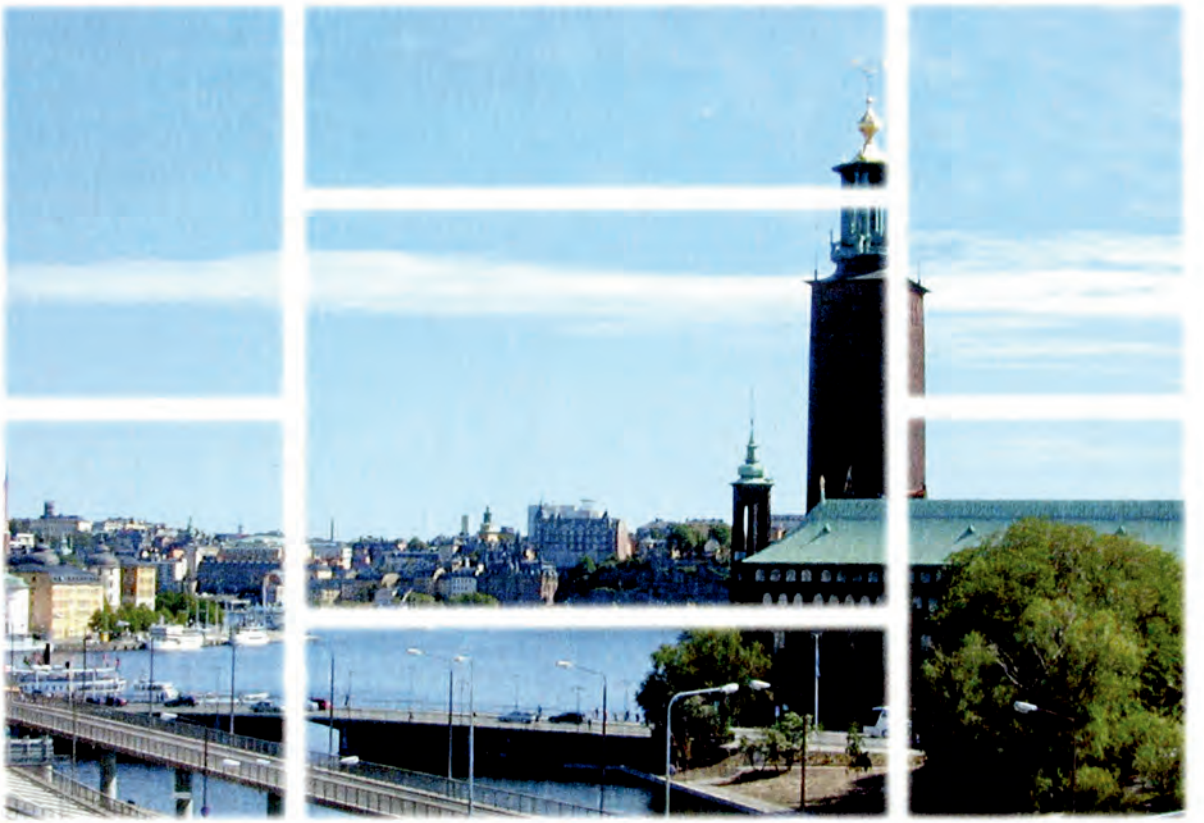
SKI Report 2001:16

Seven Law Concepts on Nuclear Non-Proliferation

Suggested by The International Group of Legal Experts (ILG)



Göran Steen
Lars Wredberg

March 2001

ISSN 1104-1374
ISRN SKI-R-01/16-SE

SKI

SKI Report 01:16

Seven Law Concepts on Nuclear Non-Proliferation

Suggested by The International Group of Legal Experts (ILG)

Göran Steen[1]
Lars Wredberg[2]

[1] Former Director General and Chief Judge
Svea Court of Appeal
Lillkalmarvägen 106 B
S-182 65 Djursholm, Sweden

[2] ILG Consultant LTD
Hammerschmidtgasse 18
A-1190 Vienna, Austria

March 2001

The ILG has worked as an independent group under the Swedish Support Programme on Nuclear Non-Proliferation in Central and Eastern Europe and Central Asia. Since July 1997, the work and travels by the Group's Chairman and Technical Secretary have been financed exclusively by the Swedish Support Programme. The ILG's mission is concluded with this report.

TABLE OF CONTENT

PREFACE

The Treaty on Non-Proliferation of Nuclear Weapons (NPT) is the foundation for both national and international supervision and control of nuclear material, equipment and technology. States that are parties to the NPT are committed to adhere to the requirements and conditions that follow from the Treaty. That means that a party state must develop adequate national legislation and establish state systems for nuclear material accounting and control, for physical protection of nuclear material and facilities and for export/import control of nuclear material, equipment and technology. Furthermore, the state must assign independent and competent national authorities for the supervision and control of the implementation of the requirements that the NPT obligations impose on the nuclear industry.

When developing the seven Law Concepts on national nuclear legislation that are presented in this report, the ILG has applied certain basic principles, which are firmly established in modern Western legislation. A summary of these principles is made here. They are essential cornerstones in laws and regulations that apply both to the nuclear industry and to other high technology areas, characterised by advanced safety and security requirements. Of essential importance is that the Operator alone is responsible for the fulfilment of requirements stipulated in laws and authority directieves.

The technical complexity of the nuclear industry and the far-reaching requirements on safety and security necessitate a qualified and complete national system of legislation and regulations. As all legislation in general, the nuclear legislation should be clear, easy to understand and give little room for misunderstandings and loopholes. It should also present the legally established requirements on safety and security in a form that facilitates the application and implementation by both state authorities, facility operators and individuals.

The investigations of the causes of the Three Mile Island and Chernobyl accidents brought into focus the impact on nuclear safety from human failure. As a consequence, increased emphasise has since then been put on the development of an overall high safety culture in the nuclear field. It is recognised that a good safety culture also promotes the non-proliferation systems and safeguards measures and helps to reduce the risk of illicit trafficking.

In a high safety culture environment, each individual facility employee has to be motivated and encouraged to carry out the assigned duties and responsibilities in accordance with rules and regulations. The facility management would have to promote training and education of the personnel to make each individual qualified to perform the tasks assigned to him. Even if rules and regulations are complete and adequate, they are of limited value if employees neglect them, because of poor motivation or insufficient sense of responsibility or carelessness. It is, therefore, important that the facility recruits reliable personnel and keeps each individual motivated to carry out a qualified work. Such a personnel policy would lead to improved facility safety and security.

It is one of the duties of the supervisory authority (or State Regulatory Body) to continuously monitor the personnel education and training programmes of the nuclear facilities. One supervisory tool for efficiently doing so, is the introduction of Internal Control at the facilities, in combination with Quality Assurance. These controlling measures will help the authority to clarify the role of each member of the safety and security system, as established in facility manuals and instructions.

One other important component of an effective state system for nuclear safety and security is the investigation, both by the facility itself and the authority, of all abnormal or deviating events, incidents and accidents. The causes must be clarified, so that corrections can be made. Questions to be asked during an investigation are to what extent inadequate supervision by the Operator or the State Regulatory Body has contributed to the incident, or if the blame has to be put on incomplete training of facility staff, etc.

