NUCLEAR LAW
BULLETIN No. 50

Contents

December 1992
Nuclear Energy Agency
Organisation for Economic Co-operation and Development

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960 and which came into force on 30th September 1961, the Organisation for Economic Co operation and Development (OECD) shall promote policies designed

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability and thus to contribute to the development of the world economy
- to contribute to sound economic expansion in Member as well as non member countries in the process of economic development, and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations

The original Member countries of the OECD are Austria, Belgium Canada Denmark France Germany Greece, Iceland Ireland, Italy Luxembourg the Netherlands Norway Portugal Spain Sweden, Switzerland, Turkey the United Kingdom and the United States The following countries became Members subsequently through accession at the dates indicated hereafter Japan (28th April 1964) Finland (28th January 1969) Australia (7th June 1971) and New Zealand (29th May 1973) The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention)

NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency It received its present designation on 20th April 1972 when Japan became its first non European full Member NEA membership today consists of all European Member countries of OECD as well as Australia, Canada, Japan and the United States The Commission of the European Communities takes part in the work of the Agency

The primary objective of NEA is to promote co operation among the governments of its participating countries in furthering the development of nuclear power as a safe environmentally acceptable and economic energy source

This is achieved by

- *encouraging harmonization of national regulatory policies and practices with particular reference to the safety of nuclear installations protection of man against ionising radiation and preservation of the environment radioactive waste management and nuclear third party liability and insurance*
- *assessing the contribution of nuclear power to the overall energy supply by keeping under review the technical and economic aspects of nuclear power growth and forecasting demand and supply for the different phases of the nuclear fuel cycle*
- *developing exchanges of scientific and technical information particularly through participation in common services*
- *setting up international research and development programmes and joint undertakings*

In these and related tasks NEA works in close collaboration with the International Atomic Energy Agency in Vienna with which it has concluded a Co operation Agreement as well as with other international organisations in the nuclear field.

FOREWORD

Since the Chernobyl accident, the question of State liability for damage caused by nuclear activities has been under discussion, and this edition of the Bulletin contains an article analysing this issue The two other articles presented deal with very different subjects the first concerns the aspects of public participation in the licensing process for nuclear installations, while the other describes planned nuclear legislation in Morocco A note on case law deals with the decision of the United States Supreme Court on the constitutionality of the Low Level Waste Policy Amendments Act.

As usual, information is provided on the latest developments in legislative and regulatory activities both nationally and internationally Export of sensitive articles continues to generate concern, as demonstrated by regulatory actions at national level and by the Nuclear Suppliers Group's recent policy statement A number of Conventions on marine pollution have recently been adopted which severely regulate and even prohibit the dumping of nuclear materials, they are analysed here In connection with liability for nuclear damage, a brief report discusses the topics presented at the Helsinki Symposium on Nuclear Accidents - Liabilities and Guarantees pending publication of the Proceedings

This fiftieth issue of the Bulletin is accompanied by an Analytical Index which covers all the issues published to date and supersedes the previous Index The Secretariat takes this opportunity to thank once again the correspondents to the Bulletin and all those who collaborate in this publication

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Towards a New Regime of State Responsibility for Nuclear Activities

by Louise de La Fayette

Abstract

Since the nuclear accident at Chernobyl, it has become evident that the existing nuclear civil liability régime is seriously deficient and must be replaced and that states must make a public commitment to nuclear safety, including the prevention of accidents and the mitigation of their consequences The civil liability system suffers from flaws that are so fundamental that they cannot be remedied through a mere revision of the three main conventions involved Instead, they should be replaced by a new convention on state responsibility for nuclear activities, encompassing provisions on safety, accident prevention, and emergency response

Introduction

Over the past few months, a series of incidents in Soviet-designed nuclear reactors and the discovery of serious safety problems at a Bulgarian power plant have raised the spectre of another catastrophe like the one at Chernobyl several years ago Justifiable uneasiness among the general public is probably exacerbated by the suspicion that very little has been done to improve the safety of nuclear reactors or to deal more effectively with the consequences of an accident should one occur Furthermore, public concern has intensified in response to recurrent press reports that several thousand people have died as a result of Chernobyl, rather than the official figure of 31

However, the appearance of inertia belies the significant progress in international co-operation to promote nuclear safety that has taken place out of the public eye in the

* Department of External Affairs and International Trade Canada The views in this text are those of the author and do not necessarily reflect the views of the Department of External Affairs and International Trade Canada Responsibility for the facts given rests solely with the author

relevant international organisations, including the International Atomic Energy Agency (IAEA), the OECD Nuclear Energy Agency (NEA/OECD), the European Community the World Health Organisation (WHO), and the World Association of Nuclear Operators (WANO) This co-operation includes programmes to assess and enhance the safety of Soviet-designed reactors in central and eastern Europe, as well as in the states of the former Soviet Union

On the other hand, states have yet to commit themselves formally to accept responsibility for nuclear safety, the prevention of accidents, and the mitigation of damage Yet, change is in the air States are finally beginning to face the brutal facts the prospect of another nuclear disaster with perhaps more serious transboundary consequences is too terrible to contemplate After many years of firm resistance to the assumption of binding obligations relating to nuclear safety, at an international conference held in September 1991, states agreed to consider the development of a framework convention on nuclear safety under the aegis of the IAEA [1]

A related issue is the question of liability for damage arising from nuclear accidents After Chernobyl the Soviet Union refused to accept liability for damage caused in other countries, insisting that it was not required to do so in the absence of a binding treaty obligation to that effect The USSR was not a party to the Vienna Convention on Civil Liability for Nuclear Damage and there is no convention on state liability for nuclear accidents In fact, at the time there were only ten parties to the Vienna Convention, at least partly because most states considered it to be seriously inadequate as well as out-of-date

Consequently at the first session of the IAEA General Conference held after the accident at Chernobyl, a number of states advanced proposals to revise the Vienna Convention and to develop a new convention on state liability for damage arising from nuclear accidents However for the next two years, states' attentions were focussed upon the elaboration of a Joint Protocol to link the Vienna Convention with the Paris Convention on Third Party Liability in the Field of Nuclear Energy

In February 1989 the IAEA Board of Governors established a working group to discuss all aspects of nuclear liability The following year, the task was transferred to a newly constituted Standing Committee on Liability for Nuclear Damage Negotiations on revision of the Vienna Convention have proceeded rather hesitantly and appear to be far from conclusions Although there is some agreement regarding certain obviously necessary amendments such as raising the limited amount liability and expanding the definition of damage, there are considerable differences of opinion with respect to funding mechanisms, procedures for obtaining compensation, and the relationship between civil and state liability have been thwarted by other states who refuse to accept responsibility for transboundary harm caused by the nuclear facilities under their jurisdiction or control

In the view of this writer, at least, the civil liability system suffers from flaws so fundamental that they cannot be overcome even in the most radical revision of the Vienna Convention unless it contains substantial elements of state liability and an "internationalised" method of dispute settlement Yet even this would not suffice for daunting task at hand What is really required indeed, what is an absolute necessity, is the development of an entirely new convention combining the two projects for a safety convention and a liability convention into a comprehensive framework régime of state responsibility for nuclear activities

Some states, perhaps most states, would probably be strongly opposed to such a utopian vision Nevertheless, it is not entirely impossible to imagine that, just as they have recently abandoned their long-standing abhorrence of an international convention on nuclear safety, so may they be persuaded to adopt a broader-based instrument encompassing general provisions on emergency response and liability and compensation, as well as plant safety and the prevention of damage

A THE CIVIL LIABILITY SYSTEM

The general principles of the civil liability system are fairly well-known There are two main conventions, those of Paris and Vienna, plus the Brussels Convention supplementary to the Paris, and most recently, the Joint Protocol linking the two hitherto separate régimes The Paris Convention on Third Party Liability in the Field of Nuclear Energy was adopted under the auspices of the OECD on 29 July 1960 The Vienna Convention on Civil Liability for Nuclear Damage was adopted under the auspices of the IAEA in 1963 and came into force in 1977 While the Paris Convention has a regional vocation, the Vienna Convention is of potentially universal membership

Both civil liability conventions provide for private actions in the regular courts by victims of a nuclear accident to recover compensation for damage from the operator of the nuclear installation responsible for the accident The basic features of the two conventions are

1 exclusive liability "channelled" to the operator of the nuclear installation involved,

2 "absolute" or strict liability, with few exceptions,

3 limitations on the amount of liability,

4 limitations in time for the submission of claims,

5 compulsory financial security,

6 unity of jurisdiction,

7 judgments enforceable in any of the States Parties,

8 special rules for accidents during the transport of nuclear materials

Despite these basic similarities, there are nevertheless important differences between the two conventions Whereas the Paris Convention prescribes both a minimum and a maximum amount of liability, the Vienna Convention stipulates only a minimum, with a maximum being merely permitted Thus, under the Vienna Convention, there is no bar to unlimited liability Second, in the Vienna Convention, the definition of damage is open-ended, allowing states to provide for any additional heads of damage they desire in their national legislation Finally, and most significantly, in the Vienna Convention, the installation state effectively guarantees compensation up to the operator's liability limit, as under Article VII, it is responsible for payment if the financial security fails

In neither the Paris nor the Vienna Convention are there any provisions regarding either

In neither the Paris nor the Vienna Convention are there any provisions regarding either state responsibility or state-to-state claim However, the question of state responsibility under the rules of public international law are expressly reserved under both conventions The respective provisions on state responsibility read as follows

The Paris Convention
Annex II

This Convention shall not be interpreted as depriving a Contracting Party, on whose territory damage was caused by a nuclear incident occurring on the territory of another Contracting Party, of any recourse which might be available to it under international law

The Vienna Convention
Article XVIII

This Convention shall not be construed as affecting the rights, if any, of a Contracting Party under the general rules of public international law in respect of nuclear damage

Nevertheless despite this textual reticence, state liability is imported into the Paris Convention régime by means of the Brussels Supplementary Convention Even at the time of its adoption, States recognised that the limited liability of the Paris Convention would not provide adequate compensation to the victims of nuclear accidents Therefore, in 1963, 13 of the 16 Signatories of the Paris Convention concluded the Brussels Supplementary Convention, which provides additional compensation in a three-tier system At the first level, compensation is paid by the operator up to his liability limit under national law In the second tier, compensation is paid by the installation state up to the limit of 175 million Special Drawing Rights - SDRs Finally, the remaining amount, if any, is contributed by all the States Parties, up to the limit of 300 million SDRs, in accordance with a special formula derived from the gross national product and the total thermal nuclear power capacity in each State

B DEFICIENCIES OF THE CIVIL LIABILITY SYSTEM

There are a number of serious deficiencies in the civil liability system, some of which cannot be remedied through a simple revision of the existing conventions Among the most important are the following

1 geographical scope,

2 lack of harmonisation,

3 definition of damage,

4 proof of causality and of damage,

5 amount of compensation and limitation of liability,

6 priorities in the distribution of compensation,

7 time limits for making a claim, delayed damage, and insurance,

8 exonerations,

9 exclusions of military installations,

10 difficulty and expense for victims of private lawsuits,

11 lack of capacity of local courts to deal with a very high number of claimants, and detailed and difficult scientific evidence

Geographical Scope

Between them, the Paris and Vienna Conventions involve slightly more than 30 countries, far from the world-wide coverage that was envisaged in the early 1960s The 14 Parties of the Paris Convention are all OECD Member States in Western Europe Belgium, Denmark, Finland, France, Germany, Greece, Italy, Norway, the Netherlands, Portugal, Spain, Sweden, Turkey, and the United Kingdom At the time of Chernobyl, there were 10 Parties to the Vienna Convention Argentina, Bolivia, Cameroon, Cuba, Egypt, Niger, Peru, Philippines, Trinidad and Tobago, and Yugoslavia [2] Most of these are developing countries, most do not have nuclear facilities, and most are too far apart to be affected by an accident in another Party [3]

After the accident at Chernobyl and the insistence of the Soviet Union that it was not liable for damages in the absence of a treaty obligation, States Parties to the two civil liability conventions sought to extend their geographical scope by concluding the Joint Protocol to link them by means of reciprocal benefits It was considered that the prospect of being able to recover damages from accidents in Paris Convention States would induce the USSR and the States of Eastern Europe to become Parties to the Vienna Convention Thus, the gap in coverage would be closed, and in the event of another serious accident in the USSR and in Eastern Europe, victims in Western Europe could seek compensation through the Joint Protocol system

In fact, following the adoption of the Joint Protocol, seven additional States became Parties to the Vienna Convention Mexico, Chile, Hungary, Poland, Croatia, Slovenia and Lithuania As several are European, coverage of the civil liability system in Europe has increased marginally By virtue of the Joint Protocol, victims in Paris Convention States could use the civil liability system to claim compensation for damage caused by an accident in an Hungarian nuclear facility and vice versa However, Poland does not have a functioning reactor, and the old Soviet-designed plants in the republics of the former Soviet Union are still not included This is a serious omission

Moreover, the Joint Protocol does not address any of the fundamental problems of the existing civil liability régime Even with the link, the defects in amount of liability,

definition of damage, and procedure would still prove to be insurmountable obstacles to full, effective, and prompt compensation in the case of a major nuclear accident

Lack of Harmonisation

As noted in the previous section, there are a number of differences between the Paris and Vienna Conventions, some of them rather important As a consequence, the two Conventions would have to be revised and harmonised before the Joint Protocol could be implemented Furthermore, as the Conventions leave many matters to the discretion of national legislation, there is a lack of harmonisation even among the Parties to the same Conventions For example, the liability of the operator ranges from the absolute minimum of an absurd $5,000,000 to the unlimited liability of countries such as Germany, Bulgaria, Japan, Switzerland, Hungary and South Korea Lack of harmonisation also exists in relation to the nature, form and extent of compensation as well as the equitable distribution thereof, as all of these matters are governed by the law of the competent court

Definition of Damage

At the time of the negotiation of the Paris and Vienna Conventions, it was envisaged that the type of damage caused by a nuclear accident would be limited to that suffered by individuals loss of life or bodily injury, and loss of or damage to property In the light of the experience of various types of industrial accidents, including oil and chemical spills, as well as nuclear incidents and disasters, it is now well understood that the range of potential damage is much broader In particular, most accidents will involve considerable costs of preventive measures, the costs of cleaning up the contaminated area close to the site of the accident, and damage to the general environment, extending perhaps hundreds of miles from that site

Chernobyl demonstrated that radioactive substances could spread over a far greater distance and for a longer time than previously imagined, and that economic loss or loss of profit as a result of contamination to the general environment, even in the absence of damage to property, could be fairly substantial Furthermore, it is now known that the extent of impairment of human health may not become apparent until decades after the accident, and may even affect the unborn

None of the above types of damage or costs is expressly mentioned in the civil liability conventions Moreover, some of those costs and damage will be borne by the state, not by individuals State agencies will introduce measures to protect the population immediately after the accident and as long as a danger exists, they will have to monitor the situation, to assist the sick and injured, to assess the damage, to try to clean up contaminated areas and so forth Damage to the environment is one of the most important heads of damage, and as it is *res communis*, only the state may claim for restoration or reparation in its capacity as *parens patriae* There is no provision for any of this in the civil liability conventions Finally, the conventions do not cover the costs of precautionary protective measures, such as evacuations, when the accident was averted or did not have any off-site effect

In relation to damage to the environment, in the past there was some controversy as to whether "impairment of the environment" or damage to the environment *per se* should be compensated and as to the most appropriate method of determining the amount of this compensation For several years, it was accepted that apart from economic loss or loss of profit, compensation should be limited to the costs of reasonable measures of restoration undertaken or to be undertaken Recently, however, there has been some movement towards allowing compensation for damage to the environment itself, even when restoration is impossible

Any convention seeking to provide full or even "adequate" compensation would have to include the missing heads of damage listed above Yet, in the event of a major accident the resultant claims would be so extensive that operator liability could not satisfy but a tiny fraction of them The question then becomes who will pay for the balance?

Proof of Causality and of Damage

No guidance is given in the civil liability conventions on the crucial issues of causality and the level of contamination or kind of injury that is considered to constitute "nuclear damage" It will be recalled that after Chernobyl, the Soviet Union insisted that the emissions of radioactive material from the stricken plant that reached other countries were not dangerous, that the protective measures taken were unnecessary, and that all the damage or economic loss was therefore caused by the action of other governments

Essentially, the first question is which levels of radioactivity pose a danger to human beings (intervention levels) and which levels of radioactivity in food and the environment (derived intervention levels) will result in this dangerous level in humans The second question is which protective measures should be taken in which circumstances to most effectively prevent dangerous levels of radioactivity from being absorbed by humans Clearly, if the measures taken by governments or by individuals are not necessary to prevent damage in view of the prevailing level of radioactivity, a claim for compensation will not be allowed

Therefore, before decisions can be taken concerning compensation for preventive measures, further damage caused by preventive measures, and economic loss, as well as for personal injury and impairment of health, states will have to agree upon which levels of radioactivity are dangerous to human health, which levels of contamination in food and the environment will lead to those dangerous levels, and which protective measures will be appropriate in which circumstances These decisions have to be taken outside the text of any liability convention, but the convention should at least refer to international standards and criteria, instead of leaving important issues of causality and proof of damage entirely to the local law or to individual judges as is done in the Paris and Vienna Conventions

Proof of causality is notoriously difficult to establish in the case of delayed damage resulting from exposure to relatively low levels of ionizing radiation While exposure beyond a certain threshold level produces immediate, well-known effects generally resulting in severe radiation sickness and death, lower levels of radiation produce subtle changes in body cells that may result in soft (leukaemia), or hard cancers after a latency period

ranging from 3 to 40 years Furthermore, when such cancers appear, they will be indistinguishable from cancers with other causes

If the regular rules of evidence of national laws were applied, proof of causation would be impossible and the victims would recover nothing Therefore, in order to ensure that compensation will be paid, states must agree at an international level to more lenient rules of evidence or alternative methods of establishing causation Even so, local judges with no specialised scientific, medical, and technical knowledge working on their own would not be able to properly assess the evidence to determine whether any particular cancer or hereditary defect was the result of exposure to ionizing radiation during a nuclear accident

Amount of Compensation and Limitation of Liability

These two issues must be considered together, as they are mutually dependent Generally, in both national and international law, the principle is that all damage must be fully compensated However, when the nuclear liability conventions were concluded in the early 1960s, their primary purpose was to encourage the development of the nuclear power industry by limiting, or at least permitting limitations upon, the amount of liability for damage [4] Thirty years later not only is this encouragement no longer necessary but also the main concern of governments is the protection of the public Indeed, because of public fears about nuclear power, prospects for future growth in the industry are seen to depend upon reassuring the public that nuclear power plants are safe, and that victims will be fully compensated in the event of an accident

This means there must be higher limits on liability, or even no limits at all, as in some domestic legislation Yet, so-called "unlimited" liability is merely a statement of principle, not a practical possibility as insurance cover is strictly limited, both in amount and in time Furthermore, the confiscation of assets will lead to a bankruptcy that may still not provide sufficient moneys for full compensation This problem of insufficiency was well understood even at the time of the negotiation of the original agreements, and was the reason for the conclusion of the Brussels Convention Under the Paris-Brussels system, if operator liability does not cover all the damage, first the installation state and then all the states parties contribute certain amounts up to a fixed ceiling in a three-tier compensation process beginning with the financial security of the operator

Hence, it is clear that a civil liability system based upon the primary liability of the operator is inadequate to compensate the victims of a major nuclear accident In view of the billions of dollars of damage arising from the accident at Chernobyl it is also clear that the inadequacy will continue, even if limitations on the liability of the operator are raised to the limit of available insurance Furthermore, any fixed limits, floor or ceiling, will rapidly become out of date The obvious conclusion is that at least in the nuclear field liability must be unlimited and some other source of funding, such as state liability, is essential to reach the primary goal of protecting and fully compensating the innocent victims of nuclear damage

