25 Nov 1986	8 Feb 1987
Luxembourg*	13 Jun 1980	Vienna		
Mexico			accession: 4 Apr 1988	4 May 1988
Mongolia	23 Jan 1986	New York	ratified: 28 May 1986	8 Feb 1987
Morocco	25 Jul 1980	New York		
Netherlands*	13 Jun 1980	Vienna		
Niger	7 Jan 1985	Vienna		
Norway	26 Jan 1983	Vienna	ratified: 15 Aug 1985	8 Feb 1987
Panama	18 Mar 1980	Vienna		
Paraguay	21 May 1980	New York	ratified: 6 Feb 1985	8 Feb 1987
Philippines	19 May 1980	Vienna	ratified: 22 Sep 1981	8 Feb 1987
Poland	6 Aug 1980	Vienna	ratified: 5 Oct 1983	8 Feb 1987
Portugal	19 Sep 1984	Vienna		
Romania	15 Jan. 1981	Vienna		
South Africa	18 May 1981	Vienna		
Spain*	7 Apr 1986	Vienna		
Sweden	2 Jul 1980	Vienna	ratified: 1 Aug 1980	8 Feb 1987
Switzerland	9 Jan 1987	Vienna	ratified: 9 Jan 1987	8 Feb 1987
Turkey	23 Aug 1983	Vienna	ratified: 27 Feb 1985	8 Feb 1987
Union of Soviet Socialist Republics	22 May 1980	Vienna	ratified: 25 May 1983	8 Feb 1987
United Kingdom of Great Britain and Northern Ireland*	13 Jun 1980	Vienna		
United States of America	3 Mar 1980	NY/Vienna	ratified: 13 Dec 1982	8 Feb 1987
Yugoslavia	15 Jul 1980	Vienna	ratified: 14 May 1986	8 Feb 1987

* Signed as EURATOM Member State.

Note: The Convention entered into force on 8 February 1987, i.e. 30 days following the deposit of the 21st instrument of ratification, acceptance, or approval with the Director General of the IAEA, pursuant to Article 19, paragraph 1.

Special report

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency Status (as of 17 October 1988): 70 signatories, 27 parties

State/organization	Date of signature	Means and date of expression consent to be bound	Entry into force
Afghanistan*	26 Sep 1986		
Algeria*	24 Sep 1987		
Australia*	26 Sep 1986	ratification* deposited: 22 Sep 87	23 Oct 1987
Austria	26 Sep 1986		
Bangladesh		accession deposited: 7 Jan 88	7 Feb 1988
Belgium	26 Sep 1986		
Brazil	26 Sep 1986		
Bulgaria*	26 Sep 1986	ratification* deposited: 24 Feb 88	26 Mar 1988
Byelorussian Soviet Socialist Republic*	26 Sep 1986	ratification* deposited: 26 Jan 87	26 Feb 1987
Cameroon	25 Sep 1987		
Canada*	26 Sep 1986		
Chile	26 Sep 1986		
China*	26 Sep 1986	ratification* deposited: 10 Sep 87	11 Oct 1987
Costa Rica	26 Sep 1986		
Côte d'Ivoire	26 Sep 1986		
Cuba*	26 Sep 1986		
Czechoslovakia*	26 Sep 1986	ratification* deposited: 4 Aug 88	4 Sep 1988
Democratic People's Republic of Korea*	29 Sep 1986		
Denmark	26 Sep 1986		
Egypt	26 Sep 1986	ratification* deposited: 17 Oct 88	17 Nov 1988
Finland	26 Sep 1986		
France*	26 Sep 1986		
German Democratic Republic*	26 Sep 1986	ratification* deposited: 29 Apr 87	30 May 1987
Germany, Federal Republic of*	26 Sep 1986		
Greece*	26 Sep 1986		
Guatemala	26 Sep 1986	ratification* deposited: 8 Aug 88	8 Sep 1988
Holy See	26 Sep 1986		
Hungary*	26 Sep 1986	ratification* deposited: 10 Mar 87	10 Apr 1987
Iceland	26 Sep 1986		
India*	29 Sep 1986	ratification* deposited: 28 Jan 88	28 Feb 1988
Indonesia*	26 Sep 1986		
Iran, Islamic Republic of	26 Sep 1986		
Iraq*	12 Aug 1987	ratification* deposited: 21 July 88	21 Aug 1988
Ireland*	26 Sep 1986		
Israel	26 Sep 1986		
Italy	26 Sep 1986		
Japan	6 Mar 1987	acceptance* deposited: 9 Jun 87	10 Jul 1987
Jordan	2 Oct 1986	ratification deposited: 11 Dec 87	11 Jan 1988
Lebanon	26 Sep 1986		
Liechtenstein	26 Sep 1986		
Malaysia*	1 Sep 1987	signature, 1 Sep 87	2 Oct 1987
Mali	2 Oct 1986		
Mexico	26 Sep 1986	ratification deposited: 10 May 88	10 Jun 1988
Monaco	26 Sep 1986		