The result of investigations should be made public to the extent possible, in accordance with the principle of public access to information, which should be stipulated in the law. Experience from both the nuclear industry and other high safety operations (such as civil aviation) shows that a well developed and organised system for investigation and publication promotes the development of high quality, safety and security, both at the authority and facility level.

In general, it might be argued that clearly formulated laws and regulations, emanated from parliaments, governments and authorities, promote the administrative, economical and technical development of nuclear operation and are thereby of overall benefit to State and society. This is not least important for the international interchange, co-operation and trade, involving know-how, services, material and equipment.

In an international perspective, attention is drawn to the world community's concern over the illegal and clandestine use of nuclear material, equipment and technology. In the joint Swedish-Norwegian-Latvian Report on Combating of Illicit Trafficking (SKI Report 00:3, January 2000), measures for the prevention, detection and response of illicit trafficking are discussed and improvements of the national and international systems to combat illicit trafficking are suggested. The basis for such improvements is the development and implementation of complete and qualified national nuclear legislation systems in all states.

THE ESTABLISHMENT OF THE ILG

The Swedish Support Programme on Nuclear Non-Proliferation in Central and Eastern Europe and Central Asia (henceforth referred to as "the Swedish Programme") was initiated in 1991. The progress and status of the Programme was presented in SKI Report 00:23, published in June 2000 (Ref. No. 1). The states with which co-operation and support programmes have been established are the, so-called, Newly Independent States (NIS)[1], the Baltic States[2] and the Russian Federation (Russia),

One of the major objectives of the Swedish Programme has been to assist states in developing national legislative and authority infrastructures which meet with the requirements of international legal instruments (treaties, conventions, agreements) on nuclear non-proliferation and which apply modern, western principles of responsibilities, quality assurance, safety culture and internal control.

The first Swedish support projects on nuclear legislation were initiated in Belarus and Kazakstan. Legal experts, engaged by the Swedish Programme, presented a revised draft of a radiation safety law in Belarus in May 1994. In November of that year, the same experts prepared a draft basic nuclear law for Kazakstan.

In order to broaden the basis for the legislation support and to promote the co-operation between Sweden and other supporting countries, the Swedish Programme took the initiative, in 1995, to establishing the International Group of Legal Experts (ILG). A further reason for this step was to promote the harmonisation of the nuclear legislation between the co-operating states.

The ILG held its constituent meeting in Vienna in November 1995. The six original members came from five countries and the International Atomic Energy Agency (IAEA). They were:

Göran Steen (ILG Chairman)	Former Chief Judge Svea Court of Appeal Sweden
John Carlson	Director of Safeguards Australian Safeguards Office (ASO) Australia
Odette Jankowitsch	Senior Legal Officer Legal Division, IAEA Austria

[1] Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Kyrghyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.
[2] Estonia, Latvia, Lithuania.

Eero Kaukoranta	Legal Counsel Legal Department, Imatran Voyma OY (IVO) Finland
Dag Reite	Legal Counsel Ministry of Health and Social Affairs Norway
Lars Wredberg (ILG Technical Secretary)	Section Head (ret.) Department of Safeguards, IAEA Austria

Later, Ms. Jankowitsch was replaced by Ms. Maria Lourdes Vez (in 1997) and Mr. Reite with Mr. Sverre Hornkjöl (in 1998).

During the November meeting, the Group agreed upon its Terms of Reference. See Annex 1.

In September 1996, the ILG published a Reference Report: "Nuclear Legislation in the NIS, Assistance and Co-operation" (Ref. No. 2). It was emphasised in the joint SKI-IAEA Reference Report that the ILG was acting as an independent group of nuclear legal experts from five different countries, with the objectives to assist the NIS in the development of a nuclear legal and regulatory framework of good international standard.

CO-OPERATION WITH THE IAEA

ILG's co-operation with the IAEA was consolidated through the two group members who were professional staff members of the IAEA (Jankowitsch and Wredberg). It was therefore obvious that ILG's objective to assist the states would be based upon the same international legislative foundation as that applied by the IAEA in the area of nuclear non-proliferation and safety. This essential prerequisite for ILG's mission in the NIS was spelled out in the Reference Report, from which the following is a citation:

> *The international instruments in the area of safe and peaceful uses of nuclear energy are the NPT and the Safeguards Agreements with IAEA, the conventions elaborated under the auspices of IAEA, i.e. the Convention on Physical Protection of Nuclear Material, the Vienna Convention on Civil Liability for Nuclear Damage and the Joint Protocol Relating to the Application of the Vienna and Paris Conventions, the Convention on Nuclear Safety, the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.*

In order to further strengthen the co-operation with the IAEA, an agreement was reached, in May 1996, between the ILG and the IAEA Department of Technical Co-operation (TC). The purpose was to co-ordinate ILG's Co-operation Programmes in the different states with TC's projects in the same states, involving nuclear legislation and regulation. To facilitate and promote the co-operation, the ILG Technical Secretary was assigned as Project Co-ordinator for IAEA's Regional TC Project "Legislative Assistance for the Utilisation of Nuclear Energy" (RER/0/015).

Unfortunately, the successful and fruitful co-operation with the IAEA was abruptly interrupted in July 1997. The break with the IAEA caused a standstill of the ILG programme activities during almost four months, during which the IAEA and the Swedish Programme, unsuccessfully, tried to find and agree on a solution. The programme was re-activated in mid October 1997, with the same Terms of Reference, but without any IAEA representative among the Group members. Furthermore, the Technical Secretary was, from then on, not an IAEA employee any more, but engaged as an independent consultant to the Swedish Programme.

OBJECTIVES AND PROCEDURES

Objectives

As stated in the ILG Reference Report, the ILG objectives have been to assist and advise the co-operating states in the development or improvement of a nuclear legal and regulatory framework of good international standard that meet with the requirements of the NPT, applicable international conventions and the IAEA safety standards.

ILG's support and co-operation activities have been related to the entire field of nuclear legislation, i.e. basic nuclear energy laws, and applied laws on

- Nuclear Material Accountancy and Control,
- Licensing of Nuclear Activities,
- Physical Protection of Nuclear Material and Radiation Sources,
- Radiation Protection,
- Radioactive Waste Management,
- Export/Import Control, and
- Transport of Radioactive Material.

What concerns legislation on liability for nuclear damage, the ILG decided, on an early stage, not to be directly engaged in that specific area of nuclear legislation. This was a result of consultations and liaison with the Legal Division of NEA/OECD in Paris, which organisation is also engaged in assisting the NIS, in particular on matters of liability for nuclear damage.

The ILG activities have included:

- Review of draft laws and regulations and preparation of review reports with comments, suggestions and recommendations for amendments;
- Preparation of Law Concepts in different application areas to be used as guidelines;
- Advice on organisational structure and responsibilities of State Regulatory Bodies;
- Transfer of knowledge and know-how at meetings with members of parliament committees, ministries and state authorities.