Priorities

In the civil liability conventions, the distribution of compensation is left to the discretion of national courts If there are insufficient funds to cover all the damage and if the court decides to distribute the available funds proportionally, then the result may be only partial compensation for those severely injured, while property damage that may not be a serious loss to the owner would be compensated to an equivalent amount Most people and most states would view such an outcome as unfair Therefore, to ensure that compensation goes to the victims that need it most, any new convention would have to establish priorities among the victims

Priorities in time are a related issue Since civil litigation may take over 10 years to come to a conclusion, and since victims with bodily injuries have an immediate requirement for financial assistance, some means should be found to make virtually instant payments to those in need [5] No one with a serious physical injury, or who has lost his or her sole means of support, should have to wait 10 years for compensation or a means of sustenance Indeed, no one could Interim payments should also be provided to those who have been evacuated from their homes and workplaces and who consequently require early access to funds to enable them to purchase the basic necessities of life The civil liability system is not equipped to deal with these sorts of problems, nor to provide for compensation, without a final determination of liability

Time Limits for Submitting a Claim and Delayed Damage

Related to the questions of proof of causality, priorities, and insurance is the problem of too short time limits for making a claim At present, the civil liability conventions provide for ten year limitation periods, whereas damage such as radiation-induced cancers may not appear for up to 40 years after exposure While there have been proposals to extend the claims period to thirty years, this amendment would not resolve all the associated problems First, insurance is not available to cover claims made more than ten years after the accidents Second, there is the problem of distributing funds among early and late claimants If the money available for compensation is distributed on a first-come, first-served basis, there may be little remaining for well-deserving late-comers

In the national legislation that addresses these issues, compensation for damage manifested after the end of the limitation period is provided by the state [6] If all the innocent victims are to be compensated, the state appears to be the only source of funds for delayed damage

Exonerations

What happens to innocent victims if the operator is exonerated from liability, as provided in the civil liability conventions, because the accident was caused by a natural disaster or armed conflict? Under the civil liability system, the innocent victim would be left to bear the burden himself - hardly a just result

In many recent national laws, the sole exoneration is that of armed conflict, it being understood that nuclear installations should be built to withstand natural disasters and that if accidents do happen, the operator should bear the cost Further, most national laws provide for compensation from the state if operator liability is excluded by exonerations [7]

Military Installations

Liability for damage caused by accidents in military installations is not included in the civil liability conventions The damage from accidents in military installations may be at least as severe as that caused by civilian installations and the innocent victims should not be left to bear the cost As military installations are owned and operated by the state, compensation will have to be provided by the state

Competent Courts

As the civil liability conventions do not require that all actions be instituted in the same court, victims may file claims in several different courts in the state having jurisdiction over the case The results could be differences among decisions by the various courts in relation to criteria and standards in judgments, different compensation being granted for similar injuries, and perhaps, more compensation being awarded than funds available

Procedural Inadequacies of the Civil Liability System

Even if all the deficiencies listed above could be remedied through the revision of the civil liability conventions, the two most serious deficiencies would remain The first is procedural While the system of individual actions in the local courts may be adequate for the compensation of only a few victims suffering only minor damage, it would be wholly inappropriate and at once ludicrous and tragic in the event of a major nuclear accident causing damage to thousands or to millions of people in several different countries [8]

If all nuclear liability actions relating to one accident were consolidated into a single national court, as would be necessary to avoid inconsistent judgments that court would not be able to function No national court has the capacity to handle thousands, if not millions, of individual claims Furthermore, national judges would lack the expertise to understand the complex scientific, technical and medical issues involved Nor are national courts particularly efficient Recent experiences with litigation on nuclear and environmental liability has shown that international liability cases with even a relatively small number of plaintiffs may take over a decade to conclude [9] International arbitration and adjudication is invariably much faster [10]

From the perspective of the innocent victims, the institution of individual private lawsuits would present an insuperable hurdle to compensation for all the but the wealthiest plaintiffs As with the Chernobyl disaster varying kinds and degrees of damage might be suffered by millions of people situated up to several thousand miles from the site of the accident For most of the victims, the trouble and expense of a private lawsuit would be prohibitive They would have to hire lawyers at home and abroad, the lawyer in the

foreign, perhaps far distant country Victims and their witnesses would have to travel long distances to testify in a foreign court operating in a foreign language and using unfamiliar procedures

They would have to hire translators and interpreters as well as scientific, technical and medical experts to prove causality and damage Even if they managed to overcome these problems, they would have to wait 10-15 years for the outcome In case of delayed damage, they might not even have a remedy, but if the limitation period were extended, a lawsuit instituted 20-30 years after the accident would face even greater difficulties in proving causation Finally, after all this trouble and expense, the compensation received might just be enough to cover legal fees and other expenses

Most victims probably could not afford to hire a lawyer in the first place and would receive nothing The burden would be greatest for those least able to bear it - those who have been seriously injured, or who are dependents of someone who has died, those who have lost their homes and all their possessions, those who have lost their livelihoods because their workplace is contaminated, farmers whose entire crop and livestock have been banned from sale or destroyed because of contamination In many cases, land may be unfit for living or farming for decades, or even permanently If Chernobyl had been situated near a border, foreigners would have suffered as much as those who had lived and worked in the 30 km "dead zone" immediately surrounding the plant

In conclusion, civil liability, with its system of individual private claims in the local courts, is not a practical means of compensating the innocent victims of a major or even mid-sized nuclear accident A more efficient and effective method must be found

Revisions to the Conventions

In 1982, two Protocols were adopted to revise the Paris and Brussels Conventions The unit of account was changed to the SDR, while the amounts payable under the Brussels Convention were raised by a factor of 2 5 Unfortunately, it was not possible to secure agreement to raise the limitation on liability in the Paris Convention Even before the accident at Chernobyl, the Parties recognised that the Paris Convention required substantial revision After Chernobyl, discussions with a view to agreement on revisions only resulted in the adoption of the two Recommendations, one on raising the maximum amount of liability, and the other on designating a single competent court [11]

Attention was diverted for some time by the conclusion of the Joint Protocol linking the Paris and Vienna Conventions through a mutual extension of the benefits of one Convention to the Parties of the other, and through the preclusion of conflicting applicability Henceforth, if there is a nuclear accident in a Party to either Convention, victims in Parties to both will be able to obtain compensation if the states involved are both Parties to the Joint Protocol This increase in the amount of compensation required would create problems for the application of the Brussels Convention However, any efforts to further revise either the Paris or the Brussels Conventions have been superseded by the negotiations in progress at the IAEA to revise the Vienna Convention

In addition to the procedural problems the most serious deficiency of the civil liability system is one of the basic principles the installation state avoids any responsibility (or liability) for the consequences of its actions or omissions For, it must not be forgotten, that nuclear operators do not function independently of any government control Just the opposite It is governments who decide to use nuclear facilities in the first place, and it is governments who licence nuclear installations, and who ultimately control their operations Moreover, under international law, it is the state that is responsible for any damage that may arise from the nuclear installations operating under its jurisdiction or control Therefore, any liability for nuclear damage must be based upon the responsibility of the state

C *STATE RESPONSIBILITY FOR TRANSBOUNDARY ENVIRONMENTAL HARM*

It is generally accepted that all states have a duty to preserve and protect the human environment, to prevent, reduce, and control pollution in all sectors of the environment, and to ensure that activities within their jurisdiction or control do not cause damage in the territory of other states or beyond the limits of jurisdiction In other words, states have a duty to prevent harm to the general environment and to human health not only within their jurisdiction, but also beyond it within the jurisdiction of other states and to the global commons This duty is owed directly to other states, as well as to the international community as a whole including individuals wherever they may be, and to future generations

The source of this duty, sometimes termed the "no harm" principle is fourfold First, the duty not to cause harm to or in other states is a general principle of international law derived from the fundamental tenets of the international legal and political system Second, it is a general principle of law analogous to a principle found in national legal systems Third, it is a principle of customary international law found in conventional law and in *opinio juris communis* Fourth, it is a principle of conventional law expounded explicitly or implicitly in hundreds of multilateral and bilateral treaties

The relevant general principle of law is usually expressed in its Roman law formulation *sic utere tuo ut alienum non laedas,* use your own property in such a way as not to cause harm to the property of others The principles of good neighbourliness non-abuse of rights and good faith have been adduced in support of this general rule

In international law, the corresponding principle may also be logically deduced from the basic concepts of sovereignty territorial integrity and sovereign equality Just as every state has a right to respect for its sovereignty and territorial integrity so must it respect equally the sovereignty and territorial integrity of other states Furthermore as sovereignty imparts the full authority and jurisdiction of the state to a certain territory there is concomitant duty to use that authority to ensure that activities within the state's jurisdiction do not cause harm or impinge upon the sovereignty or territorial integrity of other states Damage to the environment or to human health in another state would be a clear breach of this rule

This principle has been confirmed in two important international decisions on the issue of state responsibility for transboundary harm In the *Trail Smelter Case*[12], between the United States and Canada, the Arbitral Tribunal confirmed the obligation of states to prevent environmental damage beyond their borders from activities within their jurisdiction and their territory In the words of the award

> Under the principles of international law no State has the right to use or to permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein

Significantly, the Tribunal did more than just declare that Canada should prevent any future injury Upon the advice of scientific and technical experts from both parties, the panel ordered Canada to implement a specific pollution reduction plan Furthermore, it held that if further transboundary damage occurred, Canada would be liable to pay compensation even if it had faithfully adhered to its obligations under the plan This meant that Canada was to be held strictly liable without fault for any future damage

A few years later, the International Court of Justice reiterated the general principle in a case that did not involve the environment In its judgment in the Corfu *Channel Case*, the Court held that every state had an "obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states [13] Also relevant in this regard are the *Lac Lanoux*[14] and the *Gut Dam*[15] arbitrations and the *Nuclear Test Cases* [16] In state practice, a case involving transboundary environmental harm that did not go to adjudication also confirmed the general principle When Canada in 1978 claimed damages from the USSR for the consequences of a nuclear-powered satellite falling on its territory, it based the claim on the general principle of international law, as well as on the Space Liability Convention, as the latter did not contain a specific reference to either environmental damage or clean-up costs [17]

At the 1972 Stockholm Conference on the Human Environment, the general principle received the approbation of all states in Principle 21 of the concluding Declaration [18] Although not binding in itself, Principle 21 has become the locus classicus of the general international law on transboundary environmental harm This seminal text reads as follows

> States have in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction

For the past twenty years, this expression of the *opinio juris communis* of states has been confirmed as customary law through its inclusion in innumerable treaties and other binding legal instruments, as well as in further manifestations of *opinio juris* or "soft law" such as resolutions, declarations, guidelines, codes of conduct, and sets of draft articles Consequently, although interpretations may differ, it is clear that the international community has accepted Principle 21 as a general principle of international law and as a statement of the customary law evidenced in state practice

States have also accepted specific obligations designed to implement the general principle on the practical level In the many treaties and other legal instruments adopted

since 1972, there are found a collection of very similar measures that are repeated so often and applied in practice to such an extent that many of the obligations have acquired the status of customary international law In relation to the protection of the environment and prevention of damage, the obligations fall within the general categories of

1 *Safety*, including precautionary measures, minimisation of risk, prevention of accidents, prevention of damage during normal operations, and

2 *Emergency Response*, including the elaboration of contingency plans, emergency preparedness, notification of accidents and of potential damage, measures to contain the damage

Specific obligations include unilaterally, the adoption of legislative, administrative and economic measures to prevent, reduce and control pollution and to ensure the safety of dangerous installations, the performance of environmental assessments, the enforcement of safety measures, inspection and surveillance of dangerous installations, etc, and in co-operation with other states, the exchange of information, notification of future projects, consultation, scientific research, technical assistance, monitoring, notification of accidents, etc

Also addressed at Stockholm was the third aspect of environmental protection liability and compensation In Principle 22, states pledged to co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of states to areas beyond their jurisdiction In contrast to states' efforts albeit inadequate, to implement Principle 21, in respect of Principle 22, they have been shamefully remiss Until recently, very little has been attempted, and much less has been accomplished For example, although the International Law Commission has been struggling with the issue since 1978, irreconcilable differences persist among certain members, some of whom even refuse to recognise the existence of obligations that are well-established and generally accepted by states [19]

At all events, some commentators including this one, believe that the ILC made a fundamental mistake at the very outset of its deliberations For once granted that states have a duty to prevent transboundary environmental harm, then the consequences of failure to prevent such harm fall squarely with the rubric of the Commissions's topic on state responsibility In its work on the latter topic, the Commission has confirmed the general principle of law found in all legal systems worthy of the name since time immemorial that an actor who breaches an obligation will be held to account and will be subject to new obligations to cease the wrongful act and to perform the original obligation, and to restore the situation that would have prevailed had the breach not occurred (*restitituo in integrum*), or if this is not possible, to compensate the innocent victim These principles were declare unequivocally by the Permanent Court of International Justice in the *Chorzow Factory Case* in 1928

> it is a principle of international law and even a general conception of law that any breach of an engagement involves an obligation to make reparation [20]

The basic concept is very simple he who has the responsibility to control or supervise an installation or activity also has the responsibility to ensure that the activity does no

harm to others, and consequently must be held to account and must repair the damage or compensate the victim if harm does occur At least some of the contemporary confusion regarding responsibility and liability is linguistic Whereas in English, there are two different terms, in other languages, the same word responsibility encompasses the entire concept in all four of its aspects Thus, responsibility means

1 the care of control of a person, thing, installation, or activity

2 the obligation to ensure that the thing, activity etc does not cause harm to other persons, their property and the environment,

3 the obligation to be held to account if the previous obligation is breached, and

4 the obligation to repair the damage or to compensate the innocent victim

In English, the term "liability" is used to refer to the third and fourth elements of the concept Seen as a whole, the relationship between the responsibility to prevent damage and the responsibility to compensate the victim for any damage that may occur becomes quite evident

One could even analyse state liability as an extension of the "Polluter Pays Principle" [21] When the principle was originally developed at the Organisation for Economic Co-operation and Development (OECD), it referred only to the obligation of the "polluter", the owner or operator of a polluting activity, to internalise the costs of damage by paying for pollution prevention measures required by the government More recently, the principle has been extended to accident situations by requiring the polluter to pay for emergency response and the mitigation of damage However, in popular usage as well as in the context of other organisations, the PPP has come to mean requiring the operator of the activity to pay compensation to the victims of pollution damage Yet, even if the PPP principle be accepted in international law in relation to state liability, two questions remain who is the polluter, and what is the standard of liability "due diligence" (a negligence standard), or strict liability (liability for risk)?

Despite the general lack of progress and direction of the ILC in its "liability" topic, the Commission has agreed upon a few general principles, two of which are that the innocent victim should not bear the burden of his loss and that the entity responsible for causing the damage or creating the risk of damage should be held responsible or accountable for the harmful consequences of the activity, even if it is not at "fault" in the classical sense of causing damage intentionally or breaching elements of a duty of care or of due diligence That is, even if the entity (state or operator) has taken all the required measures of safety or prevention, it will be liable if damage occurs Thus, the ILC has endorsed the application of the concept of strict liability or liability for risk

If the due diligence standard were applied and the state or operator were not liable when they had taken all the necessary safety measures, then the innocent victim would have to bear the burden of the damage This is obviously unfair Secondly, there is the issue of the standard of care what type of act or mission should be deemed negligent? Furthermore, even if the state or operator were in fact negligent, it is highly unlikely that any victim would know enough about the activity in question or about the actions of the other parties to be able to prove they were at fault This is also unfair

From the economic perspective, the inequity lies in the fact that the operator would be externalising" part of his costs by imposing them on the victim if he could avoid liability It is clearly only just that he who profits or benefits from an activity should have to pay for the costs or the harmful consequences of the damage it causes Thus, the rationale behind the concept of strict liability or liability for risk is that he who creates the risk must pay the price

Of course, this begs the question of who is the polluter, who has created the risk who is responsible for the dangerous activity Is it the operator or the state? Upon close analysis, the answer must be that both the operator and the state are responsible and liable For while the operator is responsible for the daily, regular operations of the activity and for ensuring that it conforms to domestic legal requirements, the state under whose jurisdiction or control the installation is operated is responsible for deciding to permit the activity in the first place, for licensing it for enacting and enforcing safety legislation, for inspecting and monitoring the activity and its consequences, for making arrangements for emergency response and generally for ensuring that it does not cause damage in the territory of other states or beyond the limits of national jurisdiction

These responsibilities of the controlling state are binding obligations under international law and the state is therefore responsible to other states and to the *international community as a whole for their fulfillment Because the state has ultimate* control over an activity, it is internationally responsible and liable for any transboundary harm that may occur

D A NEW CONVENTION ON STATE RESPONSIBILITY FOR NUCLEAR ACTIVITIES

Of their three basic responsibilities in relation to the protection of the environment, states have recognised directly two as being applicable to the nuclear field prevention of damage and emergency response However, the third, state liability (including accountability and compensation for damage) has been recognised only reluctantly and indirectly

Of these responsibilities, prevention is clearly the most important It is far preferable to prevent any damage from occurring in the first place, than to try to clean up or repair the damage afterward and to pay compensation that will most probably be inadequate Indeed, compensation is to place the victim in the same situation as he would have been had the accident not occurred In the case of nuclear accidents in particular this will be impossible as much of the damage will be irreparable No amount of money can bring back the dead, cure radiation sickness or eliminate severe contamination of the environment Some radioactive substances persist for thousands of years, and no decontamination is possible

For these reasons states and operators of nuclear facilities must focus upon enhancing structural and operational safety, intensifying their efforts to decrease routine emissions, reducing the risk of accidents, and improving the capacity to contain serious accidents and to mitigate their consequences After Chernobyl states faced this reality, *and rapidly increased their participation in international co-operation for nuclear safety and* emergency response albeit in an informal, unstructured and rather piecemeal fashion However serious problems persist in certain reactors and in certain states and many

aspects of safety require further research and investigation Upgrading of engineering and technical elements is always possible, and the human factor requires further study Moreover, much work remains to be done in improving national regulatory régimes

A Comprehensive Convention

For reasons indicated in the introduction, a consensus is growing that a global framework convention on nuclear safety is necessary, both to support national and international efforts to improve safety and to allay public fears of future accidents To be truly comprehensive and effective, the convention should comprise all the major elements of the law on the industrial accidents and the environment safety, prevention of damage, emergency planning emergency response, co-operation, mitigation of damage, liability, restoration, and compensation In other words, the convention should recognise that prevention is paramount, and that it is a logical consequence of responsibility for safety

Liability is an inherent part of prevention as it provides an incentive to take safety seriously If states (and operators) are aware that they will be liable to pay large sums in compensation for any damage caused by nuclear facilities under their jurisdiction or control, they will be more likely to take all possible measures to enhance nuclear safety and to reduce the risk of accidents The higher the level of liability, the greater the incentive to prevent damage

The second reason for an all-inclusive framework convention is to emphasise the link between the duty to prevent damage and the duty to compensate any damage caused The essence of this vital link is the concept of responsibility The party who is responsible for the safe operation of the installation and for the prevention and mitigation of damage will be held accountable if the safety systems fail, preventive measures are ineffective, and damage to third parties occurs The same party is then responsible or liable for paying compensation to the innocent victims That is, the one responsibility necessarily entails the other

Because of the initial assumption of the risk and of its crucial supervisory role, the controlling state is responsible if something goes wrong, even if it has carried out its duties most conscientiously

State Liability Accepted Indirectly

It is puzzling that some countries persist in refusing to admit that states are directly and strictly liable for transboundary harm arising from nuclear facilities under their jurisdiction and control Although certain aspects of state liability in other fields remain contentious among a small number of states, most of the issues involved have long been settled in relation to nuclear activities

Ever since the initiation of the various nuclear liability régimes in the 1950s, the possibility and the actuality of state liability have been unambiguously accepted, both in national legislation and in international conventions First, both the Paris and the Vienna Conventions contain provisions safeguarding the possibility of state responsibility under international law