Special report

State/organization	Date of signature	Means and date of expression of consent to be bound	Entry into force
Mongolia*	8 Jan 1987	ratification* deposited: 11 Jun 87	12 Jul 1987
Morocco	26 Sep 1986		
Netherlands*	26 Sep 1986		
New Zealand		accession* deposited: 11 Mar 87	11 Apr 1987
Niger	26 Sep 1986		
Nigeria	21 Jan 1987		
Norway*	26 Sep 1986	signature, 26 Sep 86	26 Feb 1987
Panama	26 Sep 1986		
Paraguay	2 Oct 1986		
Poland*	26 Sep 1986	ratification* deposited: 24 Mar 88	24 Apr 1988
Portugal	26 Sep 1986		
Senegal	15 Jun 1987		
Sierra Leone	25 Mar 1987		
South Africa	10 Aug 1987	ratification* deposited: 10 Aug 87	10 Sep 1987
Spain	26 Sep 1986		
Sudan	26 Sep 1986		
Sweden	26 Sep 1986		
Switzerland	26 Sep 1986	ratification: deposited: 31 May 88	1 Jul 1988
Syrian Arab Republic	2 Jul 1987		
Thailand*	25 Sep 1987		
Tunisia	24 Feb 1987		
Turkey*	26 Sep 1986		
Ukrainian Soviet Socialist Republic*	26 Sep 1986	ratification* deposited: 26 Jan 87	26 Feb 1987
Union of Soviet Socialist Republics*	26 Sep 1986	ratification* deposited: 23 Dec 86	26 Feb 1987
United Arab Emirates		accession* deposited: 2 Oct 87	2 Nov 1987
United Kingdom of Great Britain and Northern Ireland*	26 Sep 1986		
United States of America*	26 Sep 1986	ratification* deposited: 19 Sep 88	20 Oct 1988
Viet Nam, Soc.Rep. of		accession* deposited: 29 Sep 87	30 Oct 1987
Zaire	30 Sep 1986		
Zimbabwe	26 Sep 1986		
World Health Organization		accession* deposited: 10 Aug 1988	10 Sep 1988

* Indicates that a reservation/declaration was deposited upon or following signature/ratification.

Note: The Convention entered into force on 26 February 1987, i.e. 30 days after the date on which the third State expressed its consent to be bound, pursuant to Article 14, paragraph 3.

Vienna Convention on Civil Liability for Nuclear Damage

Contracting parties	Ratification/accession	Other signatories	Date of signing
Cameroon (accession)	6 March 1964	Colombia	21 May 1963
Cuba	25 October 1965	Spain	6 September 1963
Egypt	5 November 1965	United Kingdom of Great Britain and Northern Ireland	11 November 1964
Philippines	15 November 1965	Morocco	30 November 1984
Trinidad and Tobago (accession)	31 January 1966	Chile	18 August 1988
Argentina	25 April 1967		
Bolivia (accession)	10 April 1968		
Yugoslavia	12 August 1977		
Niger (accession)	24 July 1979		
Peru (accession)	26 August 1980		

Special report

Convention on Early Notification of a Nuclear Accident Status (as of 22 September 1988): 72 signatories, 32 parties