Procedures

The ILG counterparts and partners in the co-operating states have been nuclear regulatory authorities, ministries, and parliamentary committees. The ILG work approach can be described as follows:

On request by a state, the first formal contact has been taken by the Director of the Swedish Support Programme (Mr. Paul Ek), suggesting a visit to the state by the ILG Chairman and Technical Secretary. At that "fact-finding" visit, the state has given a presentation of the overall situation with respect to nuclear and radiation safety legislation and has pointed out the need for supplements, changes and improvements. A Co-operation Programme between the state and the ILG has been agreed upon and a Work Plan has been established.

The Work Plan has defined actions for both parties (the ILG and the state) and a time schedule, including time and place of the next meeting. The order of priority has always been established by the state, depending on the specific situation and need. State representatives have been assigned to meet with ILG members at working meetings, which have been held in Stockholm, Vienna and the capitals of the co-operating states. The main purpose of such meetings has been to discuss the suggestions and recommendations made by the ILG, and also to clarify the intentions of the law drafters, including language questions.

An ILG Law Concept and an ILG Review Report have normally been used as working papers at the working group meetings. ILG's review has always been based on the appropriate ILG Law Concept and has pointed out differences and submitted explaining and arguing comments. Between working meetings, communications have been maintained via phone, fax and e-mail by the ILG Technical Secretary. The series of working meetings has continued until a draft law proposal has been developed.

In each co-operating state, the ILG has tried, as far as possible, to follow-up on the law-making process, from the first draft, through deliberations in interdepartmental working groups and parliamentary committees, to the final stage of approval by the Parliament. The ILG expert services have best been utilised through continuous communication and direct dialogue with the people directly involved in the drafting and processing of the laws in the state.

The working meetings, under the ILG chairmanship, have been of essential importance for the promotion of the "transfer-of-knowledge" process from ILG to the co-operating state and for obtaining a satisfactory result. During other meetings, with members of parliament committees and ministries, fundamental questions related to non-proliferation legislation have been dealt with. One subject often discussed has been the structural inter-relation between authorities and ministries, distribution of responsibilities, restrictions or incompleteness in the state's constitution, infrastructure and resource problems, etc. The informal atmosphere of these meetings has promoted the exchange of information and knowledge in both directions.

Language has been a constant handicap in the ILG work. The ILG working language has been English, while the co-operating states have drafted their laws in the own languages (Armenian, Ukrainian, Georgian, etc.). Since Russian is used as a communication language between the former Soviet republics, the ILG documents in English have been translated to Russian. The translation, as well as the translation to English of the draft laws prepared by the states for review by the ILG, has been arranged and financed by the Swedish Programme. With few exceptions, consecutive interpretation English-Russian has been used at the working meetings.

SOME CONSTITUTIONAL ASPECTS

ILG's recommended approach for the development of new, or improved, legislation in the co-operating states has been first to establish a Basic (frame-work) Nuclear Law, supplemented by decrees and ordinances as need arises. Thereafter, the state nuclear authorities should develop regulations, rules and guidelines covering all technical applications of the Basic Law. Such an approach would facilitate a fast implementation of new legislation of modern, western standard.

The laws should be clear, transparent and understandable. They should be based on certain fundamental principles ("corner-stones"), which should be reflected as provisions in the Basic Nuclear Law, referring to such matters as obligatory licensing, independent and competent state authority, supervision and control systems, responsibilities, and the use of punitive measures in case of deviations from the legal requirements and stipulated conditions.

ILG's recommendations and advice refer to modern western standard and the experience of nuclear operation and law making in Sweden, in the first place. Reference has also been made to the approach taken when introducing new legislation in areas other than nuclear, such as international civil aviation. Attention has, in particular, been drawn to the benefit gained by national lawmakers from participation in international working groups and conferences. The output from international groups and committees can be used in the national legislation work and incorporated in national laws.

Conventions and recommendations developed by United Nation's technical organisations, like the IAEA, can, in a similar way, be incorporated in national laws, without any change. Some amendments of the law text can, however, be necessary. In addition to a fast implementation of internationally imposed legislative requirements, the advantage of such an approach is that a desired international harmonisation of regulations is obtained.

If the requirements and conditions in the international conventions or agreements do not partly or fully agree with the existing law, amendments to that law must, of course, be made. The Swedish Constitution stipulates that bi-lateral or multi-lateral agreements must be concluded by the Government alone and must be approved by the Parliament (The Riksdag), whenever an amendment of the existing law is necessary. A state agency or authority (like the Swedish Nuclear Power Inspectorate) may, however, enter into an international agreement, on behalf of the Government, when the agreement does not require the involvement of the Riksdag or of the Advisory Council of Foreign Affairs. Agreements which impose obligations on individuals or physical or legal persons must be translated into Swedish and be presented in the form of Swedish statutes. As an example, the Safeguards Agreements with the IAEA is available in Swedish, even if it affects only a limited target group of nuclear facilities.

Most of the co-operating states claim that they are unable to fully apply the approach described above, because of restrictions in their constitutions. This has as consequence, among others, that the nuclear laws are becoming lengthy and detailed, which makes them difficult to understand and implement. The laws are also often introducing "home-made" terms and definitions that do not fully agree with internationally recommended and used terms.

The ILG has based its Law Concepts on the Swedish constitutional system. An important feature of that system is that the relationship between public and private interests must be regulated in the law in accordance with a resolution, made jointly by the Government and the Riksdag. Regulations concerning the protection of life, personal safety and health might be issued as ordinances on the basis of the law, instituted by the Riksdag. Any infringement of the law that is punishable by more than a fine, must be supported by the law.

The Swedish Constitution further stipulates that all state authorities operate under the jurisdiction of the Government, but that they are independent and maintain a high degree of integrity in all their functions. The Government cannot influence the authority's acting or decision taking in a specific case. It is entirely up to the authority alone to decide, without paying attention to or being influenced by other parties, including ministries and other authorities.

A state authority is carrying out its supervisory and controlling function by establishing rights and duties supported in the law, e.g. the granting of licenses, the imposing of bans or of injunctions. In doing so, the authority must apply

general standards as stipulated in the law. As a rule, appeals against an authority's decision can be made to the court.

In its work to assist the co-operating states, the ILG has referred to constitutional issues only on matters that have a direct relation to the nuclear sector. This has been the case concerning the important matter of "Public Access to Information" about nuclear events, incidents and accidents. The reporting to the public of nuclear accidents, incidents and other abnormal events is a legally binding duty of the nuclear authorities in most countries, in accordance with international conventions and agreements. Experience shows that both the authorities and the nuclear industry might get into a crisis-of-confidence, if a true and complete reporting of an event and its causes is not done.

In the case of nuclear non-proliferation, examples of events that should be reported to the public are: deficiencies in the state's non-proliferation or safeguards system; acts of sabotage against a nuclear power plant; illegal export of nuclear material or smuggling of such material and equipment that can be used for the manufacturing of nuclear explosives, i.e. so called illicit trafficking. Illicit trafficking events that can lead to the manufacturing of nuclear weapons, are very serious and are, in the worst cases, to be considered as crimes against humanity. The public should, therefore, be entitled to full insight in and information about such grave criminal activities. The right to be informed about serious nuclear crimes is not less legitimate than in case of nuclear accidents. A serious illicit trafficking event that is revealed in one state cannot be looked upon as a matter for that state alone, but is of an international, or even global, interest.