Second, in the Vienna Convention and in the Convention on the Liability of Operators of Nuclear Ships, the installation state must guarantee payment of compensation by the operator up to his liability limit Under the Paris Convention, it is tacitly understood that if the operator's liability fails, the state will step in and "do the right thing" [22]

Yet the most important evidence of the acceptance of liability by states internationally is the Brussels Convention, which supplements the operator liability in the Paris Convention by adding two tiers of compensation, first by the installation state and then by all the states party to the Convention Thus, not only does the installation state acknowledge responsibility for the damage and liability for compensation, but in an act of international solidarity, so do all the other nuclear states party to this regional Convention In effect the states not directly involved in the accident are recognising a form of collective responsibility simply for having created the risk of an accident Because they are contributing to the risk of nuclear damage they consider themselves at least indirectly responsible for any actual damage and hence liable to pay compensation to the victim

The same acknowledgement of ultimate responsibility is evinced in virtually all national nuclear liability laws These provide for either compulsory or voluntary state action (termed "state intervention") to compensate the victims of a nuclear accident if an operator cannot because his financial security has failed or because the amount of his liability is insufficient to adequately or fully compensate all the damage Most states will also pay compensation if the operator is exonerated because the accident was the result of a natural disaster or armed conflict In addition, some states will pay compensation for "delayed damage", radiation-caused disease that appears after the termination of the limitation period [23]

Furthermore, the legislation of certain states provides for an additional tier of compensation by the state if the funds available under the Paris and Brussels Convention do not satisfy all the claims [24] In Germany and Switzerland the state will even pay compensation for damage in its territory caused by an accident in another state if compensation is otherwise unavailable This provision was used after Chernobyl as a basis for compensating German victims

The reliance of some states upon state liability in their domestic legislation appears to be inconsistent with their international position For example, although the United States is a strong opponent of state liability for transboundary nuclear damage its nuclear liability law - the Price-Anderson Act - was based upon a state liability regime [25] For, in its initial versions the Act provided for state indemnification of the liability of operators of nuclear facilities beyond a modest minimum covered by private insurance

In the current Act as amended in 1988, the private insurance cover of each operator is supplemented by a retrospective premium imposed upon the operators of all nuclear facilities licensed by the Nuclear Regulatory Commission (NRC) However, the NRC still has the authority to indemnify operators of small nuclear power plants and research reactors operated by educational institutions In relation to large plants if the insurance cover of the operator is exhausted and recourse must be had to the retrospective premiums operators need only pay a maximum of $10 million per year in retrospective premiums until the limit of $63 million per accident is reached To ensure prompt compensation the NRC has the authority to borrow funds to compensate the victims against future receipt of the respective premiums

Moreover, contractors working for the Department of Energy are fully indemnified Victims of a nuclear accident caused by a contractor will be paid entirely from government funds up to the limit of liability of NRC licensees

If the court determines that compensation may exceed the limit of all insurance and retrospective premiums, the President is required to submit a compensation plan to Congress within 90 days, providing for "full and prompt compensation for all valid claims" Congress must then review the incident thoroughly and take whatever action is required to compensate the public This action may include the appropriation of public funds

Furthermore, under the legislation a Presidential Commission on Catastrophic Nuclear Accidents was established to recommend means of fully compensating victims when the damage exceeds the liability limit Because of the cost and the practical difficulties involved, the Commission has determined that the regular civil liability procedure would be inappropriate, and has proposed administrative alternatives [26]

Strict Liability

Also settled in relation to nuclear activities is the question of the standard of liability - due diligence or strict liability In the nuclear field, there is no question that liability is strict it has been so since the adoption of the Paris Convention in 1960 Even if it be considered that strict liability is only appropriate for "ultra-hazardous" activities, no one can deny that nuclear activities are the ultimate hazard

Since in national legislation and in the Brussels Convention, state liability supplements operator liability, it partakes of the same standard and must also be strict Furthermore, if state liability were to be primary and direct, instead of secondary and indirect, it would still have to be strict or objective, not only because the same rationale would apply to states as to operators, but also because the environmental law requires objective, causal state liability

Special Features of Both Nuclear and Space Activities

Indeed, the principle, the practice and the sheer necessity of state liability has been acknowledged by many states during the IAEA negotiations on liability for nuclear accidents The only difference from what is being proposed here is that the state liability in the draft texts is supplementary, rather than primary Apparently, some sates are willing to *pay*, but unwilling to admit they are liable to pay

Nevertheless, it need not be so Witness the provisions of the Space Liability Convention The resemblances to the nuclear issue are unmistakable, as are the differences between these and most other polluting activities In both the space and nuclear fields, the activities are either directly conducted by states or state agencies, or are very strictly supervised by them It is primarily because of this state involvement and tight control over an ultra-hazardous, high technology activity that in the Space Liability Convention, states are responsible and absolutely liable, not only for damage caused directly by state actions or omissions, but also for that caused by private parties operating under their jurisdiction and control

Yet, a large proportion of space activities are carried out by private parties Nor was the space liability convention a mere accident or creature of more innocent times For the past several years, the Outer Space Committee has been elaborating a set of draft principles on the use of nuclear power sources in outer space These principles expressly declare both the responsibility and the liability of states for space activities involving nuclear power sources that are conducted under their jurisdiction or control [27]

Because of the close similarities between space and nuclear activities, it may be argued that states should bear primary responsibility for transboundary harm in both, as a matter of principle, as well as for practical convenience As nuclear activities are ultra-hazardous, as they are closely controlled by the state, and as the state, representing society as a whole ultimately benefits, so the state must be primarily liable in principle

In any event in the case of a major accident such as that at Chernobyl the state will be primarily liable in fact from a financial point of view, as the cost of the damage is likely to far exceed the operator's resources and the state will ultimately pay the greater proportion of the compensation

The Proposed Comprehensive Global Convention on Responsibility for Nuclear Safety

From a theoretical or doctrinal perspective, therefore, it would be preferable that any framework convention on nuclear safety be comprehensive and include all aspects of an international safety regime in one document This means including liability, which is an inherent aspect of safety and which is the legal consequence of the duty to prevent damage From a practical perspective, while separate treaties may contain all the necessary elements of a complete régime - prevention, emergency response liability and compensation - it would be more convenient, elegant, comprehensive and meaningful to include all the responsibilities of states in a single, coherent, integrated, formalised structure This framework would emphasise the interrelationships among the various responsibilities, making them clear to states, to operators, and to the general public

The Convention proposed would directly concern the obligations of states only, although the obligations of operators would be evident indirectly from the responsibility of states to supervise and control them By framework convention is meant that the treaty would simply declare the general principles and obligations involved in the main aspects of responsibility nuclear safety and the prevention of damage emergency response, and liability and compensation States would retain and reaffirm their primary responsibility for nuclear safety There would be no provisions imposing binding legal standards or mandatory inspection

Detailed obligations or recommendations could continue to be contained in separate conventions codes of practice, and guidelines agreed through cooperation in the responsible international organisations In the alternative, if states decide to accept binding safety standards procedures or compulsory inspections, these could be added in protocols to the general convention, as has been done in the existing conventions and protocols on transboundary air pollution[28] the protection of the ozone layer[29] and the regional seas [30]

In essence states would merely accept binding legal obligations to continue doing what they already have been doing voluntarily since the inception of the international

nuclear régime in the 1950s They would accept the general principles of nuclear safety and would pledge to adopt national legislation, regulations, standards, criteria and practices that are no less effective than internationally accepted norms and standards The qualification of *no less effective* would permit states to adopt more stringent measures and should allay the fears of those expecting a lowest common denominator approach [31]

Surveys and studies have shown that voluntary acceptance of international standards is fairly widespread For example, the Nuclear Safety Standards (NUSS) codes of the IAEA are generally used as either the basis for new national legislation, or as a benchmark by which to examine existing laws Furthermore, certain standards, such as the IAEA Transport Regulations have actually become binding through their incorporation into conventions promulgated under the aegis of various international transport organisations At a more general level, during discussions of the proposed new convention on nuclear safety, most states appeared to be prepared to adopt and apply the recommendations on Basic Safety Principles for Nuclear Power Plants prepared by the International Safety Advisory Group (INSAG)

Of course, the IAEA standards and regulations are acceptable precisely because they have been developed and drafted not only by experts and the professional staff of the secretariat, but primarily by the states themselves Typically, a committee comprised of state representatives will be involved in the drafting, and texts will be sent to states for comment In the convention, states would formally agree to continue this procedure, to collaborate and co-operate, within the context of international organisations to establish standards, rules, principles and practices which they would then use as guidance in their national regulatory systems Hence, the framework convention would merely be a highly visible commitment to maintain a current practice

Legally binding commitments to co-operate with other states in further developing nuclear safety by exchanging information, discussing regulatory practices, sharing lessons learned from operational experience, engaging in joint research projects, and so forth, would also merely confirm existing voluntary practice within a number or organisations These obligations might be implemented through the use of IAEA safety services, as well as through participation in workshops meetings, symposia and conferences organised by a number of international organisations including the IAEA, the NEA, the EC, WHO, the Food and Agriculture Organisation - FAO, and WANO Over the past few years, both industrialised and developing countries have made increasing use of these opportunities, and have continued to request more services and more advice [32]

Similar provisions would address the entire range of issues involved in emergency planning, emergency response and mitigation of damage For example, there would be provisions on early notification of accidents and emergency assistance, restating in very general terms the basic legal principles For more detailed obligations, states would refer to the IAEA Conventions, or any bilateral or regional agreements to which they might be party Models for particular provisions regarding emergency response, as well as safety and prevention would be found in the multitude of treaties, declarations, codes of practice and recommendations already adopted or in the process of negotiation, not only in the nuclear field, but also in relation to other activities that may harm human health and environment

Liability and Compensation

In the context of international law and international relations, it is clear that the installation state is primarily liable to the states that have suffered damage caused by a nuclear facility under its jurisdiction or control There is no question of state liability or payment of compensation being "residual" or merely a supplement to operator liability From a doctrinal point of view, on principle, state liability is and must be primary, because states have ultimate responsibility for all activities within their jurisdiction and control, and must be held to account for any injurious consequences

From a financial point of view, state liability will also be primary in the event of a major nuclear accident, as the operator will not be able to satisfy all the claims, and the state will ultimately pay the greater amount for costs and compensation Finally, from a practical point of view, state liability is necessary because civil liability procedures are expensive, time-consuming, inefficient, and largely ineffective In contrast an inter-state claims settlement procedure using the existing resources of the state and consolidating all the public and private claims in each state would provide relatively prompt compensation, at the least cost to society, and with the greater return to each individual claimant

The most efficient and effective procedure would be the classic inter-state claims procedure, as adapted for the nuclear field Options for implementation include either adding a section on liability and compensation to a comprehensive safety convention with technical details related to a protocol or annex, or concluding a separate, self-contained state liability convention, with the responsibility for prevention declared in very general terms, followed by a fairly complete set of provisions on interstate settlement of claims These would be largely modeled on the procedures in the Space Liability Convention, except that the Claims Commission would have the authority to make binding decisions Another useful precedent is the arrangement adopted by the UN Commission established to settle claims against Iraq arising from its invasion of Kuwait and the subsequent Gulf War [33]

To facilitate the collection of evidence and proof of causality, the Commission would have to enjoy extensive fact-finding powers, and be assisted by the relevant authorities in all the states concerned In addition, it should be able to make use of an advisory panel of international scientific and technical experts, possibly established in cooperation with the various competent international organisations the IAEA, the NEA/OECD, WHO, the United Nations Environment Programme - UNEP the World Meteorological Organisation - WMO, FAO, the United Nations Scientific Committee on the Effects of Atomic Radiation - UNSCEAR, and the International Commission on Radiological Protection - ICRP In order for them to be able to understand the scientific and technical complexities of the case, the Commission members themselves would have to have some specialised knowledge of nuclear activities and nuclear science and technology as well as nuclear law

As in the Space Liability Convention, state liability for nuclear damage would be absolute, without limitation and without exoneration Any limitation on the liability of states would be inappropriate for several different reasons First, the general rule in both national and international law is *restitituo in integrum* or a total compensation The contrary rule of limitation on liability was introduced into nuclear law to encourage the development of a nascent nuclear industry which was afraid of potentially devastating claims for damages Not only is this issue not relevant to state liability, but also it is now considered that

victims are more deserving of protection than dangerous industries Another justification for limitation on liability in civil claims against the operator is the limitation in insurance cover available Again, this problem is not relevant to states, as they would be using not insurance, but regular treasury funds to pay the compensation Most importantly, a limitation on compensation would mean that the victims would have to bear part of the burden themselves, a result that would be clearly inequitable and that would violate the Polluter Pays Principle For all these reasons, state liability must in theory be unlimited

However, factual circumstances and the requirements of equity would impose some limitations both in principle and in practice In determining the total amount of compensation payable by the installation state, the Claims Commission would have to take into account all the relevant circumstances, such as negligence on the part of the state, or a possible breach of a specific duty, the degree of damage suffered by the installation state and ability to pay Also to be taken into account would be whether the affected state has benefited in any way from the installation in question, as by purchasing the power it generates Any shortfall in compensation available for victims would be paid through contributions by other operators and other states The installation state would have recourse to the operator for this amount of his liability Theoretically, all the claims should be paid in full

Because the funds available under state liability would be greater than those provided through operator liability under the existing Paris and Vienna Conventions, the compensation should be able to cover all the possible heads of damage Thus, the types of damage in the new state liability convention could include the cost of preventive measures, further damage caused by preventive measures, and impairment of the environment In relation to damage to the environment, compensation could be provided for both decontamination and restoration, and for damage to the environment *per se* where restoration is impossible

Thus would the main problems of the civil liability system be resolved by a state liability régime The installation state would be held to account, instead of being relieved of its responsibilities, the difficulty and expense of private law suits would be avoided, more money would be available for compensating the innocent victims, and all main heads of damage, in particular damage to the environment, would be covered

The other deficiencies of the civil liability system would also be overcome For example, military installations could be included, as they are operated by the state Because of the extensive financial and material resources of the state and of the professional expertise of state officials, the collection of evidence and proof of causation would be greatly facilitated As the state would doubtless wish to survey and assess the damage in any event, there would be no duplication of effort for the litigation No individual in a private lawsuit could even think of undertaking such a task The geographic scope would be universal, so that compensation would be provided to all states offering reciprocal benefits Thus, the artificiality, clumsiness, and unnecessary complication of two separate systems linked by a protocol would be avoided

If sufficient compensation were available for all, financial priorities should not be necessary, yet, as a precaution the convention, or perhaps an annex, should provide that in the event that all claims cannot be paid in full, individual victims with personal injuries, dependents of those who have lost their lives, and individuals who have lost their homes

or livelihoods, should be paid first Furthermore, those most in need, including the injured and those who have been evacuated should receive immediate, interim payments

Since delayed damage such as cancer may become manifest decades after exposure, there should be no time limits for making claims A victim suffering delayed damage should merely be required to submit a claim to the installation state within three years of the discovery As the Claims Commission will have been disbanded within a few years of having been created, late claims would go to a national claims commission which using the established criteria, would determine their validity If a claim is accepted, the installation state would pay the compensation out of treasury funds Unlike the operator insurance, which expires after ten years, state funds should always be available

If judged by the regular rules of evidence, causality could rarely be proven in personal injury cases involving ionizing radiation and delayed damage There is no way of absolutely proving that a particular cancer was caused by exposure to ionizing radiation from a particular nuclear incident Therefore, in order to protect and compensate the innocent victim, less traditional methods of "proof" of causality should be required The Claims Commission should be directed to refer to international standards and recommendations as to which levels of radiation are likely to cause damage and which particular diseases are likely to result Compensation should be based upon a degree of probability in the relevant circumstances rather than upon the relatively difficult, if not impossible establishment of direct cause and effect relationship

There are certain innovative American precedents that might serve as models for awarding damages where causation cannot definitely be proven [34] These propose that compensation should be granted to all those who were exposed to radiation by the accident and who developed certain types of diseases known to be caused by radiation There could be a sliding scale of recovery depending upon the degree of probability The Claims Commission should also be authorised to set categories of certain types of victims suffering certain types of damage - physical, property damage, economic loss costs of preventive measures and further damage caused by preventive measures - that would receive the same amount of compensation for the same type of damage [35] This would not only be fair it would also simplify decision-making and save precious time

To determine the validity of claims by both states and individuals for the costs of preventive measures and further damage caused by preventive measures the Commission would have to refer to international standards and criteria regarding intervention levels, derived intervention levels and appropriate application of protective measures The relevant standards and criteria would be those recommended by the ICRP, the IAEA, the NEA/OECD, the FAO, and the WHO If the measures taken were excessive in relation to the degree of risk then compensation would not be granted Also to be considered would be claims for disruption of international trade These would be judged against the recommendations of the FAO/WHO *Codex Alimentarius* Since the state of scientific knowledge may change technical details should not be included in the convention Either the convention should refer generally to "internationally accepted standards and criteria", or these standards and criteria could be included in an annex which may be easily amended in accordance with the "tacit acceptance procedure" used in certain International Maritime Organisation (IMO) Conventions [36]

Similarly in order to minimise the complexities of the comprehensive convention, it would be preferable to leave the issue of operator and state pools to a separate agreement or protocol to be negotiated subsequently This would enable the safety convention to be completed at an early date, so that states could make a public commitment to safety as soon as possible Furthermore, states and operators may wish to gain some experience with the effectiveness of the safety convention before developing enough confidence in their colleagues to risk having to pay for the consequences of accidents in their installations

E PROSPECTS FOR REALISATION

At the moment the IAEA is working on two conventions, one on nuclear safety and one on liability for accidents (with a possible supplement) If current trends in the liability negotiations continue, the result will not be a convention on state liability, but revised Vienna and Paris Conventions on civil liability together with a new supplementary convention on additional compensation by operator and state pools, to be applied when operator liability is inadequate or ineffective While a number of states strongly support the conclusion of a convention on state liability a small minority opposes equally strongly even any discussion of such an instrument

In sum at the present time the prognosis is not good for a comprehensive convention covering all aspects of an international régime for nuclear activities, including state liability for nuclear damage Yet that might not be the end of the matter Because the negotiation of a convention on nuclear safety may take some years, there will be time for supporters of a complete convention to argue their case Furthermore, the adoption of revised Vienna and Paris Conventions on civil liability does not preclude consideration of state liability either simultaneously, or at a late date For the private and public systems of compensation could easily co-exist so long as claims concerning a single instance of damage could be presented through only one of the two procedures If a nuclear accident occurs, states could choose either to use the interstate claims procedures to claim compensation for their nationals as well as themselves, or they could leave their nationals to institute private proceedings under the civil liability régime

When the basic elements of the instrument are understood, there should be little resistance to the conclusion of a framework convention on nuclear safety There are several reasons for this

First, when the idea of a framework convention on safety was suggested at the 1991 Nuclear Safety Conference, virtually all the participating states welcomed the proposal Among the states supporting the ideas were the 12 members of the European Community and the United States representing most of the industrialised states with the greatest number of nuclear installations Subsequently, when the IAEA Board of Governors considered the proposals of an Expert Working Group and the Secretariat at its meeting in February 1992 all participants approved the idea of a nuclear safety convention in principle The disagreements on scope and content will have to be resolved in the course of negotiations over the next few years

Second, for several decades, states have been willing to conclude a fair number of conventions declaring their responsibility for safeguarding the environment and human

health, and pledging to take necessary measures to prevent, reduce and control transboundary environmental damage of all kinds Indeed, Member States of the IAEA, NEA and EC have agreed to do this simply by joining the organisations, whose constituent instruments give all of them competence in the field of nuclear safety In effect, as explained above, states have already been implementing most of the measures required, unilaterally, and in co-operation with other states, most often voluntarily, but also in accordance with a number of binding international agreements