State/organization	Date of signature	Means and date of expression of consent to be bound	Entry into force
Afghanistan*	26 Sep 1986		
Algeria*	24 Sep 1987		
Australia*	26 Sep 1986	ratification deposited: 22 Sep 87	23 Oct 1987
Austria	26 Sep 1986	ratification deposited: 18 Feb 88	20 Mar 1988
Bangladesh		accession deposited: 7 Jan 88	7 Feb 1988
Belgium	26 Sep 1986		
Brazil	26 Sep 1986		
Bulgaria*	26 Sep 1986	ratification* deposited: 24 Feb 88	26 Mar 1988
Byelorussian Soviet Socialist Republic*	26 Sep 1986	ratification* deposited: 26 Jan 87	26 Feb 1987
Cameroon	25 Sep 1987		
Canada*	26 Sep 1986		
Chile	26 Sep 1986		
China*	26 Sep 1986	ratification* deposited: 10 Sep 87	11 Oct 1987
Costa Rica	26 Sep 1986		
Côte d'Ivoire	26 Sep 1986		
Cuba*	26 Sep 1986		
Czechoslovakia*	26 Sep 1986	signature, 26 Sep 86	27 Oct 1986
Democratic People's Republic of Korea*	29 Sep 1986		
Denmark	26 Sep 1986	signature, 26 Sep 86	27 Oct 1986
Egypt	26 Sep 1986	ratification* deposited: 6 July 88	6 Aug 1988
Finland	26 Sep 1986	deposit of approval on 11 Dec 86	11 Jan 1987
France*	26 Sep 1986		
German Democratic Republic*	26 Sep 1986	ratification* deposited: 29 Apr 87	30 May 1987
Germany, Federal Republic of*	26 Sep 1986		
Greece*	26 Sep 1986		
Guatemala	26 Sep 1986	ratification deposited: 8 Aug 88	8 Sep 1988
Holy See	26 Sep 1986		
Hungary*	26 Sep 1986	ratification* deposited: 10 Mar 87	10 Apr 1987
Iceland	26 Sep 1986		
India*	29 Sep 1986	ratification* deposited: 28 Jan 88	28 Feb 1988
Indonesia*	26 Sep 1986		
Iran, Islamic Republic of	26 Sep 1986		
Iraq*	12 Aug 1987	ratification* deposited: 21 July 88	21 Aug 1988
Ireland*	26 Sep 1986		
Israel	26 Sep 1986		
Italy*	26 Sep 1986		
Japan	6 Mar 1987	acceptance deposited: 9 Jun 87	10 Jul 1987
Jordan	2 Oct 1986	ratification deposited: 11 Dec 87	11 Jan 1988
Lebanon	26 Sep 1986		
Liechtenstein	26 Sep 1986		
Luxembourg	29 Sep 1986		
Malaysia*	1 Sep 1987	signature, 1 Sep 87	2 Oct 1987
Mali	2 Oct 1986		

Special report

State/organization	Date of signature	Means and date of expression of consent to be bound	Entry into force
Mexico	26 Sep 1986	ratification* deposited: 10 May 88	10 Jun 1988
Monaco	26 Sep 1986		
Mongolia*	8 Jan 1987	ratification* deposited: 11 Jun 87	12 Jul 1987
Morocco	26 Sep 1986		
Netherlands*	26 Sep 1986		
New Zealand		accession deposited: 11 Mar 87	11 Apr 1987
Niger	26 Sep 1986		
Nigeria	21 Jan 1987		
Norway	26 Sep 1986	signature, 26 Sep 86	27 Oct 1986
Panama	26 Sep 1986		
Paraguay	2 Oct 1986		
Poland*	26 Sep 1986	ratification* deposited: 24 Mar 88	24 Apr 1988
Portugal	26 Sep 1986		
Senegal	15 Jun 1987		
Sierra Leone	25 Mar 1987		
South Africa	10 Aug 1987	ratification* deposited: 10 Aug 87	10 Sep 1987
Spain	26 Sep 1986		
Sudan	26 Sep 1986		
Sweden	26 Sep 1986	ratification* deposited: 27 Feb 87	30 Mar 1987
Switzerland	26 Sep 1986	ratification* deposited: 31 May 88	1 Jul 1988
Syrian Arab Republic	2 Jul 1987		
Thailand*	25 Sep 1987		
Tunisia	24 Feb 1987		
Turkey*	26 Sep 1986		
Ukrainian Soviet Socialist Republic*	26 Sep 1986	ratification* deposited: 26 Jan 87	26 Feb 1987
Union of Soviet Socialist Republics*	26 Sep 1986	ratification* deposited: 23 Dec 86	24 Jan 1987
United Arab Emirates		accession* deposited: 2 Oct 87	2 Nov 1987
United Kingdom of Great Britain and Northern Ireland*	26 Sep 1986		
United States of America*	26 Sep 1986	ratification* deposited: 19 Sep 88	20 Oct 1988
Viet Nam, Soc. Rep. of		accession* deposited: 29 Sep 87	30 Oct 1987
Yugoslavia	27 May 1987		
Zaire	30 Sep 1986		
Zimbabwe	26 Sep 1986		
World Health Organization		accession* deposited: 10 Aug 88	10 Sep 1988

* Indicates that a reservation/declaration was deposited upon or following signature/ratification.

Note: The Convention entered into force on 27 October 1986, i.e. 30 days after the date on which the third State expressed its consent to be bound, pursuant to Article 12, paragraph 3.