The ILG has always argued that an extensive freedom of speech and access to public information are basic criteria for an open and democratic society, and that those rights must be confirmed in the law. Only so can each member of the society, as well as representatives of the media, be given the possibility to evaluate the impact from industrial activities on the environment and judge the risks to life and property, and thereby be able to take position on important matters. When the public and the media are getting full insight in the way states are fulfilling their non-proliferation, as well as nuclear safety, commitments, can governments, through political means, be urged to effectively establish and maintain good safety and non-proliferation systems, including safeguards, physical protection and export/import control.

ACHIEVEMENTS

The ILG has assisted in preparing draft basic nuclear laws in Kazakstan, Lithuania, Belarus, Georgia, Armenia and Moldova (in chronological order). The ILG has had its most comprehensive co-operation programme with Ukraine and has there been engaged in the review of draft laws and regulations on physical protection, radiation protection and export/import control. In Latvia and Russia, the co-operation has focused on nuclear regulations.

With the purpose to provide guidelines for the legislative content and structure, the ILG has established a series of Law Concepts, seven in total, covering Basic Nuclear Legislation, Licensing, Physical Protection (3 law concepts), Export/Import Control, and Safeguards. The goal has been to introduce qualified and clear legal principles into the national legislative systems.

As has been described earlier, the Law Concepts are considered as "working papers" and not as a "final product". They were most often prepared under a tense time schedule to serve the purpose of guidance and basis for discussions in a working group environment with the co-operating states.

The first editions of the ILG Law Concepts were worked out during the period 1994 to 1999. When assembling the seven Law Concepts in this Report, a few editorial changes and amendments have been done with the purpose to establish uniformity, mainly with respect to definitions, expressions and names. The exception is the Law Concept on Fundamental Requirements for Nuclear Legislation, which has undergone a more comprehensive revision with respect to the Comments. The Law Concepts are here published as Edition 2, March 2001.

In addition to the Law Concepts, the ILG has prepared the document "Certain Regulations for the Practical Implementation of the Convention on Nuclear Safety". It is presented in Annex 2.

The ILG has also prepared 27 Review Reports, which are confidential and property of the co-operating states. The titles are listed in Annex 3.

CONCLUSION

With the publishing of this Report, the ILG's mission is concluded and the Group is dissolved.

There is, however, a remaining need of legal assistance and advice to the co-operating states for the continued development of modern national nuclear legislation. Such support will be given under the Swedish Programme on a bi-lateral (Sweden-State) basis, with the help of legal experts engaged and financed by the Programme..

REFERENCES

1. Swedish Support Programme on Nuclear Non-Proliferation in Central and Eastern Europe and Central Asia, SKI Report 00:23, June 2000.

2. ILG Reference Report: Nuclear Legislation in the NIS, Assistance and Co-operation, SKI/IAEA September 1996.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

FUNDAMENTAL REQUIREMENTS FOR NUCLEAR LEGISLATION

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: September 1996]

INTRODUCTION

REMARKS

This Law Concept on Fundamental Requirements for Nuclear Legislation puts the emphasis on nuclear non-proliferation, even if also legally binding requirements on nuclear and radiation safety are dealt with.

NUCLEAR NON-PROLIFERATION REQUIREMENTS

Nuclear non-proliferation is based on an international system of political, legal and technical measures that ensure that States honour their international treaty commitments not to divert nuclear material or nuclear items from peaceful to non-peaceful purposes (i.e. to weapons or military explosives). The principal multilateral treaty on nuclear non-proliferation is the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which came into force in 1970 and has 182 non-nuclear weapon States and 5 nuclear weapon States as parties.

The commitments made by the NPT parties can be summarised as follows:

- The nuclear weapon States undertake not to assist any non-nuclear weapon States to acquire nuclear weapons,
- The non-nuclear weapon States undertake not to acquire nuclear weapons or other nuclear explosive devices, and to accept safeguards on all their current and future holdings of nuclear material,
- All parties undertake to co-operate in the peaceful use of nuclear energy, and
- All parties undertake to pursue disarmament negotiations, in relation to both conventional and nuclear weapons.

Safeguards, or nuclear safeguards, refer to the technical measures that are applied by the International Atomic Energy Agency (IAEA) in accordance with bi-lateral safeguards agreement concluded between each party State and the IAEA.

Under a safeguards agreement, a State is obliged to establish a State System of Accounting for and Control of Nuclear Material (SSAC). The main purpose of the SSAC is to provide the State, and the IAEA, with a correct picture of the inventory, and changes therein, of nuclear material within the State's territory. A well developed and operating SSAC is considered as one of the cornerstones of a State's nuclear non-proliferation system.

Nuclear material must be efficiently protected against theft and sabotage. The Convention on the Physical Protection of Nuclear Material constitutes an important framework for international co-operation in the physical protection of nuclear material used for peaceful purposes, while in international transport. The IAEA has developed recommendations for how the physical protection of

nuclear material and facilities should be established. They are published in the series of INFCIRC-documents; the applicable IAEA document (INFCIRC/225/Rev. 4) is well suited for being the basis for national legislation. It should be emphasised that physical protection is an important part of a comprehensive system for preventing proliferation of nuclear weapons.

Other measures must be added and be diversified for obtaining the desired protection. Such measures include IAEA recommendations issued in the INFCIRC-series concerning export/import control of such nuclear items that have been listed in Trigger Lists by the Nuclear Suppliers Group (NSG) and the Zangger Committee. The NSG List includes also so called dual-use items, i.e. equipment that can be used both in non-nuclear activities and for the manufacturing of nuclear weapons.

In the aftermath of the Gulf War, a strengthening of the IAEA Safeguards System was developed in two steps. First, the IAEA Board of Governors' decisions regarding early notification of design information and the use of unannounced and special inspections to verify that a State fulfils the NPT requirements. A second step (in May 1997) was the introduction of the, so called, Additional Protocol to safeguards agreements. According to this, the IAEA will get broader rights of access to sites and information. States accepting the Protocol will provide additional information on nuclear and related activities, and the IAEA will have greater access to activities and locations to detect clandestine nuclear programmes (e.g. by taking samples from soil, water and air within a State's territory).

The need to improve the current IAEA programme of auditing the SSACs and of the safeguards regime as a whole is analysed and discussed in the joint Swedish-Norwegian-Latvian Report on Combating of Illicit Trafficking (SKI Report 00:3, January 2000).

NATIONAL LEGISLATION

The suggestions and recommendations that are made in this Law Concept are based upon the assumption that the State nuclear legislation would meet with applicable international treaties and conventions, such as the NPT and the Convention on Physical Protection of Nuclear Material, as well as on standards and practices recommended by the IAEA, such as the International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources (IAEA Safety Series No.115).