Similarly, states have readily concluded guidelines and agreements providing for international co-operation in emergency preparedness and response and mitigation of damage, most notably in the fields of marine pollution and nuclear accidents The latter include not only the IAEA Conventions on Notification and Assistance, but also more stringent measures adopted by the European Community, as well as numerous bilateral agreements Thus, a framework convention on safety would merely formalise what states have already been doing in the nuclear field, as well as in relation to other activities that may cause damage to human health and the environment

Third, nuclear power states are conscious of the fact that, since Chernobyl, a large proportion of public opinion is opposed to nuclear power It is primarily public fears of nuclear accidents and of radiation from the disposal of nuclear wastes that have prompted the termination or suspension of the construction and commissioning of new plants in a number of states As a consequence, countries wishing to initiate or expand a nuclear power programme (and adopt the nuclear industry) should be willing, even eager, to adopt a public relations gesture with the high visibility of a global convention providing for binding commitments on nuclear safety and emergency response As declared by Hans Blix, Director General of the IAEA, nuclear power must not only be safe, it must be perceived as being safe [37]

Those states desiring to include provision on state liability in the framework safety convention would do well to pursue this same line of reasoning They might point out the further benefits to be gained by convincing the public that states are willing to assume responsibility for the consequences of any accidents in the installations which they license and control Accepting full responsibility for safety includes paying compensation to the innocent victims of nuclear damage Furthermore, with state liability, the public would be assured of actually obtaining compensation and would not have to be concerned about the difficulty and expense of private actions against foreign operators

Finally, even those who are skeptical about the safety of nuclear power and would prefer to see it abandoned entirely should welcome such a convention, for it should increase the awareness of states and operators of their responsibilities with respect to nuclear activities and so strengthen their determination to take all possible safety precautions in order to prevent accidents and the occurrence of nuclear damage The acknowledgement that they might be liable for billions of dollars in damages would certainly give states pause for thought, and would probably enhance their vigilance, thereby increasing safety and reducing the risk of serious damage

Notes and References

1 See report to the 1991 IAEA General Conference on the "International Conference on the Safety of Nuclear Power Strategy for the Future" IAEA Doc GC(XXXV)/970, and GC Resolution 533 inviting the Director General to submit an outline of the possible elements of such a Convention to the Board of Governors

2 Since there is continuing conflict in the former Yugoslavia, the question of state succession to treaties is not definitely resolved The single nuclear power plant in the region is in Slovenia, which has adhered to the IAEA, and, as well as Croatia has become a Party to the Vienna Convention

3 Argentina has two power plants in operation Cuba is building two and the Philippines has just decided to put into operation one upon which work had been suspended IAEA "Nuclear Power Status in 1991", Press Release no PR/18, 6 April 1992

4 See "Explanatory Memorandum" 1960 in *European Yearbook VIII* 1961

5 This is possible under the Canadian Nuclear Liability Act when the government issues a proclamation to suspend civil proceedings and to assume responsibility for compensating the victims See note 8 *infra*

6 See NEA/OECD, *Nuclear Legislation Third Party Liability*, for analytical summaries of all national nuclear legislation up to 1990, and the NLB (Nuclear Law Bulletin), for subsequent changes

7 Ibid

8 In the Canadian Nuclear Liability Act, the deficiencies of the civil liability system are recognised by providing for a special procedure in the case of major accidents If the amount of damage exceeds the operator's liability limit or if it is deemed to be in the public interest the government will issue a proclamation putting into effect Part II of the Act Under Part II, an operator ceases to be liable for damages and injuries, becoming instead liable to the government for the amount of compensation paid up to the limit of his insurance All court actions are forever stayed, and a Nuclear Damage Claims Commission is established with exclusive jurisdiction to assess all claims and to award compensation Payment is made from government funds The Commission is not bound by the law of evidence and may conduct such examinations and investigations as may be necessary to establish the facts concerning the accident and any damage and may engage other persons to do this on its behalf It may establish priorities in the payment of claims and grant interim financial assistance One interesting feature of the Act is that the substantive provisions begin with a declaration that "an operator is under a duty to secure that no injury to any other person or damage to any property of any other person is occasioned " (The British Act does likewise) *Nuclear Liability Act* R S , c 29 (1st Supp), s 1

9 For example litigation regarding the accident at Three Mile Island in 1979 is continuing 13 years after the fact, see *NLB* Nos 43 and 45 Judgment in an appeal in the litigation concerning the 1978 *Amoco Cadiz* oil spill was rendered only in 1991 also 13 years after the incident In Japan lawsuits relating to mercury poisoning in Minamata are still not settled 23 years after the first court claim was filed and 36 years after the first death

10 The author was legal counsel in both the *Gulf of Main Case* before the International Court of Justice and the *Canada France Maritime Boundary Arbitration* Both cases took only three years to conclude

11 See *NLB* Nos 45 and 46

12 *UNRIAA III* (United Nations Reports of International Arbitral Awards), 1938 Decision p 1911 1941 Decision p 1938

13 ICJ (International Court of Justice) *Reports* 1949

14 *UNRIAA (United Nations Reports of International Arbitral Awards) XII* 281

15 8 *ILM* 118 (International Governmental Materials) 1969

16 ICJ *Reports* 1973 and 1974

17 Convention on International Liability for Damage Caused by Space Objects (1972) The Canadian claim is reproduced in 18 *ILM* 899 (1979) and the settlement in 20 *ILM* 689 (1981)

18 Declaration on the Human Environment Report of the UN Conference on the Human Environment Stockholm 1972 UN Doc A/Conf 48/14/Rev 1

19 For texts of reports of special rapporteurs the discussions in the Commission and the annual reports to the UN General Assembly see the ILO (International Law Commission) *Yearbook* for each year

20 PCIJ *Reports* Series A no 17 p 47

21 OECD "The Polluter Pays Principle OECD Analyses and Recommendations" OECD/GD(92)81 1992

22 Explanatory Memorandum op cit Note 4 *supra*

23 *Nuclear Legislation* op cit note 6

24 For example Sweden ibid

25 Public Law No 100 408 102 Stat 1066 (20 August 1988)

26 *NLB* No 46 p 75

27 For the most recent text see Report of the Committee on the Peaceful Uses of Outer Space UN Doc A/46/20

28 Economic Commission for Europe (ECE) Convention on Long Range Transboundary Air Pollution (1979) with protocols on sulfur dioxide (1985) nitrogen oxide (1988) and volatile organic compounds (1991)

29 Vienna Convention on the Protection of the Ozone Layer (1985) and the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)

30 In the UNEP Regional Seas Programme, there are conventions covering protection of the environment in the Mediterranean Barcelona Convention (1976) the Persian/Arabian Gulf Kuwait Convention (1978) Gulf of Guinea Abidjan Convention (1981) South East Pacific Lima Convention (1981) Red Sea Jeddah Convention (1982) Caribbean Cartagena Convention (1983) Indian Ocean Nairobi Convention South West Pacific Noumea Convention (1986)

31 This technique is used in Part XII of the 1982 Law of the Sea Convention see Article 210

32 *IAEA Yearbook 1991*

33 States are required to collect and assess all claims under their jurisdiction and to present a consolidated claim to the Commission which will verify a sampling and then pay to the state a lump sum for distribution to the victims by a national process Claims for death and personal injury are given priority and small claims are compensated by a fixed amount upon the presentation of a bare minimum of evidence

34 See report of the Presidential Commission note 26 *supra* and the Radiation Exposure Compensation Act NLB No 47 p 59

35 See note 30, *supra*

36 Under tacit acceptance an amendment adopted by a conference or committee comes into force for all parties after a short lapse of time (usually 2 3 years but sometimes less), unless objections are made by one-third of the parties or parties whose combined merchant fleets total 50 per cent of world tonnage

37 Introductory address at the Safety Conference note 1, p 12

Moroccan National Nuclear Regulation Project*

*by Rag El Hassi Ahmed***

Abstract

In order to plan the nuclear programme effectively, the objectives of the regulations in this field are, in particular, to establish the legislative framework to control the safe development of nuclear activities, fix the fundamental radiation protection principles and the conditions for implementing this framework, create an administrative and regulatory structure responsible for licensing and finally, ensure adequate financial protection in case of nuclear damage

I INTRODUCTION

There has been a relatively important increase in nuclear applications in Morocco This trend is set to grow in the years to come with, in particular, the starting up of the nuclear research centre called the National Centre for Scientific, Technical and Nuclear Studies ("Centre National d'Etudes Scientifiques, Techniques et Nucléaires" - CNESTEN), and in the longer term, the introduction of electricity of nuclear origin However the decision to use nuclear energy on economic and social grounds has been taken at a time when the protection of human life and health has become a priority throughout the world, and particularly in Morocco

Clearly, no industry can genuinely claim to involve no risk whatsoever to man or the environment

It should, however, be said that from the outset, and because of the risks inherent in radioactivity, the nuclear industry has paid particular attention to developing strict procedures and techniques to control the risks whether major and minor, of potential incidents or accidents involving radioactive materials

For all these reasons, the authorities have, from the beginning of the process of the planning and implementation of Morocco's nuclear programme, ensured that regulatory and

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* This paper was delivered at a Seminar on the use of nuclear techniques in medicine held in Rabat on 11 April 1992 Responsibility for the ideas expressed and the facts given rests solely with the author

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legislative aspects are included, these constitute the basis of State control designed to guarantee in an effective fashion the safe operation of Morocco's future nuclear installations, and at the same time to fill the legal vacuum existing in the field of nuclear applications and techniques

Morocco already has an Act, Royal Dahir No 005-71 of 12 October 1971, relating to "Protection from Ionizing Radiation", this is a framework Act which is to be completed by implementing legislation regulating all aspects of nuclear activities

For this purpose, the relevant department of the Ministry for Energy and Mines is making a study of the experience of the developed countries in this field, especially the Member countries of the Organisation for Economic Co-operation and Development (OECD), and of that of developing countries which have begun a nuclear energy programme

Assistance has also been requested from the International Atomic Energy Agency (IAEA) of which Morocco has been a Member since 1987

The principles contained in the nuclear conventions and treaties adopted by Morocco directly influence national legislation which will be dealt with subsequently

II OBJECTIVES OF NUCLEAR REGULATION

The approach adopted in preparing Morocco's draft legislation first involved defining the main objectives of this legislation namely

- To establish the legislative framework within which to regulate the safe development of nuclear energy and its applications, at the same time having regard to the commitments undertaken by Morocco in international conventions and treaties,

- To lay down the fundamental principles and conditions for implementation of this legislative framework,

- To create an administrative and regulatory structure with sufficient powers to grant and supervise licences,

- To ensure adequate financial protection in the event of nuclear damage

III MAIN COMPONENTS OF THE LEGISLATION

As mentioned above, there are two aspects involved in Morocco's nuclear legislation

- An international aspect,

- A national aspect

A International aspect

The international dimension of nuclear law differentiates it from other, traditional branches of law, the reason for this international dimension is that the environment knows no frontiers, as a major nuclear accident (for example, Chernobyl) shows only too clearly hence the existence of a number of treaties and conventions which, as will be seen below will significantly affect the process of drafting Morocco's regulatory structure

The treaties and conventions signed by Morocco are as follows

- Nuclear Non-Proliferation Treaty (NPT),
- Safeguards Agreements for IAEA monitoring of national nuclear installations,
- Convention on the Physical Protection of Nuclear Material,
- Vienna Convention on Civil Liability for Nuclear Damage,
- Convention on Early Notification of a Nuclear Accident,
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

B National aspect

There are currently several draft texts designed to regulate all aspects of the peaceful use of nuclear energy These include

- Draft Decree relating to the licensing and control of nuclear installations,
- Draft Decree relating to protection against ionizing radiation,
- Bill on civil liability for nuclear damage,
- Draft Decree relating to the transport of radioactive materials,
- Draft joint Order relating to the physical protection of nuclear material

IV MAIN PROVISIONS OF THE PRINCIPAL BASIC TEXTS

Decree on radiation protection

This draft Decree applies to all installations in which radioactive substances or any other source of radiation are held, and contains provisions on radiation doses (further details are given in the Annex hereto)

It then defines the annual dose equivalent limits applicable to exposure which can be controlled and also to accidental exposure, both for workers directly exposed and for the general public

The different aspects of radiation protection follow the basic standards adopted by the IAEA which themselves are based on the latest recommendations of the International Commission on Radiological Protection (ICRP) founded on the ALARA principle, according to which all exposure to ionizing radiation should be kept "As Low As Reasonably Achievable", economic and social factors being taken into account At an administrative level the draft makes a distinction between two categories of establishment using radioactive substances

- Category I is made up of so-called "nuclear" installations which, in view of their special safety requirements will be regulated by a separate text,

- Category II covers all establishments other than nuclear installations, using sources of ionizing radiation The Decree lays down for such establishments a system of licensing or notification depending on the nature and activity of the radioelements involved and provides that licences shall be granted by the Ministry of Public Health assisted by a Radiological Protection Commission comprising representatives from different Ministerial departments concerned, which will be called upon to give its opinion and prepare proposals on all matters affecting radiation protection

Decree relating to the licensing and control of nuclear installations

The provisions of this draft Decree apply to so-called "nuclear" installations, namely nuclear reactors and any installations connected with the nuclear fuel cycle and waste storage

The Decree lays down a licensing system covering all phases of the construction of a nuclear installation, and which are site selection, construction, fuel loading, start-up tests, operation and final shutdown These licences will be granted in the light of different safety reports prepared by the applicant

Apart from site approval for a nuclear installation, which constitutes the legal basis for the subsequent relevant licences and which requires a Decree of the Prime Minister, the national competent authority for granting subsequent licences is the Energy Minister on the basis of an opinion by the National Nuclear Safety Commission This latter body is made up of representatives from the different departments concerned as well as experts in fields affecting nuclear safety and technology

Bill on civil liability for nuclear damage

This draft is based on the provisions of the Vienna Convention on Civil Liability for Nuclear Damage It lays down special rules for liability based on the following principles

a) The absolute and exclusive liability of the operator of a nuclear installation for nuclear damage occurring in his installation or involving nuclear material coming from or originating in this installation

b) Limitation of the amount and duration of the operator's liability

The first limitation meets the concern to avoid imposing an unlimited financial burden on the nuclear industry in order to cover the risks involved, something which would have the effect of hindering the development of the peaceful use of nuclear energy

As for the limitation in time of the liability this is the outcome of a compromise between two conflicting requirements

- the personal injury caused by exposure to radiation may not become apparent for a long time,

- it would be difficult for operators and insurers to maintain, over too long a period the funds required to cover their liability, the amount of which, in money terms, would not be known

c) An obligation for the operator to take out insurance or other financial security to cover his liability

d) A State guarantee to pay compensation for nuclear damage in excess of the operator's financial security

Decree relating to the transport of radioactive materials

This draft based on the IAEA Regulations, applies to the transport of radioactive materials by land, water or air It lays down special requirements concerning the packaging of radioactive materials to ensure that packages can be transported, handled and stored with no danger to workers the public or the environment Packages are classified according to their weight, volume and activity Consideration is currently being given to the choice of the competent authority to be responsible for granting licences and ensuring compliance with regulations

Draft order relating to the physical protection of nuclear material

In implementation of the international Convention on the Physical Protection of Nuclear Material and on the basis of the IAEA Recommendations in this sphere, a joint Order has been drafted This Order specifies the physical protection measures required to prevent or contain any illegal act of theft or misappropriation or the threat of any such act The Order lays down a national system for the physical protection of nuclear material

IV CONCLUSION

The process of setting up a legislative framework and regulatory structure in the nuclear field involves co-ordinating the national regulations in force in other areas with the changing provisions of the international law applicable and also requires discussions on as broad a basis as possible with all the administrative and professional partners involved In our opinion, priority should be given to the following

1 Above all, the legislative aspects and regulatory constraints involved should, in spite of their diversity, appear to all those concerned with the nuclear programme as forming a cohesive whole, with each component serving a useful purpose, this could be achieved, over and above any applicable statutory requirements, by encouraging continued in-depth consultations among the different partners concerned

2 Training constitutes another priority the existence of qualified personnel in sufficient numbers to carry out the various preparatory tasks of investigation, evaluation and the provision of advice, and, in due course, the work of regulatory control, must be seen as a "sine qua non" of a safe and credible nuclear programme

3 Lastly, for the purpose of implementing the above-mentioned legislation, provision has to be made for the adoption and dissemination of technical directives and practical guides for all those concerned Keeping up to date with the latest advances in technology will therefore constitute the linchpin of all future action in the field of nuclear regulation

ANNEX

Description of the Draft Decree relating to Protection against Ionizing Radiation

At present, in Morocco, nuclear technology and radioactive materials are widely used in the fields of medicine, industry and research Since these materials emit radiation which can be harmful to man and the environment, they must be controlled and their use made subject to strict regulation that is as detailed as possible at both technical and administrative levels so as to control the risks of radiation and prevent possible radiological accidents

To this end, a draft Decree has been prepared, based on and pursuant to Act No 005-71 of 12 October 1971 relating to Protection against Ionizing Radiation The objective of the draft is to prevent risks of radiation by laying down limits, maximising

protection and requiring justification for any activity involving exposure to ionizing radiation so as to ensure better radiation protection for workers and the general public

I TECHNICAL ASPECTS

In Part I, the draft defines its scope of application, specifying those types of activity involving radioactive substances in relation to which the establishments concerned are subject to the Decree It also lays down general provisions concerning circumstances of exposure and the dose limitation system (Titles I and II)

It then defines the annual dose equivalent limits applicable to exposure which can be controlled and also to accidental or emergency exposure both for workers directly exposed and for the general public (Titles III and IV)

The basic rules for monitoring the health of workers and the public are set out in Titles V and VI

The different technical aspects of radiation protection in the draft are founded on the basic standards adopted by the International Atomic Energy Agency (IAEA) which themselves are based on the latest recommendations of the International Commission on Radiological Protection (ICRP) founded on the ALARA principle, according to which all exposure to ionizing radiation should be kept "As Low As Reasonably Achievable", economic and social factors being taken into account

II ADMINISTRATIVE ASPECTS AND REGULATORY CONTROL

At an administrative level, the draft makes a distinction between two categories of establishment using radioactive substances

- A first category covering all so-called nuclear installations, in addition to the application of the basic radiation protection standards, the Decree prescribes strict regulation and control measures in view of the specific nature of these installations and the problems they pose as regards nuclear safety and environmental protection

The draft does not, however, provide for any licensing procedure in relation to these installations which are governed by the draft Decree relating to nuclear installations, to be submitted for government approval at the same time as the present draft

- The second category covers all establishments, other than nuclear installations, using sources of ionizing radiation

The draft lays down for such establishments a system of licensing or notification depending on the nature and activity of the radioelements involved and provides that licences will be granted by the Ministry of Public Health (Titles VIII, IX and X), the supervisory authority of the Central Radiation Protection Service which will be responsible for ensuring that establishments using radioactive sources comply with the regulations

The draft also provides for the creation of a National Radiological Protection Commission (Title XI), made up of representatives from different Ministerial departments concerned, which will be called upon to give its opinion and prepare proposals concerning applications for licences to construct establishments using radioactive substances, their operation and any other question of general interest in the field of radiation protection

Right of the Public to Participate in the Nuclear Decision-Making Process

by Florence Galliot de Galzain[**]

Abstract

It is generally acknowledged in OECD countries that the public must play a role in the elaboration of nuclear energy policies. This article discusses the public's participation in the decision-making process in the nuclear field and points out that this approach cannot be dissociated from that concerning other large industrial installations. The author considers that the right of the public to participate in technological decisions is based on the concept acquired in international law according to which the public is entitled to be informed and consulted on environmental matters, and gives examples. Methods of participation and its limitations as well as the flexibility of these procedures are also described

NUCLEAR DECISION-MAKING AND SOCIETY

In industrial societies, the public is increasingly aware of the impact technology has on everyday life. It is also very well aware that technological choices have to be made, in the field of energy for example. As regards electricity, in particular, such choices are based on an evaluation of a country's energy resources and electricity needs as well as on economic or political considerations such as the desire to establish or strengthen national energy independence, for example.