The Law Concept reflects a fundamental part of the overall ILG objective to contribute to the improvement of nuclear legislation, namely to promote the establishment of *a complete nuclear legislative system*, that covers both *nuclear safety* and *nuclear non-proliferation*. Such a system would support the safe operation of nuclear installations and the safe handling of nuclear material and radiation sources, and it would take into consideration requirements of all nuclear related international treaties, agreements and conventions.

The laws, ordinances and regulations in such a complete legislative system should be clear and understandable, so that the application of stipulated rules and requirements, both for the operators/users and the State bodies, is facilitated.

The national legislative system should be based upon certain fundamental principles, which should be reflected as provisions in laws and become "corner stones" of the legislative structure. The most important of these principles are:

- a system of obligatory "Licensing" of nuclear activities by a State Regulatory Body;
- "Sanctions and penalties" for activities that are carried out without a license, intentionally or unintentionally;
- an independent State Regulatory Body in the centre of a "State Control System";
- "Operator's responsibilities" for both non-proliferation and safety, reflected in an approved Operator's System with identified personal and individual responsibilities.

LEGISLATIVE STRUCTURE

The general approach to be applied when establishing the nuclear legislative structure would be either

- to lay out the basic principles and requirements in a "framework law", while detailed requirements and provisions are referred to ordinances and regulations; or
- to include both basic and detailed requirements and provisions in the law.

Both approaches are being used by countries that have established a nuclear legislation.

The main advantage of the first approach is that the law will give an overview of the basic requirements and principles that are of fundamental importance to the legislative system. Detailed rules and requirements, many of which are of a technical nature, would not appear in the law, but would be written into ordinances, regulations and guidelines that are issued by the Government or the Regulatory Body. They can, therefore, be changed more easily, without changing the law. Such changes may be necessary as a result of technical development.

The advantage of the second approach is that the law will give a complete description of the detailed rules and requirements that are to be implemented. This may be of help to the law makers (Parliament) during the law making

process, but would make it more difficult and time consuming to, later on, introduce changes, when so becomes necessary.

The nuclear power industry is a high-tech area and the technological development, including the improvement of safety systems, is a fast and comprehensive process. This means that detailed safety regulations rather soon are out of date and have to be amended or changed.

It should also be observed that in the Western nuclear industry applies a modern safety philosophy, according to which the State authority regulations have the character of requirement specifications. The nuclear industry, i.e. the facility operators, has to establish detailed conditions in instructions and manuals that meet with the authority requirements. This is further discussed below under the ILG Comments to the Law articles, as well as the recommendation that the NIS countries should accede to the modern safety philosophy.

The ILG recommends that the NIS countries implement the internationally established fundamental safety and non-proliferation requirements into their national legislation. This should be done by first to develop a *Basic Nuclear Law*, and then to establish more detailed requirements and regulations in the form of *Ordinances*, which should be based on that Law. The Basic (or Core) Nuclear Law would be a joint responsibility of Parliament and Government, while the Ordinances would be the delegated responsibility of the Government alone. Furthermore, detailed requirements and regulations of a more practical and technical nature would have to be established by the State Nuclear Regulatory Body, i.e. instructions, recommendations, guidelines and manuals aimed at promoting harmonised procedures and standards for the different types of nuclear activities.

In the following, the fundamental requirements that should be included in a Basic Nuclear Law are described in the form of a law text. It should be understood, however, that the proposed text serves only as an illustration of the way in which the requirements can be expressed. Each State must work out its own text, taking into account traditional legislation structure, etc.

1. PURPOSE OF THE LAW

Article 1. Purpose of the Law

The purpose of this law is to achieve and maintain a high level of safety in all nuclear activities and to prevent the proliferation of nuclear weapons as well as the unauthorised use of nuclear material, nuclear items and nuclear waste, including spent nuclear fuel, in accordance with [the State's] commitments under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and its obligations under other international agreements to which [the State] is a party.

A further purpose of this law is to protect humans, animals and the environment against the harmful effects of ionising radiation.

ILG COMMENTS
The Basic Nuclear Law should cover *both* nuclear and radiation safety *and* non-proliferation. This should be clearly spelled out in the beginning of the Law.

The nuclear areas that are referred to as non-proliferation are:
- Nuclear Material Accounting and Control;
- Physical Protection of both nuclear facilities and nuclear material in storage and in transit;
- Export/Import Control of nuclear material and nuclear items;
- Transport of Radioactive Material.

Other nuclear areas to be covered by the law are:
- Nuclear Safety, including Nuclear Reactor Safety;
- Protection against Ionising Radiation (Radiation Safety), including Environment Protection;
- Radioactive Waste Management;
- Liability for Nuclear Damage.

All the nuclear areas listed above should be addressed in the Law, and reference should
be given, if so is found suitable, to separate laws or regulations that cover specific subjects, e.g. Law/Regulations on Radiation Protection, Radioactive Waste Management, and Physical Protection, etc.

It is assumed that the State is a Party to the NPT and this should be clearly reflected in the Law, at the very beginning. The prevention of proliferation, as well as of the unauthorised uses of nuclear material, is a responsibility of the State.

The requirements on non-proliferation shall be met through means of well-functioning nuclear material accounting and control systems and effective physical protection measures at nuclear installations, storages and disposals of

nuclear and radiation sources, as well as during transport of nuclear material, including export and import.

The necessity of maintaining high safety standards and promoting safety culture in all nuclear activities is obvious. These and related activities, which may lead to harmful radiation effects on humans, animals or the environment, require special safety regulations. The need for protection against harmful radiation is essential, and requirements on such protection should be included in any legislation on nuclear activities.

In its contacts with NIS co-operating countries, the ILG has met with a certain astonishment over the inclusion also of animals on the list of subjects to be protected against radiation, which is the case in the Swedish law. That this is a both relevant and reasonable prescription became evident in connection with the emergency precautions that were applied as a consequence of the radioactive fallout in Sweden after the Chernobyl accident in 1986. Domestic animals and livestock had to be prevented from the intake of contaminated water and food. It also became evident that game (such as moose and reindeer) and fish should not be hunted and killed or caught unnecessarily when it was found that the radiation dosage to which they had been exposed exceeded acceptable limits for human consumption.

The law should lay out the basic requirements on procedures and systems for nuclear emergency situations, including measures to be taken, following a nuclear incident or accident.

2. SCOPE OF THE LAW

Article 2. Scope of the Law

This Law concerns Nuclear Activities as defined in Article 4, and the use and transport of Ionising Radiation Sources.

ILG COMMENTS
The Law should cover all types of activities that are related to the use, storage and transport of ionising radiation sources, and the use, storage and transport of nuclear material, including the building, operation and de-commissioning of nuclear (research) reactors, and storage and transport of radioactive waste.

One way of guaranteeing that all relevant activities are included in the Law is to refer to these activities under the Scope of the Law and in the article about terms and definitions.

3. MAIN PRINCIPLES

Article 3. Main Principles of Legislation

Nuclear energy, material and items in [the State] shall be used exclusively for peaceful purposes. Import of nuclear weapons or other nuclear explosives as well as their fabrication including research, possession and detonation in [the State] are prohibited.

The use of nuclear energy must be safe; it shall not cause injury to people and animal, or damage to the environment or property.

Sufficient physical protection measures for protecting nuclear energy against illegal activities, such as sabotage or theft and sales of nuclear material or drawings and know-how and similar, that can be used in the fabrication of nuclear explosives, shall be a prerequisite for the use of nuclear energy, as well as sufficient emergency planning and other arrangements for preventing or reducing nuclear damage from accidents, incidents or abnormal occurrence.

ILG COMMENT
These principles follow from the NPT commitments and should be spelled out in the Law.

4. TERMS AND DEFINITIONS

Article 4. Terms and Definitions

By "Nuclear Activities" is meant:

1) the erection, possession or operation of a nuclear installation;
2) the acquisition, possession, transfer, handling, processing, transport or other dealings with nuclear material, nuclear items or radioactive waste;
3) the import into and export out of [the State] of nuclear material, nuclear items or radioactive waste;
4) the export from [the State] of:
   a) a mineral from which nuclear material is practicably recoverable;
   b) anything made from nuclear material, or a product of which such material
   forms part;
   c) equipment or material that has been specially designed or arranged for
   processing, use or production of nuclear material, to the extent that the
   Government prescribes;

d) nuclear technology and know-how;

5) the grant or transfer to a person abroad of the right to manufacture equipment or material of the kind referred to in item 4c, to the extent prescribed by the Government;
6) the sales, grant, offer for a consideration, borrow, gift or procurement, to a person abroad of an equipment or material referred to in item 4c and is found abroad, to the extent prescribed by the Government.

The provisions of item 5 and 6 also apply to grant, transfer and procurement that takes place abroad by an authority of [the State] or company or person domiciled or permanently residing in this country.

ILG COMMENTS
Apart from the definitions given above, only few definitions should be included in the Law. Technical and descriptive definitions should be given in regulations and standards. Those definitions that are included in the Law should be strictly compatible with those used in international agreements in order to obtain a harmonisation of the nuclear regulations across borders. "Home-made" definitions should thus be avoided.

There might be a need to include other definitions, such as "Radiation Source" (or Ionising Radiation Source), "Radioactive Waste" and "Nuclear Installation". In that case, the definitions given in the Glossary of the IAEA Safety Series No 115 "International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources" (BSS), should be used. For "Nuclear Material" is a definition given in the IAEA document INFCIRC/153 paragraph 112.

5. LICENSING SYSTEM

Article 5.1 Obligation to Apply for a License

Any nuclear activities and activities related to radiation sources are prohibited except those under license (or permit) granted by a State Regulatory Body. Nuclear activities that are performed without a license (or permit) or that are inconsistent with [the State's] commitments under the Treaty on the Non-Proliferation of Nuclear Weapons and related agreements are considered as offences and will attract sanctions or penalties.

The State Regulatory Body may grant an exception from the licensing requirement in cases where licensing is considered unnecessary.

Article 5.2 Validity of the License

The license shall be granted for a fixed term. When the length of the term is considered, particular attention shall be paid to ensuring safety and to the estimated duration of operations. The license shall contain the necessary license conditions as referred to in this Law.

The license conditions may be changed when necessary and the licence renewed or amended, in order

- to ensure the safety of the use of nuclear energy;
- to ensure radioactive waste management;
- to ensure fulfilment of [the State's] obligations under international treaties;
- to prevent the proliferation of nuclear weapons or other nuclear explosives, or
- in case of changed ownership.

Article 5.3 Withdrawal of License

A license can be cancelled by the State Regulatory Body, if conditions or requirements stipulated in the license are, to an essential degree, not fulfilled or adhered to, or when particular reasons with respect to safety and non-proliferation are at hand.

Article 5.4 Appeal Procedures

Dispute in licensing matters related to nuclear safety, safeguards and radiation safety shall be considered by the court in accordance with the established legislation of [the State].

Article 5.5 Building of a Nuclear Installation

License to build a nuclear installation may be granted:

- if plans concerning the nuclear installation, its central systems and components entail sufficient safety and labour protection and the population's safety has otherwise been taken into account appropriately when planning operations;
- if the location site of the nuclear installation is appropriate with respect to the safety of the planned operations and environmental protection has been taken into account appropriately when planning operations;
- if physical protection has been taken into account appropriately when planning operations;
- if a site has been reserved for building a nuclear installation in a town plan or building plan, and the applicant has possession of the site required for the operation of the installation;

- if the methods for arranging nuclear waste management, including the final disposal of nuclear wastes and the decommissioning of the facility, are sufficient and appropriate;
- if the applicant's plans for arranging the nuclear fuel management are sufficient and appropriate;
- if the applicant's arrangements for the implementation of control by the Regulatory Body are sufficient;
- if the applicant has available the necessary expertise;
- if the applicant has sufficient financial prerequisites to implement the project and carry on operations;
- if the applicant is otherwise considered to have the prerequisites to engage in operations safely and in accordance with the obligations of [the State's] international commitments, and if other obligations considered by the Regulatory Body are fulfilled.

Article 5.6 Operation of a Nuclear Installation

The license to operate a nuclear installation may be issued when the State Regulatory Body has convinced itself that the building license conditions are fulfilled, and:

- if the general provisions of this Law are met;
- if the applicant has available sufficient and appropriate methods for accommodating safeguards requirements and for arranging nuclear waste management, including the disposal of nuclear wastes and the decommissioning of the installation;
- if the applicant has available sufficient expertise, including in particular, the competence of the operational staff and the operational organisation of the nuclear installation are appropriate;
- if the applicant has the necessary financial means and is otherwise considered to have the prerequisites to engage in operations safely and in accordance with [the State's] international commitments, including the Vienna Convention on Liability for Nuclear Damage.

The operation of a nuclear installation must not commence before the State Regulatory Body has determined that the installation meets the requirements that are stipulated in the license.

The State Regulatory Body shall, from time to time during the operation of the nuclear installation, control that the operation of the installation meets with the licensing requirements.

ILG COMMENTS
The law should stipulate that licensing by a State Regulatory Body is a requirement for all nuclear activities, and should state the consequences of non-adherence to the licensing requirement in the form of sanctions and penalties.

The license should prescribe the conditions that are necessary for the fulfilment of regulatory requirements and standards.

The requirement of licensing by a State Regulatory Body is the most important and effective measure to control that the nuclear activities are being implemented in accordance with the law. The licensing process gives the State Regulatory Body the means to establish several conditions with respect to safety and safeguards. In practice, the system of licensing means that an operator of a nuclear installation must prove that he, or she, has sufficient operational and technical competence, as well as financial and other resources to manage a nuclear installation or handle radioactive material in a way that ensures maximal safety and safeguards.

The requirement of licensing by a State Regulatory Body makes it easier for that Body to determine whether or not the nuclear activities are legal. Any nuclear activity without a license is illegal.

License (or Permit) requirements and conditions for the use and handling of radioactive sources should be given in a separate law on radiation protection, to which reference should be given in the Basic Nuclear Law.