To date, long-term decisions about sources of energy production have been taken after discussions between experts and governments alone. Such decisions have sometimes later given rise to public protest - on the sites of nuclear power plants for example -- but have rarely been preceded by discussions or consultations involving governments and the public.

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* The OECD Nuclear Energy Agency (OECD/NEA) and the International Atomic Energy Agency (IAEA) jointly organised an International Workshop on Public Participation in the Decision Making Process in the Nuclear Field from 4 to 6 March 1992. This article describes the main conclusions of this Workshop and the results obtained from a questionnaire sent by the NEA and the IAEA to their Member countries concerned.

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Such on-site protests have not, however, succeeded in directly challenging the main thrusts of national energy policies For example, once the decision to develop nuclear energy has been taken, subsequent protests have not led to the fundamental principle of using nuclear energy being called into question They have simply succeeded in delaying, and sometimes overturning specific siting decisions There is of course a marked contrast between the negligible effect of such public demonstrations protesting a posteriori about specific decisions, and the impact on national nuclear policies which certain forms of direct participation, such as referenda, can have today and which usually result in putting a brake on nuclear energy programmes

There is as yet no standard definition, in the different countries concerned, of the concept of public participation in the decision-making process in the nuclear field The definition may simply include the fact of informing the public or keeping it up to date and making documents available to the public in the context of the administrative and legal procedures preceding the granting of licences for the construction or operation of nuclear installations, or even their dismantling But as defined here, the concept includes a form of consultation provided for and defined in law, allowing the public not only to be heard but also to have its opinions taken into consideration

The public desire to participate actively in decisions has gradually been taken into account in the national law of most industrial countries In the case of nuclear energy, there has been a growing tendency to allow the public to take part in decisions using a quite different approach, i e at the actual stage of prior discussions or in the context of licensing procedures, and in the most official way possible, using representation procedures defined and regulated by law In fact, several OECD countries have already adopted statutory rules or measures of application to the effect that representatives of the public should be informed and consulted about decisions on nuclear development, or even authorised to vote directly on such decisions The rules adopted in different countries about public participation in the successive stages of decision-making - statutory, regulatory, or administrative - are closely dependent on their national political system, their constitution, and in particular on the structure and organisation of government, and on the social and psychological context All OECD countries today admit that the public has a role to play, whether direct or indirect, in the formulation or at least implementation of nuclear policy, even though direct participation is still the exception There are of course significant differences in the ways in which this principle is applied, having regard in particular to constitutional, political or social traditions which at times can be very long-standing, or to the fact that public awareness of nuclear risks varies from one country to another Such differences can relate both to the form and formulation of participation mechansims and to the weight given to public participation in the final decision[1]

PARTICIPATION AND DEMOCRATISATION

Public participation in the decision-making process in the nuclear field cannot be dissociated from that in relation to other major industrial installations In the first place, nuclear installations fall into the general category of large industrial installations and, as such, are governed by the same laws thus in a large number of countries, a whole series of provisions governing installations presenting industrial risks applies also to the nuclear industry[2] For example, thermal power plants and nuclear ones are subject to many of the same regulations This applies in particular to aspects such as construction, and water, air

or noise pollution The overseer of a nuclear installation is therefore subject to provisions which are not specific to the nuclear field and the application of which often falls within the jurisdiction of Ministries or Agencies other than his supervisory authorities In the second place, given the relatively recent development of the nuclear industry, the procedures adopted in this field to allow public participation in decision-making are based, precisely because of the chronological order of the history of industrialisation, on those already applicable to policy-making in traditional industrial sectors

Thus, public participation is governed by procedures linked to the exercise of democracy rather than by special measures applicable exclusively to a given sector Nevertheless, such procedures should be tailored to fit the nature and scope of the decisions to be taken, hence the interest in a more detailed study of a sector such as the nuclear one

However, as is the case in other fields such as biotechnology for example, nuclear decisions are the result of a series of factors based not only on technical, legal and administrative parameters but also on emotional considerations The current trend in industrialised countries, moreover, is to emphasize the first group of factors, precisely in an attempt to keep emotional considerations out of decision-making This, in recent years, has given rise to numerous procedures designed to "institutionalise" public participation in the hope of making it more "objective" by rendering discussions less emotional and involving the public to a greater degree

PARTICIPATION AND THE FINAL DECISION

The scope of public participation in the decision-making process and in the final decision itself depends on several factors, notably on the stage at which such participation takes place, the extent to which it is formal, the degree of participation depending on the definition of the "public" called upon to participate, and, above all, on the nature of such participation

This may be a simple opinion, following an information campaign, collected by means of random or systematic polling In all cases, the giving of such an opinion is a step further than simply participating in the debate The opinion may be positive, negative or raise certain objections It may or may not be followed, but it rarely represents in itself the final decision, the fact of participating in the decision-making process at one or more specific stages is not the same as taking the final decision The competent authorities usually consider rather consultation of the public - more or less mandatory and often impossible to avoid - to be one element only of the general file constituted in application of licensing procedures

The impact of this opinion thus varies from one country to another it is strong in Austria (where the referendum in 1978 was decisive), Belgium, Finland, Italy, the Netherlands, Sweden and Switzerland It is doubtless less strong elsewhere However, except in special political circumstances, the opinion given by the public rarely has the force of a final decision and in most cases the power of decision remains with the political or executive authorities or, at best, with Parliament In this respect, Parliaments are expressly entrusted in a number of countries with formulating nuclear energy policy (as, for example, in the Nordic countries, France, Switzerland and the United States) Only the

case of a referendum whose result is binding on the government has the force of a decision and allows members of the public to participate fully as citizens

PUBLIC PARTICIPATION AND PUBLIC INTERNATIONAL LAW

The concept of public participation, which is actually fairly recent and the application of which remains essentially a matter for national governments, is nevertheless gradually being taken into account in public international law, not only because this helps harmonize national legislation on the topic but above all because it involves recognition of a new general legal principle

It will be seen from several international texts that the right of the public to participate in policy decisions of a technological nature flows directly from the principle already recognised in international law mainly in environmental matters, of the public's right to be informed Moreover this right applies both to technological policy decisions and to any impact these might have on human health and the environment As early as 1972, one of the Principles adopted by the United Nations Conference on the Human Environment stipulates that "Education in environmental matters is essential for an enlightened opinion" [3] Similarly, the 1975 Helsinki Conference on Security and Co-operation in Europe declared that the right to information is a prerequisite for the public to be able to contribute towards improving the environment Several Community Directives also strongly confirm this public right to information in the field of the environment[4]

This right seems increasingly to be accompanied by a corollary principle the right to be consulted on major decisions concerning technological development Such a right has moreover been confirmed in various international legal instruments in the field of environmental protection in general and accidents involving hazardous substances in particular

Thus in its Principle 3, the World Charter for Nature[5] gives the right of the public to participate in decisions concerning the environment the status of a universal principle This series of three texts shows clearly the logical approach taken at international level - education, information, responsibility, participation - to assert, in the form of a universal principle, the right of the public to participate in decisions concerning the environment The different participation instruments include referenda and popular initiatives (Austria, Sweden, Switzerland), hearings (the United States), and Parliamentary inquiries (France)

Somewhat more timidly, but in the same spirit, a 1979 Declaration of the OECD Council states that Member country governments "will encourage public participation, where possible, in the preparation of decisions with significant environmental consequences "[6]

Only the 1985 Community Directive obliges States to ensure that "the public concerned is given the opportunity to express an opinion" during the licensing procedure in accordance with rules to be determined by them, for example, consultation in writing or by means of a public inquiry This type of public consultation, practised in France through public inquiries for example, nevertheless falls far short of the concept of participation in decision-making Clearly, the fact that Community Directives are more binding than other international legal instruments has discouraged European countries from accepting more

detailed provisions relating to possible public participation Even the Directive of 7 June 1990 on freedom of access to information on the environment, which goes furthest in giving a right to information, does not at all give the public the right to participate in the decision-making process The right of the public to participate in decision-making has not therefore evolved in parallel with the right to information in Community law

The Decision-Recommendation of the OECD Council of 8 July 1988 concerning Provision of Information to the Public and Public Participation in Decision-Making Processes related to the Prevention of, and Response to Accidents Involving Hazardous Substances clearly recommends, on the other hand, that "Member countries take action to facilitate, as appropriate, opportunities for the public to comment prior to decisions being made by public authorities concerning siting and licensing of hazardous installations " Again, this Decision-Recommendation only applies to the field of the environment properly so called, excluding certain industrial sectors such as the nuclear industry, for example It may also be noted that the OECD Nuclear Energy Agency is currently drafting a Council Decision on informing the public about radiological emergencies This draft Decision deals with informing the public about the radiological protection measures which would be adopted in the event of an accident resulting in the release of radioactive substances into the environment Although endeavouring to respect a certain parallelism with the form of the above-mentioned provisions adopted in 1988 by the OECD Environment Directorate the draft does not however, include provisions relating to public participation in decision-making

While the provisions actually calling for the introduction of procedures organising the participation of the public in decision-making are in fact only declarations of principles and are not legally binding the fact remains that this concept of participation, at least in the field of the environment is increasingly being taken into account in international public law jurisprudence

Governments have not yet, on the other hand firmly committed themselves at international level to organise such participation in spite of the practice prevailing in national procedures There is therefore no international obligation based on this principle though there is a clear right of the public to information The battle to oblige governments to organise public participation in the decision-making process seems far from won and such an obligation is still perceived as interference in the exercise of national sovereignty The issue becomes even more complicated when there is a possibility of involving frontier populations in decisions concerning the construction of installations close to national borders

MODES OF PARTICIPATION

Two questions arise in the context of public participation in the decision-making process One relates to substance, the other to form In other words who is entitled actually to participate and, above all, how is this participation to be organised in practice

The concept of the population concerned

In most cases, the procedures laid down for organising public participation in the decision-making process concern essentially two categories of persons representatives of the public (committees, associations, etc), and so-called "concerned" individuals In the United States, for example, a person is "concerned" if he has a legally recognised interest in the outcome of the procedure He is then entitled to intervene as a party to the discussion, give evidence directly during the hearing, or even conduct cross-examinations

Thus, in public participation procedures other than referenda, when participation is on the basis of citizenship, the public considered as involved in decision-making is usually limited to the local population directly concerned by the construction of an installation, either in an individual capacity or, more usually, collectively through representative organisations, local or municipal authorities or groups defending special interests (trade unions, farmers' or consumers' organisations, environmental or religious associations, etc)

Instruments of participation

There is a wide variety of modes of participation ranging from simply informing the public, even prior to the decision, through consultation of the persons concerned, to organisation of a direct vote at local or national level Each such variation exists in one or other of the OECD countries, based either on specific regulations or on a custom which, repeated and recognised, can become accepted practice

The form and nature of participation vary considerably from one country to another provision for it may be made in texts of general application, even in the Constitution itself, or in legal instruments specially designed to organise participation in decisions concerning the siting, construction and operation of nuclear installations In most countries, several forms of public participation are provided for by law The most common are public inquiries (Belgium, United Kingdom, France) followed by petitions and public hearings (Germany, United States), then special initiatives, public information meetings and written statements Referenda are fairly rare, their use (provided for in Austria, Italy and Sweden and Switzerland, and possible also in Canada and Finland) often giving rise to problems

Public inquiries, for example, are defined as tools serving the environment and democracy The objective of the procedure involved is to inform the public about planned developments, building works or other projects capable of affecting the environment It also allows the competent authority to test public opinion, and perhaps obtain suggestions or counter-proposals from the public, prior to the decision to go ahead with the project The public is thus able to express its viewpoint, in writing or to an inquiry officer In France, for example, some ten thousand public inquiries (under the Environmental Protection Act of 12 July 1983) relating to installations classified for the purposes of environmental protection are held every year[7]

Generally speaking, the public is informed, within the framework of a public inquiry, about planned nuclear installations at an early stage of the licensing procedure, by means of publication (in the Official Gazette or daily papers as in Germany for example) or by means of posters (as in Belgium) The population concerned then has a certain period of

time in which to express its opinion (usually 15 days) Public debates or hearings may also be organised (Canada, France United States)

PARTICIPATION LIMITS

While the principles of public participation seems to have been accepted - whatever the arrangements for, and cost of its application - practical difficulties nevertheless arise in satisfactorily reconciling such participation with the constraints of the nuclear industry These constaints are essentially of two types (i) major investment managed over the long, or very long term, and (ii) very slow and complex administrative licensing procedures

Public participation is possible at different stage of the decision-making process, and the stage selected greatly influences the extent to which the opinion of the public is taken into account Very early consultation will be designed to obtain the agreement in principle of the population concerned by a project before even beginning on-site investigations or administrative procedures At the other extreme, when the public participates in inquiries or hearings at the last phase of the implementation of the project, it is usually too late for the project to be stopped The public may possibly be able to delay the procedure or at best make objections concerning site details Furthermore, an objective debate is well-nigh impossible if the public is consulted before all the relevant technical information is available But it can be just as catastrophic to risk challenging a project which is nearing completion and has already involved heavy costs in both human and financial terms As for the public it can feel frustrated in different ways, either because it does not have all the relevant information when being consulted or on the contrary, because the project has progressed so far that the public feels it is being presented with a fait accompli

Another related question concerns the duration of public participation If such participation is not limited in time or if an initial participation is automatically rendered null and void because of a few minor changes made subsequently to the project as first envisaged, the costs involved can be extremely heavy for the nuclear industry to bear, and there are several examples of projects which have had to be reviewed on such grounds, for example, the Mulheim-Karlichen power plant in Germany or the California Diablo Canyon plant in the United States

FLEXIBILITY OF PARTICIPATION PROCEDURES

The way in which the public participation process is institutionalised may, if excessively formal, be perceived as highly restrictive It can for example give rise to endless public debate the organisation of which may end up by being extremely expensive There is also a risk of the licensing procedure being seriously blocked In a reaction against such rigidity in the legal arrangements a new more flexible form of public participation has been tried out in Canada for example, using a programme of public consultation designed to identify sensitive issues at an early stage of a project to construct a radioactive waste disposal facility in a deep geological formation[8] This approach will continue to be used, always in an informal fashion during public hearings relating to the mandatory impact study for the project The idea is first of all to obtain, after a major information campaign, public "permission" to look for an appropriate site Once this principle has been agreed the public will again be consulted at a more advanced stage of the project While the

information relating to this consultation was targeted at the Canadian population as a whole, the consultation itself involved only those sections of the public selected in advance because of their direct interest or their representativeness of a sector of society At this stage, it can be said that this system of consultation has at least had the merit of taking account of the main concerns of the public and meeting these concerns not only by the better targeting of information but also by looking for compromise solutions in the field

NATIONAL AND LOCAL PARTICIPATION

There is of course no single ideal statutory or procedural solution for the organisation of public participation in the decision-making process in the nuclear field Nevertheless, it would seem desirable to obtain public agreement in principle at a very early stage of national nuclear energy programmes whether this agreement is obtained under a formal procedure or by simple tacit consent before proceeding to develop projects which though technically very worthwhile have not a priori gained public acceptance

This approach requires two types of complementary consultation in the first place, prior public consultation at national level, whether by referenda or through structures of Parliamentary representation, and after a national information campaign of a general and educational type, on the advantages and disadvantages of nuclear energy

In the second place, at a more advanced stage of projects for constructing installations or waste managements repositories, or for decommissioning, the regional or local population should be directly involved in the taking of decisions affecting its immediate environment

Such procedures are perhaps as yet still to be defined in most countries, or at least they will require constant adaptation to deal with an ever-evolving phenomenon

CONCLUSION

Of the many questions still pending on the subject of public participation in the decision-making process in the nuclear field the first concerns the responsibilities resulting from such participation in decisions, and which should determine the rules for implementing such participation As far as the public is concerned, responsibility in the nuclear field is collective and limited in time shared by the whole population but expressed through the bodies to which it delegates full power to construct, operate and control installations This is very different from what happens in other fields such as the environment, where the duties and responsibilities of members of the public are individual and permanent When a nuclear decision in which the public has participated is taken, the responsibility of the public is short-term and of a political nature But once the consultation has taken place, individuals have no further obligations An environmental decision, on the other hand, involves the partial and permanent responsibility of each individual In most cases indeed, the public does not fully realise the consequences of the opinion its gives The information supplied during nuclear debates does not usually give a clear enough picture of the positive and negative consequences of the decision on local life and on society as a whole, consequences which the public will have to assume subsequently

This leads to a second question concerning the real motives of governments in encouraging the participation of the public and accepting, in a more or less formal manner, the consequences thereof In any event, by responding to the increasingly clearly expressed popular desire to be informed, understand and participate, governments will help members of the public develop a more responsible attitude and channel their emotional reactions in relation to technology, the objective being to adopt policies which serve the public interest

Whatever the real motives of governments with regard to these procedures, it would seem that in most OECD countries, current endeavours should concentrate on making better use of existing instruments serving democracy through Parliamentary procedures or local bodies (groups of elected representatives, local committees, etc) rather than on creating new mechanisms which are often complex and controversial However, there is also a need in the industrialised countries for more standardized democratic procedures involving those sections of the public concerned and for common international arrangements for public participation, if only to make it possible at least in theory, to enable citizens from neighbouring countries also to participate

Notes and References

1 For details on procedures see *Licensing Systems and Inspection of Nuclear Installations* OECD Nuclear Energy Agency Paris 1991

2 See the *Legal provisions and practices of public participation results and conclusions of a survey based on national replies to an NEA/IAEA international questionnaire* Jean F FREYMOND study presented at the OECD International Workshop on Public Participation in the Decision Making Process in the Nuclear Field Paris 4-6 March 1992

3 Principle 19

4 Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment Council Directive of 7 June 1990 on the freedom of access to information on the environment

5 Resolution of the General Assembly of the United Nations of 28 October 1982

6 Declaration by the OECD Governments of Anticipatory Environmental Policies of 8 May 1979

7 Guide de l Environnement Ed Moniteur Paris 1990 p 269

8 See *Public Consultation in the Canadian Nuclear Fuel Waste Management Program* Simone LECOURS (AECL) paper presented at the OECD International Workshop on Public Participation in the Decision Making Process in the Nuclear Field Paris 4 6 March 1992

UNITED STATES

Supreme Court Decision on the constitutionality of the Low Level Waste Policy Amendments Act (1992)

On 19 June 1992, the Supreme Court decided the case of *New York v United States*, No 91-543, which challenged the constitutionality of the Low Level Waste Policy Amendments Act of 1985 (See Nuclear Law Bulletin No 37)

The U S Court of Appeals for the Second Circuit had upheld the Act in its entirety, and the Supreme Court agreed, except in relation to the so-called "take-title" provision of the Act, which it found to be unconstitutional with respect to New York

The Act amended a 1980 statute that encouraged States to enter into compacts for the purpose of developing regional disposal facilities for low-level radioactive waste In addition to ratifying some of these compacts, the Act as amended contained incentives and penalties intended to foster the development of such facilities by the States, and made clear that the Federal government considers the disposal of low-level radioactive waste to be a State responsibility New York chose not to join a compact, but had indicated before the lawsuit was initiated that it would develop its own waste disposal capacity

The "take-title" provision requires a State that has not provided for disposal of low-level radioactive waste generated within the State by 1 January 1996, to take title to, and possession of, such waste upon the request of the State's generators The Court (by a 6-3 vote) struck down this provision, but decided (by a 9-0 vote) that the remainder of the Act was constitutional, including its provisions granting financial incentives and allowing States or compacts with disposal sites to cut off access to States that do not comply with milestones of the Act Furthermore, the Court determined that the remainder of the Act could be given effect, since the "take-title" provision could be severed from it without defeating the Act's purpose of encouraging the States to attain local or regional self-sufficiency in low level radioactive waste disposal