The decision to build a nuclear power plant is considered as a most important matter for a country, not at least from a political point of view. The decision process is usually slow and it must be based on a thorough, comprehensive and competent investigation work, where the commonweal has to balanced against environmental impacts, safety risks, etc. A similar decision process foregoes also the decision on the operation license.

In this Law Concept has only a few general conditions, of more or less technical nature, for the building and operation of a nuclear power plant been listed in Article 5. These conditions could also be applied for the construction of other types of nuclear facilities, such as fuel fabrication plants. For granting a license, all conditions must be fulfilled as they are stipulated in the NPT, the Convention on Physical Protection, and in IAEA's applicable circulars, including the establishment of an SSAC. Detailed requirements referring to these different areas are found in the other ILG Law Concepts on Physical Protection of Nuclear Materials and on Physical Protection of Radiation Sources.

Other important internationally established requirements concerning nuclear safety are given in the Convention on Nuclear Safety, which are further elaborated with in ILG's Concept on Certain Regulations for Nuclear Safety. It is the task and responsibility of the State Regulatory Body to stipulate all these requirement under the licensing conditions and also see to it that they are fulfilled by the licensee.

6. OPERATOR RESPONSIBILITY

Article 6.1 Operator Responsibility

Any person who operates a nuclear installation is responsible for ensuring that the operation meets, at a minimum, the requirements of this law. For this purpose, the licensee shall establish a system aimed at preventing the proliferation of nuclear weapons or other nuclear explosives, as well as the unauthorised use of nuclear material, nuclear items and nuclear waste. The system shall also aim at preventing failures of installation or equipment, mistakes and unsafe acts, or other circumstances that may lead to accident conditions or radiation damage.

Article 6.2 Accident Investigation

Accidents and incidents concerning nuclear activities and radioactive sources must be investigated for the determination of their causes and for the purpose of preventing reoccurrence.

The State Regulatory Body shall issue directives and instructions for such investigations and for emergency planning with the purpose of minimising consequences of accidents and incidents.

ILG COMMENTS

General

One major licensing condition should be that the nuclear installation operator establishes a system aimed at preventing proliferation or unauthorised use of nuclear material and equipment, and a system for maintaining safety, safeguards and physical protection.

Nuclear legislation, both in the area of safety for nuclear reactors and safety for other types of nuclear installations, requires a clear indication of *personal and individual* responsibility and accountability. A person who operates an installation involving nuclear material and ionising radiation, such as a manager of a reactor plant, is solely responsible for maintaining a high level of safety. The State Regulatory Body, however, holds the responsibility for ensuring adequate legislation, control and inspections.

A nuclear installation operator must, as has been said before, demonstrate to the State Regulatory Body that he is able to properly carry out this responsibility. He must, to that end, have in place an organisation, procedures, instructions and documentation that are appropriate to the safe operation of the installation. The operating staff and other employees must have the required competence and skill. An education and training programme must be maintained in order to ensure that technical competence as well as safety awareness is maintained.

For many years, the international nuclear industry has utilised *quality assurance* programmes to ensure a systematic approach to the safety-related activities within a nuclear installation. Such programmes are designed to go hand in hand with the *internal control* of operation of the plant. The preventive ensuring parts of these programmes are using risk analyses to identify the types of hazardous situations that may arise in the operations.

Prompt and effective procedures for dealing with abnormal operational events are the prerequisites for a well-functioning internal control system. Procedures for reporting and analysis, as well as documentation and information, are important elements of the internal control, as are also prompt and adequate preventive measures. In this context, it should be noted that the inspection authorities of the nuclear energy industry in many countries have yet to develop further detailed requirements on quality assurance and internal control.

Civil Aviation

In the European legislative work for civil aviation (the Joint Aviation Authorities/Joint Aviation Requirements, JAR) legislation is being developed that requires aircraft operators to establish quality assurance programmes and to develop modern internal controls. It is evident that such systems are well suited also for the various activities of the nuclear energy industry; not only for reactor safety, but also for safeguards and physical protection.

The advantages of such quality assurance systems cannot be underestimated, provided that they are properly established. State Regulatory Bodies are normally not in a position to control in detail all nuclear activities, nor do they normally have the personnel resources to do so. The principle of *individual* safety responsibility and the system of internal control that are applied at nuclear installations are, therefore, of decisive importance in supporting and monitoring an individual employee in his or her operational and technical activities and in ensuring that facilities, machines and equipment are of high standards.

Civil aviation has a long experience of incidents and accidents and has learnt the importance of carrying out accident investigations in a professional way. In order to maintain a high safety standard in any operational field, it is necessary to investigate accidents and, not least, incidents, in a fast and competent manner, with the purpose to find out about what happened. These abnormal events can namely show that the safety system is insufficient and that shortcomings in the system have to be corrected, so that a repetition of the event is prevented. In case of serious accidents, the Regulatory Body, or alternatively an independent commission assigned by it, should lead the investigation. Only the latter approach can guarantee an impartial investigation.

For the nuclear industry in particular, it must be emphasised that all activities must be handled by competent staff and be carried out in a skilled and careful manner. Every abnormal event must be taken care of in a professional way and be investigated in order to prevent recurrence.

Another essential aspect of internal control concerns various methods for developing and maintaining proper safety attitudes and motivations among staff towards the safe operation of a nuclear installation. These methods are directly related to the safety culture that is recommended by the IAEA (IAEA Safety Series No. 75, Safety Culture).

The IAEA defines safety culture as follows: "Safety culture is that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding principle, nuclear plant safety issues receive the attention warranted by their significance." The definition, thus, stresses that safety culture comprises characteristics and attitudes of both organisations and individuals.

Among the elements required by an organisation in its promotion of a safety culture are the following:

- clearly formulated safety objectives and policies at all levels;
- a strong, and clearly visible, commitment on the part of management to carry out these objectives;
- a clear distribution of responsibilities, effective work descriptions and adequate resources;
- an independent, internal safety inspection function;
- an inquiring attitude of the individuals in the organisation;
- support for performance improvement, rather than punishment, when mistakes have been made.

In addition to the elements mentioned above, an internal control system should ensure:

- that the relevant laws, ordinances, guidelines, etc. are known,
- the routines for implementation and fulfilment of the relevant legislation,
- the procedures for how to handle deviations if they occur, and for the implementation measures to avoid future deviations,
- procedures for updating the internal control system.

The law should contain requirements on the operator's responsibility and the means and measures with which he should assume that responsibility, i.e. to establish and maintain the facility safety and safeguards systems. These requirements are expressed in Article 6.1 of the law.

Responsible for Deviation

A question to be addressed in this context is who shall be responsible for deviations or violations during operation of a nuclear facility, or in other words, who has the penal or "criminal" liability. The question has relevance in cases where an individual, who has been assigned a defined responsibility of the facility operation, has neglected his duties to supervise or control the operation.