The Supreme Court's opinion was based in large part on a reconstruction of the original intent of the framers of the Constitution with respect to the relationship between the Federal and State governments The Court decided that even though the Congress may regulate interstate commerce directly, it may not require the States to regulate commerce in a particular way On the other hand, it may encourage States to regulate in that way, and may provide incentives to the States as a method of influencing a their policy choices This may be done, for example, under Congress's spending power, by setting conditions for the receipt of Federal funds It may also be done by Congress offering States the

choice of regulating an activity according to Federal standards or having State law pre-empted by Federal regulations, as it has in several environmental statutes (like the Clean Water Act)

The "take-title" provision provides two alternatives (1) the State can regulate low-level radioactive waste pursuant to Congress's direction, or (2) the State can take title to and possession of such waste generated within its borders, becoming liable for damages waste generators suffer as a result of the State's failure to do so The Supreme Court considered this provision to be an impermissible form of coercion upon the State, since neither choice gives the State the option of declining to administer the Federal programme

The Court also decided that New York's participation in developing the 1985 Act could not stop the State from challenging the Act, since the Constitution protects the rights of ordinary citizens of the State, and not merely States as "abstract entities"

According to a separate dissenting opinion, regardless of the Court's decision with respect to the application of the "take-title" provision to New York, that provision remains enforceable against the States that have joined interstate compacts approved by the Congress The majority opinion refused to address that issue, on the ground that it did not require decision for the purposes of the particular case This issue was not argued before the Court

NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES

ARGENTINA

GENERAL LEGISLATION

Act concerning the peaceful applications of nuclear energy in the Province of Cordoba (1992)

Act No 8157 of 21 May 1992 determines the general policy in the Province of Cordoba concerning the scientific technical, technological and industrial activities in the field of the peaceful uses of nuclear energy, to derive a maximum social and economic benefit from such activities

The objectives of the Act are in particular

- to promote the creation of undertakings for the development of technical processes, engineering and industrial irradiation services and other industrial processes specifically in the nuclear field,

- to secure the benefits of the peaceful uses of nuclear energy by promoting studies, scientific and technical research and development programmes and by concluding agreements with public and private institutes in the nuclear field,

- to include, in the relevant national regulations, present and future provincial regulations, particularly those regarding the protection of workers and the population against the hazards arising from the application of nuclear processes, and

- to make provision for the participation of the competent provincial institutions and bodies in the event of a nuclear emergency or accident

The Act provides that the authority responsible for its implementation is the Scientific and Technical Secretariat of the Province Its duties will include the study and establishment of nuclear projects, control of the proper application of the regulations for radiation protection, nuclear safety and environmental protection in the Province, co-ordination of the necessary actions to supervise the achievement of all nuclear activities therein

The Act also sets up a Provincial Nuclear Policy Commission to be responsible for co-ordinating all the activities arising from the implementation of the Act The Commission will

include representatives of provincial bodies competent in the nuclear field, and of other bodies considered suitable by the Scientific and Technical Secretariat The Commission will be invited to be part of the National Atomic Energy Commission (CNEA)

Finally, a Regulatory Commission will be established to prepare the necessary regulations under the Act, and will be invited to be part of the Regulatory Commission of the CNEA

REGULATIONS ON NUCLEAR TRADE

Decree establishing controls on sensitive exports and war materiel (1992)

The above Decree No 603/92, was adopted on 9 April 1992 and published in the Official Gazette (Boletin Oficial) on 14 April 1992 It provides that as a general rule, it is prohibited to export materials, equipment, technology and technical assistance services connected with the conversion and enrichment of uranium, fuel reprocessing, heavy water production and manufacture of plutonium

The export of reactors and enriched uranium and related technology will be authorised provided that there is a bilateral peaceful nuclear co-operation agreement with the country concerned and that certain conditions are fulfilled, in particular that a full-scope safeguards agreement with the International Atomic Energy Agency is included in that agreement and that the prior consent of Argentina is obtained before the retransfer to a third party of any material derived therefrom

The Decree provides that the Commission for Co-ordinating Export Policies for War Materiel set up by a 1985 Decree will henceforth be named the National Commission for Control of Sensitive Exports and War Materiel and will be responsible for all such questions The Commission will be made up of the Ministers for Defence, Foreign Relations, Culture, Economy, Public Works or their representatives, it will also include representatives of the following agencies

- the National Atomic Energy Commission for questions relating to nuclear exports
- the National Space Commission for questions relating to exports of missile technology
- the Institute for Scientific and Technical Research in connection with the Armed Forces for questions related to exports of chemical and bacteriological substances

BELGIUM

RADIATION PROTECTION

Royal Order amending the 1946 General Regulations on Safety at Work (1992)

A Royal Order of 31 March 1992 amends certain provisions of the Regulations on safety at work with respect to protection of workers against the hazards of ionizing radiation, amended in 1990 (see Nuclear Law Bulletin No 47) This Order was published in the Moniteur belge (Official Gazette) of 24 April 1992

The purpose of the amendment is to avoid that certain international and national civil servants be hindered in their control duties The following inspectors are concerned

- the International Atomic Energy Agency Inspectors,
- the persons designated as responsible for surveillance under the Euratom Treaty and the Act of 1955 on State security in the nuclear field,
- the inspectors designated by the Act of 1972 on inspections at work

Royal Order amending The General Regulations of 1963 for Protection of the Population and Workers (1992)

A Royal Order of 17 June 1992 replaces certain provisions of the General Regulations for protection of the population and workers against the hazards of ionizing radiations (see Nuclear Law Bulletin Nos 39, 47) The Royal Order was published in the Moniteur belge of 23 June 1992

The new provisions concern the monitoring of radioactivity in the national territory and population dose, as well as monitoring of the population as a whole The purpose of this amendment is to conform without delay to the Opinion of the Commission of the European Communities, the amendment concerns mainly the monitoring of doses received by the population and the technical conditions for such monitoring

It is recalled that the 1946 Regulations on Safety at Work were amended in 1990 to implement Community Directives on radiation protection The amendment was reported in Nuclear Law Bulletin No 47

BRAZIL

ORGANISATION AND STRUCTURE

Decree relating to the application of SIPRON (1992)

Decree No 623 of 4 August 1992 specifies the conditions of application of Decree-Law No 1 809 of 7 October 1980 which set up the Protection System for the Brazilian Nuclear Programme - SIPRON (see Nuclear Law Bulletin No 27)

The purpose of SIPRON is to ensure the integrated planning, co-ordination, joint action and execution of measures to comply with safety conditions for Brazilian nuclear activities, installations and projects for the protection of workers, the population and the environment

SIPRON includes a central unit, the Secretariat for Strategic Affairs of the Presidency of the Republic (SAE), units for co-ordinating different sectors, in particular, the National Nuclear Energy Commission (CNEN) and the Environment Secretariat of the Presidency (SEMAN) SIPRON also includes executing units, operational units and support units

SIPRON's central unit is assisted by the Commission for Co-ordinating the Protection of the Brazilian Nuclear Programme (COPRON)

The Secretariat for Strategic Affairs of the Presidency is responsible for the main orientation, the general co-ordination, control and supervision of SIPRON

CNEN is responsible for co-ordinating physical protection, national safeguards, nuclear safety and radiological protection in accordance with the legislation in force

General rules, established by the Secretariat for Strategic Affairs, will specify the organisation and planning for emergency situations and nuclear accidents

CANADA

TRANSPORT OF RADIOACTIVE MATERIALS

Amendment of AECB Recovery Fees Transport Packaging of Radioactive Materials Regulations (1992)

Pursuant to the Atomic Energy Control Act, the Atomic Energy Control Board (AECB) regulates the safe transportation of radioactive materials Under the AECB Cost Recovery Fees Regulations (see Nuclear Law Bulletin Nos 46 and 49) and the Transport Packaging

of Radioactive Materials Regulations (see Nuclear Law Bulletin Nos 44 and 48), the AECB began in 1990 to charge fees for the registration of each user of a certified package for the transport of radioactive materials

The amendments to the AECB Cost Recovery Fees Regulations (SOR/92-149 of 27 February 1992) and to the Transport Packaging of Radioactive Materials Regulations (SOR/92-150 also of 27 February 1992) have been made with a view to simplifying the registration procedure for obtaining such a certificate or approval under the above Transport Regulations In effect there will no longer be a need for a separate fee system for registered users of certified package designs

The amendments to both Regulations were published in the Canada Gazette Part II, Vol 126, No 6 of 11 March 1992

DENMARK

RADIATION PROTECTION

Order on the use of electron accelerators for treatment of patients (1991)[*]

Order No 319 of 23 May 1991 (published in Lovtidende, 1991, Part A of 31 May 1991, No 70) made by the National Board of Health also implements Euratom Directive No 80/836 of 15 July 1980, as amended laying down radiation protection standards as well as Directive No 84/466 Euratom of 3 September 1984 laying down basic measures for radiation protection of persons undergoing medical treatment The Order prescribes measures to protect patients treated by electron accelerators using energies from 1 MeV to 50 MeV It contains provisions on approval procedures for electron accelerators, their design, the shielding and safety systems for premises where they are housed, their supervision and quality control and finally, their inspection by the Board of Health

* This note is based on a summary of the Order published in the WHO Digest of Health Legislation, Volome 43(2) 1992

FRANCE

RADIOACTIVE WASTE MANAGEMENT

*Act of 1991 relating to research on radioactive waste management**

The above Act No 91-1381 of 30 December 1991 published on 1 January 1992, was adopted two years after the Government decided to suspend the work on constructing a pilot laboratory for storage of highly active, long-lived, waste which was decided in 1985 (The text of the Act is reproduced in Nuclear Law Bulletin No 49)

If we refer to the report presented by Mr Bataille to the National Assembly (Parliament) on behalf of the Production and Trade Commission ("Commission de la production et des échanges"), we can note that the three main objectives of the parliamentarians who adopted the Act were

1 To find a satisfactory solution to the delicate societal problem posed by radioactive waste management

2 The guarantees to be given to the population,

3 The structure of the agency responsible for radioactive waste management

While the main purpose of the Act is undoubtedly the management of highly active long-lived radioactive waste, it should be noted however that, in addition, it defines the general principles applicable not only to radioactive waste but also to storage of dangerous products

I FINDING A SATISFACTORY SOLUTION TO THE PROBLEM OF MANAGING HIGHLY ACTIVE LONG-LIVED RADIOACTIVE WASTE

This being the primary objective of the parliamentarians, the Act sets out in its first sections the general principles concerning the storage of dangerous products and imported radioactive waste It also determines the provisions applicable to highly active long-lived radioactive waste

A Underground storage of dangerous products

Section 2 of the new Act supplements Section 3 of Act No 76-663 of 19 July 1976 on installations classified for the purposes of environmental protection (such installations may, according to their importance be subject to licensing or notification) (See Nuclear Law Bulletin Nos 18, 39)

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* This note was kindly communicated by Mrs Danielle Degueuse Legal Department French Atomic Energy Commission

This addition concerns the underground storage of dangerous products, irrespective of their nature, in deep geological formations which henceforth is subject to an administrative licence Also, while according to the 1976 Act a prefectoral order ("arrêté préfectoral") was to define the mesures to prevent the hazards and drawbacks of the installation, now the licence may only be granted or extended for a limited duration

The licence will provide for the retrievability of the storage operation, since the products stored will have to be retrieved as soon as the licence expires

In addition, the conditions under which it would be possible to derogate from the principle of retrieving the stored products can only be defined in a subsequent law

Under the present regulations, all storage of dangerous products in deep geological formations must therefore be licensed and designed in such a way as to ensure that the products can be retrieved on expiry of the planned period

B Import of foreign radioactive waste

Another of the new Act's provisions - Section 3 - is general in nature and sets out a principle applicable to all radioactive waste It provides that storage of imported radioactive waste in France is prohibited beyond the technical period required for reprocessing, even when reprocessing is carried out on the national territory

C Provisions applicable to highly active long-lived radioactive waste

Right from Section 1 the Act asserts the priority to be given to protection of nature, the environment and health during the management of highly active long-lived waste Section 4 then lays down the three main orientations to be given to research and work related to such waste They are

- to seek solutions permitting separation and permutation of the long-lived radioactive elements present in such waste,

- to study the possibilities for retrievable or irretrievable storage in deep geological formations, in particular through the creation of underground laboratories,

- to study conditioning and long-term surface storage processes for such waste

Following a period which cannot exceed 15 years, an overall asssessment of this research, together with a bill, authorising where necessary the establishment of a storage facility for highly active long-lived radioactive waste will be put before Parliament

The conditions under which the underground laboratories for study of deep geological formations will be established and operated are determined by Sections 6 to 12 of the Act These Sections provide in particular that

- the establishment and operation of such a laboratory are governed by the Act on installations classified for purposes of environmental protection They are also

subject to a licence granted by Decree in the Council of State (Conseil d'Etat), following a impact study, the opinion of the municipal, general and regional councils concerned and a public inquiry, in accordance with the conditions provided by the Act of 12 July 1983 on democratisation of public inquiries and environmental protection (See Nuclear Law Bulletin No 32),

- the licensee should benefit from the conditions of the procedure laid down by the Act of 29 December 1892 on damage caused to private property by carrying out public works and by expropriation rights

- a public interest group can be established to conduct supporting activities and to manage the public equipment connected with the setting up of each laboratory

II *GUARANTEES TO BE GIVEN TO THE POPULATION*

In addition to the solutions to be studied for the management of long-lived radioactive waste, the purpose of the new Act is to give the population all the necessary guarantees to ensure that the principles defined are properly applied Control may be exercised by means of different reports and also through consultatations between the elected representatives and the population of the sites concerned

A Information of Parliament

Parliament is informed by an annual report from the Government which describes the progress of research on highly active long-lived radioactive waste The report also provides information on the status of research and achievements abroad

These annual reports are referred to the Parliament's Office for Assessing Scientific and Technological Selections as well as the above-mentioned overall assessment to be presented together with the bill authorising where necessary the establishment of a storage facility to be submitted to Parliament by the Government after a period which must not exceed 15 years

B National Assessment Commission

The above annual report and overall assessment must be published They are prepared by a National Assessment Commission made up of 12 qualified persons and experts in the field

C Information of elected representatives and the population

As regards the establishment and operation of research laboratories, as already explained, a licence may only be granted after a public inquiry and the opinion of the municipal, general and regional councils concerned

This provision in Section 8 provides that underground laboratories for the study of deep geological formations for the possible storage of radioactive waste will be covered by the 1983 Act on democratisation of public inquiries and environmental protection Such laboratories are therefore included in the categories of establishments governed by that Act

D Local Information and Follow-up Committee

The guarantees given to the population on the transparency of construction and operation of such laboratories are further supported by the creation of a Local Information and Follow-up Committee on the site of each laboratory This Committee includes, in particular, State representatives, elected representatives of the localities concerned, members of environmental protection associations, agricultural unions and professional associations as well as the holder of the licence to establish and operate the laboratory The Committee is chaired by the prefect (Préfet) of the department where the laboratory is sited and he may refer to the National Assessment Commission The Chairman must be consulted on all matters related to the operation of the laboratory which have environmental consequences

III STRUCTURE OF THE AGENCY RESPONSIBLE FOR RADIOACTIVE WASTE MANAGEMENT

The third objective of the parliamentarians who approved the Act was to amend the statute of the National Radioactive Waste Management Agency (ANDRA)

Until then, ANDRA was a unit of the Atomic Energy Commission (CEA), set up by an Order of 7 November 1979 It was responsible within the CEA for the long-term management of radioactive waste as follows

- management of long-term storage centres,
- design, siting and establishment of new storage centres,
- promotion, in consultation with waste producers, of specifications for conditioning and storage,
- contribution to research on the long-term management and destiny of radioactive waste

Section 13 of the new Act sets up under the name of ANDRA a public industrial and commercial body placed under the supervisory authority of the Ministers for Industry, Research and the Environment

The new Agency's duties include "the management of long-term storage centres either directly or through the intermediary of a third party acting on its behalf"

The duties concerning participation in research programmes and design, siting and establishment of new storage centres have been supplemented and specified In particular,

ANDRA, in co-operation with the Atomic Energy Commission, is responsible for helping to define and contribute to research on the long-term management of radioactive waste

As regards the definition - in accordance with safety rules - of the specifications for conditioning and storage of radioactive waste, it should be noted that henceforth, it is the exclusive responsibility of ANDRA

Finally, a new task has been given to the Agency it must register the status and the siting of all radioactive waste on the national territory

The administrative organisation, the financial and accounting provisions as well as various other provisions concerning in particular the staff of the new Agency will be contained in a decree soon to be made Furthermore, the status of nuclear operator for the the existing surface sites (Manche and Aube) should be transferred shortly to ANDRA

The Act of 31 December 1991 does not yet provide a long-term solution for the management of highly active long-lived radioactive waste It establishes the basis for a legal structure and provides orientations for research to be carried out under the control of Parliament which at the end of a transitional period, will select a final solution

The following features are to be noted among the other provisions

- the supplement added to the Act on installations classified for purposes of environmental protection regarding the storage of dangerous materials,

- the prohibition to store in France imported radioactive waste beyond the technical period required for reprocessing,

- the establishment of the National Assessment Commission,

- ANDRA's new statute

GERMANY

ORGANISATION AND STRUCTURE

Act on the Establishment of a Federal Export Office (1992)

On 28 February 1992, the Bundestag (Parliament) adopted an Act on the establishment of a Federal Export Office (Bundesgesetzblatt 1992 I p 376) The Act is part of the series of efforts to strengthen and improve export controls, especially those over sensitive material and products

The Office has been set up within the portfolio of the Federal Minister of Economy and has the legal status of an Independent Superior Federal Office ("selbständige Bundesoberbehörde") The Office is competent to perform all federal administrative and supervisory tasks assigned to it by the Federal Export Act, the Military Weapons Control Act, the Atomic Energy Act, and other Laws

In the field of the peaceful uses of nuclear energy, according to Section 22 Atomic Energy Act as amended (see Section 5 of the Federal Export Office Act), the Office is competent to license the import and export of nuclear material The Federal Minister for the Environment, Nature Conservation and Reactor Safety supervises the activities of the Office regarding such licences

JAPAN

REGIME OF NUCLEAR INSTALLATIONS

Safety Guides for research reactors (1991)

The Nuclear Safety Commission of Japan (NSC) published two Safety Guides for water-cooled research reactor facilities on 18 July 1991 The first Guide covers safety design of such reactors and testing nuclear reactor facilities and the second concerns safety evaluations They are to be used as general evaluation guides for examining the appropriateness of the safety design principles for proposed reactor research facilities in the context of applications for installation licences

TRANSPORT OF RADIOACTIVE MATERIALS

Amendment of Regulations for the safe transport of radioactive materials (1990)

The International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Materials, were revised in 1985 and amended in 1988 The national transport regulations in Japan were amended to take account of the IAEA regulations in November 1990 and the amended regulations entered into force on 1 January 1991

The Regulations lay down the necessary packaging, transport and handling requirements for radioactive materials

NETHERLANDS

THIRD PARTY LIABILITY

Establishment of amounts of liability for low-risk nuclear installations (1991-1992)

The Act on Nuclear Third Party Liability (Government Gazette, 1991, 374), establishes the maximum amount of the nuclear operator's liability at 500 million Dutch guilders (approximately 190 million Special Drawing Rights - SDRs) (the text of the Act is reproduced in the Supplement to Nuclear Law Bulletin No 49) The Act authorises the Minister of Finance to establish a lower amount for low-risk installations

It has been demonstrated that, due to the nature of the nuclear installations or the nuclear substances concerned and the likely consequences of an incident the maximum effect of a nuclear incident in the following low-risk installations will be negligible in a worst-case scenario

Lower amounts have therefore been established by Ministerial Decision of 26 July 1991 as follows

- 100 million Dutch guilders (approx 38 million SDRs) for the European Communities' Euratom, High Flux Reactor (thermal power 45 MW) (Ministerial Decision of 17 June 1992),

- 50 million Dutch guilders (approx 19 million SDRs) for the Technical University Delft research reactor (thermal power 2 MW),

- 50 million Dutch guilders for the Energiecentrum Nederland Low Flux Reactor (thermal power 0 03 MW),

- 25 million Dutch guilders (approx 9 million SDRs) for the KEMA research laboratory (fissionable material),

- 17 5 million Dutch guilders (approx 6 million SDRs) for the Ultra Centrifuge Nederland research laboratory (fissionable material)

NORWAY

REGULATIONS ON NUCLEAR TRADE

Decree amending the Regulations on the export of heavy water (1992)

These Regulations were laid down by a Royal Decree of 10 March 1989 in implementation of Act No 93 of 18 December 1989 relating to the control of the export of strategic goods, services and technology (see Nuclear Law Bulletin No 44) and have been amended by a Royal Decree of 28 February 1992

The Regulations prohibit the export of heavy water from Norway They specify that, henceforth, it is forbidden to persons residing in Norway and to Norwegian companies, associations or foundations to trade in, negotiate or provide other assistance in connection with the sale of heavy water from one foreign country to another

PORTUGAL

RADIATION PROTECTION

Decree to amend the 1990 Decree on protection against ionizing radiations (1992)

The 1990 Decree, adopted in implementation of the Euratom Directives laying down basic radiation protection standards, establishes the basic principles in the field of radiation protection applicable to occupationally exposed persons, individuals and the population as a whole (see Nuclear Law Bulletin No 46)

Decree No 3/92, published in the Diario Da Republica No 55 of 6 March 1992, amends the 1990 Decree to further clarify certain of its provisions Consequently, a new paragraph has been added to Section 36 of the 1990 Decree on exemptions which specifies in particular that the following cases are not exempted from prior licensing

- the administration of radioactive substances for treatment, diagnosis or research,
- the use of radioactive substances in toys,
- the addition of radioactive substances in foodstuffs, medicine, cosmetics and products for domestic use

ROMANIA

REGULATIONS ON NUCLEAR TRADE

Decision on the regime for import and export of sensitive articles and technology (1992)

At its meeting on 23 September 1992, the Government adopted a Decision on the import and export of articles and technology subject to final destination control and on control of exports from the viewpoint of non-proliferation of nuclear, biological and chemical weapons and rockets carrying them

The provisions of the Decision apply to all articles and technology subject to final destination control, irrespective of the country of origin or manufacture, including those produced in Romania Import and export of such articles and technology are subject to an import or an export licence, as the case may be Articles imported on that basis must be accompanied by a copy of the export licence issued by the exporting country and must be delivered only to the importer, in the quantities and according to the specifications set out in the documents, including the export licence Any modification of the destination or use must be authorised in advance by the authorities which issued the original documents Importers of such articles or technology must supply the exporters with an import certificate and delivery control certificate The certificates furnish proof that the conditions specified in the Decision have been complied with

The Decision sets up a National Export Control Agency responsible for supervising implementation of the Decision, under the Government and co-ordinated by an Interministerial Council The Decision also establishes the duties of the Agency

SINGAPORE

RADIATION PROTECTION

The Radiation Protection Act 1991

This Act (No 8 of 1991) was passed by Parliament on 3 January 1991 and assented to by the President of the Republic of Singapore on 18 January 1991 (published in the Republic of Singapore Official Gazette No 6 of 26 January 1991) The Act repeals the Radiation Protection Act 1985

The purpose of the Act is to control and regulate the importation, manufacture, sale, disposal, transport storage, possession and use of radioactive materials and irradiating apparatus

The Act provides for the appointment of a Director of Radiation Protection responsible for the general administration of the Act and for a Radiation Advisory Committee whose duty will be to advise the competent Minister and the Director on questions covered by the Act

The use, manufacture, sale and transport of radioactive materials and irradiating apparatus are subject to a licence delivered by the Director of Radiation Protection Notice of every sale or purchase of an irradiating apparatus must be given to the Director, together with the name and address of the person to whom it was sold or from whom it was purchased The Act lays down the licensing procedure for radioactive materials and irradiating apparatus Licences are delivered for two-year periods or less, under conditions determined by the Director and are renewable

Radioactive waste must not be kept or disposed of without the prior consent or approval in writing of the Director

Licensees have a duty to protect their employees against exposure to radiation and must provide them with information, training and supervision to that effect Employees will undergo medical examinations

The competent Minister is empowered to make regulations in furtherance of the Act, in particular regarding the licensing procedure and the types of licences, radiation protection and the safe disposal of radioactive substances and irradiating apparatus

SWEDEN

RADIATION PROTECTION

Radon legislation in Sweden[*]

Due to natural conditions in the country (uranium-rich ground, radium-rich building materials and the cold climate), there often are high levels of radon and its decay products in the air of houses, mines and other workplaces in Sweden Work on reducing radon levels began with improving the ventilation in mines in the late 1960s In the 1970s interest focused on houses and indoor air

In 1979, the Swedish Government authorised the Minister of Agriculture to set up investigations to study countermeasures against radiation risks in buildings The investigation was carried out by the Radon Commission which submitted its final report to the Government in January 1983

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[*] This note is based on a paper kindly sent by Dr Lars Persson Swedish Radiation Protection Institute

Most of the Commission's work was devoted to practical issues connected with radon in housing The radon problem was originally considered to derive from building materials Measurements were performed by local authorities and the Swedish Radiation Protection Institute (SSI) conducted a nationwide investigation on the occurrence of radon in housing which indicated the ground as the principal source of radon The number of buildings in which the radon concentration exceeded 400 Bq/m^3 was estimated at about 40 000

The Commission proposed a radon daughter action level of 400 Bq/m3, and that houseowners be given the possibility of financing countermeasures where levels exceeded this figure in their houses The Commission also proposed that other national competent authorities in collaboration with the Radiation Protection Institute should ensure that local authorities be given information and directives concerning radiation protection in buildings

In 1985 the Government decided to follow the Commission's main recommendations The decision was also based on proposals and risk estimates submitted in a report to the Government in 1984 by the Swedish Cancer Committee

A Committee established for revision of the radiation protection legislation submitted a report to the Government in 1985, proposing that the new law should also cover natural radiation sources such as radon The tasks of the Radiation Protection Institute should be to develop and standardise measuring techniques and methods and undertake a risk assessment of radon The report further proposed that the new law should authorise the Institute to establish directives on measuring and protective equipment, and on supervision of natural radiation The risk assessment by SSI was based on the principles for limiting exposure to natural radiation sources of the International Commission on Radiological Protection (ICRP) (SSI 1987 Information on radon daughter levels - radiation dose - risk for lung cancer, 187-01)

The Swedish Parliament accepted the Revision Commission's proposals in 1988 (Proposal 1987/88 88 concerning a new radiation protection law - SSI-Report 91-10)

The Radiation Protection Act - SFS 1988 220 also covers natural radiation, including radon (the text of the Act is reproduced in the Supplement to Nuclear Law Bulletin No 42) Under the Act, the Institute is responsible for research and for monitoring international developments in that field, for making risk assessments and recommendations concerning limits on activities and doses, etc

It should be noted that close co-operation exists in the radiation protection field between the five Nordic countries (Denmark Finland, Iceland, Norway and Sweden) and their radiation protection authorities A joint Working Group was set up to develop radiation protection recommendations for natural radiation in the Nordic countries The Group submitted its recommendations in a report in 1986 (the main recommendation being that action level for existing houses should not be higher than 400 Bq/m^3 radon daughters

SWITZERLAND

RADIATION PROTECTION

Ordinance on distribution of iodine tablets to the population (1992)

By an Ordinance dated 1 July 1992, the Swiss Federal Council (the Government) decided to organise the supply of iodine tablets to the population These tablets will be used in case of occurrences that might endanger the population following an accident provoking the emission of radioactive iodine

The Federal Health Ministry is responsible for organising the supply so as to enable the appropriate bodies to distribute the tablets according to geographical criteria and build up sufficient reserves

The geographical criteria which determine the distribution of the iodine tablets are the following

Area 1, around the installation, covers the region in the perimeter of which a serious event could cause a hazard for the population requiring rapid protection measures The perimeter of Area 1 is set in the construction licence by the Federal Department of Transport, Communications and Energy In this Area, tablets are given as a preventive measure and in sufficient quantities to all persons regularly in the Area, to households, heads of firms, schools, administrations as well as to public and private institutions established there

Area 2, contiguous to Area 1, covers a zone with a 20 kilometre radius approximately, divided into sectors In this zone, cantons and communes need not distribute tablets to households as a preventive measure, provided that the latter may obtain a supply within two hours of the distribution order

Area 3, the so-called remote area, is the remainder of the Swiss territory In this Area, cantons must ensure an adequate decentralised distribution and storage in sufficient quantities of tablets in standardised packaging, to provide for supplies for all the residents In case of a major incident, cantons must plan for distribution of tablets in such a way as to ensure that the population can be supplied in twelve hours

The Ordinance imposes on cantons and communes storage conditions which are identical to those for medicines and they must build up sufficient stocks to supply new residents and make good losses In case of a major incident, the competent bodies prescribe in which parts of Areas 1, 2 and 3 the tablets must be given to the population and for how long they must be taken

Operators of nuclear installations participate with the Swiss Confederation (the State) in financing the costs generated by these operations

The Ordinance entered into force on 1 August 1992

UNITED STATES

REGIME OF NUCLEAR INSTALLATIONS

Proposed Environmental Review for Renewal of Operating Licences (1991)

The Nuclear Regulatory Commission (NRC) published a proposed rule in the Federal Register (56 Fed Reg 47016) on 17 September 1991 NRC is proposing to amend 10 C F R Part 51 to establish new requirements for environmental review of applications to renew operating licences for nuclear power plants The proposed amendments would define the number and scope of environmental impacts that would need to be addressed as part of a licence renewal application In addition, for comment, NRC is publishing (1) a draft generic environmental impact statement, (2) a draft regulatory guide, (3) a draft environmental standard review plan, and (4) a draft regulatory analysis which supplement the proposed amendments

Many comments were received, particularly from the U S Environmental Protection Agency (EPA) EPA's comments contained several objections to the NRC proposal The EPA objections focused on

- the concept and approach used in categorizing issues, specifically, the overuse of Category I determinations (a conclusion about impact that applies to all affected plants) which would eliminate further consideration of environmental elements designated as Category I from future site specific reviews, limit public participation, and exclude site specific potential mitigating actions where applicable,

- the NRC proposed approach for future National Environmental Protection Act (NEPA) documentation on the Generic Environmental Impact Statement (GEIS),

- the restriction of potential impacts by the assumptions used in the draft GEIS

Decommissioning Funding for Prematurely Shut Down Power Reactors (1992)

On 10 August 1992, the NRC published in the Federal Register (57 Fed Reg 30383) a final rule amending its regulations on the timing of the collection of funds for decommissioning for nuclear power reactors that have permanently shut down before completing the full term of their operating lives These amendments require NRC evaluation of decommissioning funding plans for premature shut down of power reactors on a case-by-case basis Factors which should be considered during such an evaluation are the specific safety and financial situations at each nuclear plant

REGIME OF RADIOACTIVE MATERIALS

Uranium Enrichment Regulations (1992)

The NRC published in the Federal Register (57 Fed REg 18388) on April 30, 1992, amendments regarding the licensing of uranium enrichment facilities to reflect changes made to the Atomic Energy Act of 1954, as amended by the Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990 Primarily the effect of these amendments is that uranium enrichment facilities which are licensed under the provisions of the Atomic Energy Act concerning a production facility will now be licensed as source or special nuclear material, subject to the provisions of the Act relating to source and special nuclear material (see Nuclear Law Bulletin No 48) However, uranium enrichment facilities remain production facilities for purposes of controlling the export of specially designed or prepared uranium enrichment equipment

The amendments entered into force on 1 June 1992

Minor Amendments to the Physical Protection Requirements (1992)

Resulting from a systematic review of NRC's safeguards regulations, NRC published amendments to its regulations on 29 July 1992 in the Federal Register (57 Fed Reg 33426) The NRC amends its regulations that cover the physical protection of special nuclear material The purpose of these amendments are to supplement the definitions section, correct outdated terms and cross-references, clarify wording that is susceptible to differing interpretations, and make other minor changes

INTERNATIONAL REGULATORY ACTIVITIES

OECD NEA / IAEA

SYMPOSIUM ON NUCLEAR ACCIDENTS - LIABILITIES AND GUARANTEES

The above Symposium organised by the OECD Nuclear Energy Agency (NEA) in collaboration with the International Atomic Energy Agency (IAEA) took place in Helsinki from 31 August to 3 September 1992 at the invitation of the Finnish authorities There were well over 200 participants from OECD countries and also from Eastern Europe, Asia and Latin America The Symposium provided a forum for discussing the advantages and shortcomings of the nuclear third party liability régime established by the 1960 Paris Convention and the IAEA 1963 world wide Vienna Convention taking into account the adjustments to the regime made by the 1988 Joint Protocol now linking both Conventions (see Nuclear Law Bulletin No 49)

Eight years after the Munich Symposium on Nuclear Third Party Liability and Insurance (see Nuclear Law Bulletin No 34) this meeting gave the opportunity to take stock of the régime's applications, and also to assess the teachings of the Chernobyl accident

The Symposium's aim was to give government experts, representatives of nuclear industry and insurers the possibility of exchanging views on these questions Also, at a time when many countries East and South are studying the appropriateness of joining the Nuclear Liability Conventions and establishing corresponding national legislation, the Symposium provided them with the opportunity to participate in discussions

Current work in both Vienna and Paris is not simply limited to modernising the Conventions' provisions governing the nuclear operator's liability in the event of a nuclear incident his financial guarantee and the conditions for compensation Another matter of major importance is the establishment of an international mechanism for providing additional compensation once the operator's basic security is used up by calling for funds supplied by the nuclear industry or by Governments which is already the case in several OECD countries through the Brussels Convention, Supplementary to the Paris Convention There is no equivalent for the Vienna Convention Also, one conclusion drawn by some countries following the Chernobyl accident, is that the country which has licensed an installation on its territory having caused a nuclear accident has some measure of liability to compensate damage to neighbouring countries These topics, as well as the question of damage to the global commons (the environment) were discussed at the Symposium

Revision of the Vienna Convention

As compared to the Munich Symposium which had analysed the changes made by the 1982 Protocols to the Paris and Brussels Conventions, the Helsinki Symposium was held half-way along the revision of the Vienna Convention While there is a wide consensus on the need to modernise the Convention, there are diverging views on a number of points

This is the case for the geographical scope of the Convention, where some countries wish to reserve its benefits solely to the Contracting Parties while other countries wish to extend its protection without territorial limits so that potential transboundary victims should have a right to compensation Also discussed is the advisability of now including future fusion reactors in the Convention's scope

Another important question is that of the definition of nuclear damage Based on the model provided by several recent conventions on compensation for pollution damage - in particular in the maritime field - there have been proposals to now cover explicitly environmental damage preventive measures, pure economic loss These proposals are fairly widely supported although certain countries where jurisprudential tradition is more restrictive are reticent The suitability of setting a rank of priorities for compensation by heads of damage is also being considered

Insurance and supplementary funding

Nuclear insurance pools play a major role in coverage of risk and therefore, a working session of the Symposium was devoted to topics such as increasing the nuclear insurance market capacity to meet the need to raise liability limits, expenses for the handling and settlement of claims where there are many claimants and cover for new risks such as damage to the environment

State intervention in compensating the consequences of a nuclear incident can take two forms subsidiarily where the liable operator defaults or to provide victims with additional compensation when the basic security is used up, as laid down by the Brussels Supplementary Convention Regarding this latter aspect, the Chernobyl disaster in April 1986 emphasised the absolute need to seek new sources for funding compensation of nuclear damage, over and above the amounts contributed by operators and insurers under the present economic conditions

International State liability

A working session was also devoted to this question which, although of great interest to a number of countries participating in the Vienna negotiations, did not progress as much as study of the amendments to the third party liability regime

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These are among the many topics dealt with at the Symposium, together with several papers on national experience in those fields in non-Signatories of the Conventions (in particular in the USSR, China Japan and the United States)

The work of the Symposium will hopefully have contributed to a better understanding of the complex questions under discussion and promoted a wider adhesion to the nuclear third party liability régime The Proceedings of the Symposium will be published by NEA in the coming months They will include the texts of the papers presented and the ensuing discussions, as well as the Panel discussions

IAEA

NUCLEAR SAFETY CONVENTION

Pursuant to IAEA General Conference Resolution GC(XXXV)/RES/553 and to a decision taken by the Agency's Board of Governors in February 1992, the Director General of IAEA convened an open-ended Working Group of Experts with the task of carrying out the necessary substantive preparations for a Nuclear Safety Convention

Following a first meeting held from 25 to 29 May 1992 the Group met for its second meeting from 5 to 9 October 1992 The Group is composed of Technical and Legal Experts from 45 countries Representatives of the OECD Nuclear Energy Agency, the Commission of the European Communities (CEC) and the International Labour Office (ILO) participated as observers A third meeting of the Group has been scheduled for January 1993

There was agreement among the Experts that the objective was to achieve a Convention at an early date to which a large number of States could adhere The Experts also agreed that the Convention would introduce obligations for the Contracting Parties to hold periodic meetings on their implementation of the Convention

At its thirty-sixth session, the IAEA General Conference adopted a Resolution on the Nuclear Safety Convention which

> "*Takes note* of the work done so far by the Group of Experts for the drafting of a Nuclear Safety Convention and urges the Group to continue its work taking into account the comments made by Member States during this Conference and the vital necessity of a continuing effort to raise the general level of nuclear safety worldwide "

NUCLEAR SUPPLIERS GROUP

STATEMENT ON FULL SCOPE SAFEGUARDS (1992)

The Nuclear Suppliers Group is made up of countries whose purpose is to harmonize export control policies for nuclear items outside the framework of the International Atomic Energy Agency (IAEA) and the Non-Proliferation Treaty They have agreed on a set of principles contained in Guidelines, including a list of items which trigger the IAEA safeguards These Guidelines are set out in IAEA document INFCIRC/254 and are entitled "Guidelines for the Export of Nuclear Material, Equipment or Technology" (the text of the Guidelines is reproduced in Nuclear Law Bulletin No 21, see also Nuclear Law Bulletin No 45)

The Nuclear Suppliers Group met in Warsaw in March-April 1992 and issued a statement on their policy for full scope safeguards as a condition of future nuclear supplies (INFCIRC/405, June 1992) This statement is reproduced in the "Texts" Chapter of this issue of the Bulletin

AGREEMENTS

BILATERAL AGREEMENTS

Belgium-Switzerland

AGREEMENT FOR CO-OPERATION IN THE PEACEFUL USES OF NUCLEAR ENERGY (1992)

The above Agreement between Belgium and Switzerland was signed in Berne on 3 July 1992. It establishes a framework of public international law for co-operation between Swiss electricity purchasing companies and Belgian firms. It does not provide for mandatory supply or purchase. The partners undertake to use the nuclear materials obtained for exclusively peaceful, non-explosive purposes, to re-export such materials to third parties only under certain conditions and finally, to apply physical protection measures in their respect. The Agreement also contains provisions concerning the International Atomic Energy Agency's safeguards activities.

In a separate exchange of letters, the Parties agree in principle to the re-export of the nuclear materials to certain countries, provided that after the transfer the materials remain subject to the conditions of the Agreement.

Japan-Korea

AGREEMENT ON EXCHANGE OF INFORMATION ON NUCLEAR POWER PLANT SAFETY (1991)

On 20 December 1991, the Science and Technology Agency of Japan (STA) and the Ministry of Science and Technology (MOST) of the Republic of Korea concluded an Agreement on exchange of information on nuclear power plant safety including nuclear disaster prevention techniques. The Agreement was concluded in furtherance of a Co-operation Agreement of 1990 between both countries in the field of nuclear power plant safety.

The Agreement provides that meetings will be held to exchange information on nuclear power plant safety, there will be exchanges of information on public information in that field, and experts on those questions will be exchanged also concerning nuclear disaster prevention techniques.

MEMORANDUM ON EXCHANGE OF INFORMATION ON PUBLIC ACCEPTANCE (1992)

On 2 June 1992, the Japan Atomic Energy Relations Organisation (JAERO) and the Organisation for Korea Atomic Energy Awareness (OKAEA) concluded a Memorandum on exchange of information on public acceptance of nuclear energy

The Memorandum is valid for a period of five years and covers the following activities

- the organisation of seminars on public understanding on the peaceful uses of nuclear energy,
- exchange visits of specialists in the field,
- exchange of public relations materials (publications, films, videotapes)

MULTILATERAL AGREEMENTS

REVIEW CONFERENCE OF THE CONVENTION ON THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL (1992)

A Review Conference of the Parties to the above Convention of 1980 was convened in Vienna from 29 September to 1 October 1992 by the International Atomic Energy Agency (IAEA) in accordance with Article 16 of the Convention which entered into force on 8 February 1987 (the text of the Convention is reproduced in Nuclear Law Bulletin No 24) The Parties noted the need to protect nuclear materials from theft and other unlawful acts, and highlighted the need to preserve the confidentiality of information related to the movement of such materials They reviewed the text of the Convention and found it to be adequate, considered that it provided an appropriate framework for co-operation between States in the protection, recovery and return of stolen nuclear materials and affirmed that it provided a sound basis for physical protection of nuclear material during transport

The Parties also took note of the role given to the IAEA by the Convention, in particular, to inform Parties of national points of contact and central authorities and of

national laws and regulations They asked the IAEA to organise a meeting in the near future to review INFCIRC/225/Rev 2 "The Physical Protection of Nuclear Material"

The following table gives the status of the Convention as at 7 September 1992

Convention on the Physical Protection of Nuclear Material

Signature, ratification, acceptance, approval or accession by States or organisations

State/Organisation	*Date of signature*	*Place*	*Means/date of deposit of expression of consent to be bound*	
Argentina*	28 Feb 1986	Vienna	ratified*	6 Apr 89
Australia	22 Feb 1984	Vienna	ratified	22 Sep 87
Austria	3 Mar 1980	Vienna	ratified	22 Dec 88
Belgium	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
Brazil	15 May 1981	Vienna	ratified	17 Oct 85
Bulgaria*	23 Jun 1981	Vienna	ratified*	10 Apr 84
Canada	23 Sep 1980	Vienna	ratified	21 Mar 86
China			acceded*	10 Jan 89
Czech and Slovak Fed Republic*	14 Sep 1981	Vienna	ratified* 1/	23 Apr 82
Denmark	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
Dominican Republic	3 Mar 1980	New York		
Equador	26 Jun 1986	New York		
EURATOM*	13 Jun 1980	Vienna	confirmed*	6 Sep 91
Finland	25 Jun 1981	Vienna	accepted	22 Sep 89
France*	13 Jun 1980(*)	Vienna	approved(*)*	6 Sep 91
Germany	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
Greece	3 Mar 1980	Vienna	ratified(*)	6 Sep 91
Guatemala	12 Mar 1980	Vienna	ratified	23 Apr 85
Haiti	9 Apr 1980	New York		
Hungary*	17 Jun 1980	Vienna	ratified* 1/	4 May 84
Indonesia	3 Jul 1986	Vienna	ratified*	5 Nov 86
Ireland	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
Israel*	17 Jun 1983	Vienna		
Italy*	13 Jun 1980(*)	Vienna	ratified(*)*	6 Sep 91
Japan			acceded	28 Oct 88
Korea, Republic of*	29 Dec 1981	Vienna	ratified*	7 Apr 82
Liechtenstein	13 Jan 1986	Vienna	ratified	25 Nov 86
Luxembourg	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
Mexico			acceded	4 Apr 88
Mongolia*	23 Jan 1986	New York	ratified* 1/	28 May 86
Morocco	25 Jul 1980	New York		
Netherlands	13 Jun 1980(*)	Vienna	accepted(*)*	6 Sep 91
Niger	7 Jan 1985	Vienna		
Norway	26 Jan 1983	Vienna	ratified	15 Aug 85
Panama	18 Mar 1980	Vienna		
Paraguay	21 May 1980	New York	ratified	6 Feb 85
Philippines	19 May 1980	Vienna	ratified	22 Sep 81

State/Organisation	*Date of signature*	*Place*	*Means/date of deposit of expression of consent to be bound*	
Poland*	6 Aug 1980	Vienna	ratified*	5 Oct 83
Portugal	19 Sep 1984	Vienna	ratified(*)	6 Sep 91
Romania*	15 Jan 1981	Vienna		
Russion Federation* 2/	22 May 1980	Vienna	ratified*	25 May 83
Slovenia 3/			succeeded	7 Jul 92
South Africa*	18 May 1981	Vienna		
Spain*	7 Apr 1986(*)	Vienna	ratified(*)*	6 Sep 91
Sweden	2 Jul 1980	Vienna	ratified	1 Aug 80
Switzerland	9 Jan 1987	Vienna	ratified	9 Jan 87
Turkey*	23 Aug 1983	Vienna	ratified*	27 Feb 85
United Kingdom	13 Jun 1980(*)	Vienna	ratified(*)	6 Sep 91
United States	3 Mar 1980	New York/ Vienna	ratified	13 Dec 82
Yougoslavia 4/	15 Jul 1980	Vienna	ratified	14 May 86

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* Indicates that a reservation/declaration was deposited upon signature/ratification/acceptance/approval/ accession

(*) signed/ratified as EURATOM Member State

1/ Indicates that reservation/declaration was subsequently withdrawn

2/ On 26 December 1991, the Director General received a Note from the Minister of Foreign Affairs of the Russian Federation informing him, inter alia, that the membership of the Union of Soviet Socialist Republics "in all conventions, agreements and other international legal instruments, which were concluded within its framework or under its aegis is continued by the Russian Federation and in this connection in the IAEA the name 'The Russian Federation" should be used in the place of the name 'The Union of Soviet Socialist Republics' "

3/ On 7 July 1992, the Director General received a letter from the Minister of Foreign Affairs of Slovenia informing him, inter alia, that the "Republic of Slovenia in principle acknowledges the continuity of treaty rights and obligations under the international treaties concluded by the former SFR Yugoslavia before 25 June 1991" and based on that position and the resolution of the Parliament of Slovenia of 1 July 1992, "of the intention of the Republic of Slovenia to be considered in respect of the territory of the Republic of Slovenia, a party, by virtue of succession to the SFR Yugoslavia," to the relevant treaties, including the Convention on the Physical Protection of Nuclear Material of 1979

4/ On 28 April 1992 the Director General received a Note from the Permanent Mission of the Socialist Federal Republic of Yugoslavia informing him that, inter alia the Federal Republic of Yugoslavia (Serbia and Montenegro) "shall continue to fulfil all the rights conferred to and obligations assumed by the Socialist Federal Republic of Yugoslavia in international relations, including participation in international treaties ratified or acceded to by Yugoslavia"

Note The Convention entered into force on 8 February 1987 i e on the thirtieth day following the deposit of the twenty-first instrument of ratification, acceptance or approval with the Director General pursuant to Article 19, paragraph 1

INTERNATIONAL THERMONUCLEAR EXPERIMENTAL REACTOR (1992)

The history of co-operation on the International Thermonuclear Experimental Reactor (ITER) may be traced to the summit meetings of government leaders in 1985 which appealed for substantial international co-operation in order to increase the efficiency and minimize the cost of fusion power development As a result of that initiative, the Director General of the International Atomic Energy Agency (IAEA) in spring of 1987 invited experts from the European Community, Japan, the Soviet Union and the Unites States to discuss enhanced collaboration on nuclear fusion The experts produced, inter alia, specific terms of reference concerning conceptual design activities for an International Thermonuclear Experimental Reactor to govern the planned activities After the above-mentioned four Parties agreed to participate in accordance with the terms of reference under the auspices of the IAEA, the Conceptual Design Activities (CDA) began in April 1988 and were successfully completed in December 1990 The CDA involved two phases, the definition phase and the design phase The first phase produced a concept with a consistent set of technical characteristics and preliminary plans for co-ordinated R&D in support of ITER The design stage produced a conceptual design, a description of site requirements, and preliminary construction schedule and cost estimate as well as an ITER R&D plan (see Nuclear Law Bulletin No 44)

On 21 July 1992 representatives of the ITER Parties signed the ITER Engineering Development Activities (EDA) Agreement The Agreement and Protocol 1 thereto entered into force upon signature of the Parties and will remain in force for six years The purpose of the Agreement is "to produce a detailed, complete, and fully integrated engineering design of ITER and all technical data necessary for future decisions on the construction of ITER Such design and technical data shall then be available for each of the Parties to use either as part of an international collaborative program or in its own domestic program" The Agreement also states that "The overall pragmatic objective of ITER, which shall guide the EDA, is to demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes"

A joint central team will co-ordinate and integrate the design and R&D work to be conducted in establishments situated in the territories of the four Parties The ITER Project will be headed by a Director of the European Communities, supervised by a Board made up of members from all the Parties The Board will be assisted by a Technical Advisory Committee and a Management Advisory Committee The official headquarters of the Board will be in Moscow

CONVENTIONS FOR THE PROTECTION OF THE MARINE ENVIRONMENT AGAINST POLLUTION

Two international Conventions have been adopted recently in the above field, in accordance with Article VIII of the London Dumping Convention of 1972, which provides that the Contracting Parties to that Convention with common interests to protect the marine environment in a given geographical area shall endeavour to enter into regional

agreements consistent with that Convention for the prevention of pollution by dumping At present two other conventions dealing with the prevention of pollution of the marine environment are in force as well the 1972 Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft and the 1974 Paris Convention for the Prevention of Marine Pollution from Land-Based Sources (both Conventions are analysed in Nuclear Law Bulletin No 13) Article 5 of the Paris Convention obliges the Parties to adopt measures to forestall and eliminate pollution of the maritime area from land-based sources by radioactive substances, including wastes The Oslo Convention contains two lists of substances One list enumerates materials, the dumping of which is prohibited into the sea, the other specifies the materials which can be dumped with a specific permit from the appropriate national authority However, neither refers to radioactive materials nor indicates with certainty whether radioactive substances are also within its scope The innovation of the new Conventions as compared to the Oslo Convention is that they definitely include radioactive substances and waste from all sources Both the Paris and Oslo Conventions are to be replaced by another new text, the Convention for the Protection of the Marine Environment of the North-East Atlantic This note provides a brief description of the new Conventions below

CONVENTION ON THE PROTECTION OF THE MARINE ENVIRONMENT OF THE BALTIC SEA AREA

This Convention on the Protection of the Marine Environment of the Baltic Sea Area was adopted by a Diplomatic Conference held in Helsinki on 9 April 1992 After its entry into force it is to replace the Convention on the same question signed in Helsinki on 22 March 1974

Under this Convention Contracting Parties undertake to endeavour, individually or jointly, to promote the ecological restoration and to preserve the ecological balance of the Baltic Sea Area To this effect, the Parties will prohibit or regulate the introduction into the Baltic Sea of harmful substances specified in Annex I of the Convention, which include radioactive substances and wastes

The Convention establishes a Baltic Environment Protection Commission, made up of representatives of all the Contracting Parties The Commission is to meet at least once a year, and will keep under review implementation of the Convention, disseminate information provided by the Parties, and assume other appropriate functions to further the purposes of the Convention

The Convention is supplemented by a series of Annexes, the first of which, mentioned above, lists harmful substances, including radioactive substances The other Annexes concern the use of technology, criteria and measures to prevent marine and land-based pollution, exemptions and also the actions to be undertaken in case of pollution

CONVENTION ON THE PROTECTION OF THE BLACK SEA AGAINST POLLUTION

This Convention was adopted by a Diplomatic Conference, held in Bucharest from 21 to 22 April 1992 The Convention, like the 1992 Convention on the Protection of the

Marine Environment of the Baltic Sea Area against Pollution, is regional in nature and covers the Black Sea as a whole, including the territorial seas and exclusive economic zones

The Convention applies to all types of pollution caused by hazardous substances and matter or originating from any kinds of sources, namely land-based sources, vessels - with the exception of warships or other vessels or aircraft owned or operated by the State and used for governmental non-commercial services - activities on the continental shelf, dumping from or through the atmosphere, if the concentration or the discharged quantity of the hazardous substances is above the limit defined jointly by the Contracting Parties or by generally accepted international rules and standards Radioactive substances and wastes, including spent radioactive fuel are enumerated expressly among "hazardous substances and matter", as specified in the Annexes to the Convention and those to the two Protocols to the Convention

Under this Convention, the Contracting Parties undertake to prevent, reduce, control, eliminate and combat pollution of the marine environment of the Black Sea To this effect they will adopt the necessary laws, regulations and appropriate measures for implementation of this Convention and will co-operate in the elaboration of additional Protocols and Annexes where necessary and will also establish a liability system for compensation of damage caused by pollution of the marine environment of the Black Sea The Parties also undertake to co-operate in scientific research and monitoring programmes, in developing and introducing clean and low waste technologies

The Convention establishes a Commission for Protection of the Black Sea which includes representatives of all the Contracting Parties It meets at least once a year and its duties include making recommendations on the measures required in implementation of the Convention, elaborating criteria on preventing, reducing and controlling pollution in the Black Sea, disseminating to the Contracting Parties all scientific, technical and statistical information to promote adoption of measures for protecting the marine environment of the Black Sea The Commission is also responsible for co-operating with the competent international organisations to develop appropriate programmes or obtain their assistance for the purposes of the Convention

CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTH-EAST ATLANTIC

This Convention was adopted in Paris on the 22nd of September 1992 As indicated in its preamble "the present Oslo and Paris Conventions do not adequately control some of the main sources of pollution and it is therefore justifiable to replace them with the present Convention, which addresses all sources of pollution of the marine environment" The Convention applies to the North-Atlantic and Arctic Oceans and their independent seas, excluding the Baltic Sea, the Belts and the Mediterranean Sea, since they are covered by other regional international conventions

Under this Convention, the Contracting Parties undertake to take all possible steps to prevent and eliminate pollution, and to take the necessary measures to protect the maritime area For this purpose they will adopt scientific and technical research programmes, harmonize their environmental policies and strategies, and ensure the

application of best available techniques and best environmental practice in their measures and programmes They will also engage in preventive measures where necessary and will apply the Polluter Pays Principle

In its Annex II, the Convention prohibits the dumping of low and intermediate level radioactive waste However, as from 1 January 1993, but not before the expiry of a fifteen-year period two Signatory countries (France and the United Kingdom) reserve the right to make an exception to that rule

The Agreement establishes a Commission made up of representatives of each of the Contracting Parties Its duties will be, inter alia, to supervise the implementation of the Convention, review the condition of the maritime area and the effectiveness of the measures adopted, indicate and draw up further measures and programmes for the prevention and elimination of marine pollution

Annexes II and III to the Convention respectively concern prevention and elimination of pollution by dumping and incineration, and prevention and elimination of pollution from offshore sources

The Convention will enter into force thirty days after all the Contracting Parties to the Oslo Convention and the Paris Convention have deposited their instruments of ratification, acceptance or approval

Nuclear Suppliers Group

Meeting of Adherents to the Nuclear Suppliers Guidelines Warsaw, March 31 - April 3, 1992

Statement on Full Scope Safeguards[*]

1 At their meeting in Warsaw on April 3, 1992, the Adherents to the Nuclear Suppliers Guidelines,

- desiring to contribute to an effective non-proliferation regime, and to the widest possible implementation of the objectives of the Treaty on the Non-Proliferation of Nuclear Weapons

- seeking to promote international co-operation in the research, development and safe use of nuclear energy for peaceful purposes,

have adopted the following policy on full scope safeguards as a condition of future nuclear supplies

(a) The transfer of nuclear facilities, equipment, components, material and technology as referred to in the export trigger list of the Guidelines for Nuclear Transfers (see INFCIRC/254), should not be authorised to a non-nuclear-weapon State unless that State has brought into force an agreement with the IAEA requiring the application of safeguards on all source and special fissionable material in its current and future peaceful nuclear activities

(b) Tranfers covered by paragraph (a) to a non-nuclear-weapon State without such a safeguards agreement should only be authorised in exceptional cases when they are deemed essential for the safe operation of existing facilities and if safeguards are applied to those facilities Suppliers should inform and, if appropriate, consult in the event that they intend to authorise or to deny such transfers

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[*] This statement was published by the International Atomic Energy Agency under reference INFCIRC/405 June 1992

(c) This policy does not apply to existing agreements and contracts, however, adherents to the Guidelines underline the importance of making all supplies in conformity with it

(d) Additional conditions of supply may be applied as a matter of national policy

2 The Adherents to the Nuclear Suppliers Guidelines appeal to all states which export nuclear facilities, equipment components, material or technology to adopt the same policy

3 The Adherents to the Nuclear Suppliers Guidelines invited the Chairman of the meeting to communicate this statement to the Director-General of the IAEA for information of member states

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CANADA

L'énergie et le droit - les autorisations, l'environnement, les contrôles judiciaires et politiques, Etude comparative, by Denis Bourque, published by les éditions Yvon Blais Inc , Cowansville, Quebec, 1990, 903 pages

Following an introduction placing nuclear power plants in the overall context of electricity production through different types of energy sources, the author refers to the future of nuclear power and its importance, given the uncertainties of oil supplies and present dependence on that source of energy The book studies the licensing processes in four "nuclear" countries the United States, France, the United Kingdom and Canada Part One analyses and compares present licensing procedures and their judicial control in the four countries A description is given of the rules and methods applied for the three stages in the licensing process for a nuclear power plant site selection, construction and commissioning The extent of judicial controls over the licensing procedure is then examined, and finally the author comments on the drawbacks of experience with the existing licensing mechanisms

Part Two deals with the licensing reforms in the above-mentioned countries from three different viewpoints Firstly, the author describes the extent to which these reforms correct the drawbacks referred to in Part One Then, he examines whether the modifications to the existing mechanisms will enable the required improvements to be attained This analysis is completed by a presentation of the author's own proposals for reforming the procedure for delivering licences in Canada The division of legislative competence between the two types of governments (Canada and Quebec) in this new procedure is described, as are the rules of administrative law to be applied to the regulatory bodies Reference is also made to benefits to be drawn from the licensing experience in the other countries considered

The book is supplemented by a series of technical annexes, a bibliography, and an analytical index facilitating consultation

TUNISIA

Recueil de textes législatifs et réglementaires tunisiens en matière de protection de l'environnement et de protection radiologique, Tunis, 1991, 75 pages

This compilation of legislative and regulatory texts in force on environmental and radiological protection was published by the Tunisian Electricity and Gas Board (STEG)

Part One of the compilation reproduces the laws and decrees dealing with environmental protection, some of which refer specifically to radioactive releases In particular, Decree No 85-56 of 2 January 1985 regulating releases to the sea and inland waters and waterways, specifically provides that radioactive waste and other radioactive material, as defined by order must not pollute that medium Also, Decree No 91-362 of 13 March 1991 on environmental impact studies covers combustion and waste disposal or storage facilities

Part Two, in particular, reproduces Act No 81-51 of 18 June 1981 on protection against the hazards of ionizing radiation sources, a 1986 Decree made in implementation of the Act and Decree No 82-1389 of 27 October 1982 setting up the National Radiation Protection Centre For further details on these texts see Nuclear Law Bulletin Nos 31, 35 and 38

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10-1991

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