As a general rule, the individual (or individuals) who is carrying the corporate responsibility, or liability, is to be found in the executive management. It is crucial to define whom, in the facility or company organisation, is assigned the power to decide over the operation of the facility. In the case of stock (limited or incorporated) companies, the liability lies with the Board and the executive

management. As a general rule, the Board is responsible for the organisation and administration of the company, while the executive management deals with the day-to-day administration and operation in accordance with instructions and guidelines established by the Board. In general, the management has the responsibility for violations that occur in the daily operation.

In most companies, tasks and responsibilities that primarily lie upon the management are delegated "downwards" in the organisation. A correct delegation means that the penal liability is moved from the management to an individual to whom the task or work has been delegated. In order to implement such a delegation system in an efficient and reliable way, it is necessary that the management has organised the operation of the company in a rational way, with competent staff and instructions, manuals and guidelines. It is, furthermore, necessary that the individual to whom the responsibility has been delegated,

- has a rather independent position in relation to the management,
- is competent for his work,
- has been given sufficient decision authority and economical resources to take necessary measures, and
- has got a clear instruction about the tasks delegated to him.

The overall responsibility of the management does, however, never cease, even if a delegation of responsibilities have been made. Should it be learned by the management that certain delegated tasks have not been carried out, by an individual, in an adequate way, the management can be held liable in a penal sense for the neglect not to have intervened and corrected anomalies or deviations.

Summary

In nuclear operation in particular, is the individual responsibility emphasised. It is important that instruction manuals, procedures and standards are clear and distinct and that they are available to and understood by the staff employees. Each individual given responsibility must be well educated and trained for his task. He must also be made conscious of his responsibility and be motivated for his work and obligations.

The operation of a nuclear facility must be subject to special precision, care and watchfulness. One condition is that high safety standards must be continuously maintained. This requires a high degree of "safety culture" in the entire organisation. Deviations from established standards and instructions must be investigated and corrected without unnecessary delay. If a deviation is caused by negligence, carelessness or clear neglect of instructions, strong measures must be taken in order to avoid a recurrence.

The State Regulatory Body has the duty to impose measures in case of deviations, such as withdrawal of license and, in case of individuals, punishment or separation from duty (e.g. if alcohol was involved).

7. RADIATION SAFETY

Article 7. Radiation Safety

Radiation safety shall be adequate to principles and norms for the protection of health and safety of people from the harmful effects of ionising radiation.

Rules and requirements in the area of radiation protection are given in a separate law.

ILG COMMENTS
With regard to legislation relating to radiation sources, other than nuclear material, there are no internationally binding legal instruments through which States can commit themselves to ensure the control and security of radiation sources and, in particular, to report the loss or theft of such sources to the IAEA and/or international organisations.

The scientific basis for radiation protection standards is found in recommendations made, and periodically reviewed, by the International Commission on Radiological Protection (ICRP), which take account of studies by the United Nations Committee on the Effects of Atomic Radiation (UNSCEAR). The work underlies the "International Basic Safety Standards (BSS) for Protection Against Ionising Radiation and for the Safety of Radiation Sources" by which the International Labour Office (ILO), the World Health Organisation (WHO), the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA), and the IAEA have provided a world-wide basis for harmonised and up-to-date standards. The BSS have been reviewed and revised by those four organisations, together with the Food and Agriculture Organisation (FAO) of the United Nations, and the Pan-American Health Organisation (PAHO). The IAEA Board of Governors approved the revised standards in September 1994. The BSS is regarded as an important instrument for all national legislation in the area of radiation safety and protection.

The BSS are complemented by other standards dealing with particular aspects of radiation protection: occupational protection; protection of the public and the environment; and intervention in case of a nuclear accident or radiological emergency. Many States tailor their national regulatory systems to the general guidance provided by the BSS.

Adoption of the BSS by member States and international organisations establishes a general obligation that activities utilising radioactive material, including nuclear material, are carried out in accordance with the BSS. The BSS reflects that the transport of radiation sources should be performed in accordance with the requirements of the IAEA recommendations for the Safe Transport of Radioactive Material (IAEA Safety Series No.6), which may be made mandatory through applicable international conventions and national legislation.

Requirements of the BSS that are relevant to illicit trafficking are those of notification and authorisation by registration or licensing, as well as those related to the security of radiation sources. The requirement on security establishes that sources shall be kept secure by registrants and licensees so as to prevent theft or damage and to prevent any unauthorised use of such sources. Independent verification by an established national Regulatory Authority is an essential condition of compliance with the BSS requirements. Thus, although the BSS are intended to place requirements on registrants and licensees, who have the primary responsibility for applying them, Governments have the responsibility for their enforcement, generally through a national infrastructure that includes the necessary Regulatory Authority.

We recommend that the requirements on radiation protection and safety of radiation sources, including transport of such sources, be stipulated in a separate law, to which reference should be given in the Law. The requirements should be those established in the IAEA document Safety Series No 115 "International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources" (BSS).

With respect to radiation safety, i.e. health and safety aspects, of transport of radioactive material, including nuclear material, the requirements of the IAEA document "Regulations for the Safe Transport of Radioactive Material", published as IAEA Safety Standards in Safety Series No. 6, 1985 edition (as amended 1990) should be made compulsory in the law.

8. RADIOACTIVE WASTE

Article 8. Radioactive Waste

Radioactive waste management shall be based on the requirement that all radioactive waste shall be processed, packed and disposed of in a way that assures an acceptable level of radiation protection of population, animals and the environment during the entire time period during which the waste can be of potential danger.

ILG COMMENT
It is suggested that rules and requirements in the area of radioactive waste management be given in a separate law or in ordinances or regulations, to which reference should be given in the Law.

9. PHYSICAL PROTECTION

Article 9. Physical Protection

Physical protection of nuclear installations, nuclear material and nuclear items shall be in accordance with international treaties and conventions of which the State is a party.

The State Regulatory Body shall issue the necessary directives and instructions in the area of physical protection.

ILG COMMENT
Physical protection against the theft or unauthorised diversion of nuclear material and against sabotage of nuclear facilities by individuals or groups is a matter of both national and international concern. Two instruments on physical protection, which have relevance to the problem of illicit trafficking, have been established:

- the Convention on the Physical Protection of Nuclear Material (INFCIRC/274/Rev. 3); and
- the IAEA "Recommendations on the Physical Protection of Nuclear Material and Nuclear Facilities" (INFCIRC/225/Rev. 4), which were prepared by a panel of experts convened by the IAEA Director General and first published in 1972.

The Convention, which entered into force in 1987, defines levels of physical protection to be applied to nuclear material used for peaceful purposes while in international transport. States that are parties to the Convention are obliged to:

- make certain acts (e.g. theft of nuclear material, or threat to use nuclear material to cause harm) punishable offences under national law;
- extradite or prosecute persons alleged to have committed such acts; and
- provide assistance to other parties to the Convention in the event of an incident.

However, there is no obligation on the parties to the Convention to ensure the protection of nuclear material used for peaceful purposes while in domestic use, storage and transport. Furthermore, the Convention does not apply to:

a) nuclear material used for military purposes; or
b) other radioactive sources.

INFCIRC/225/Rev. 4 provides guidance and recommendations for the physical protection of nuclear material in use, storage and transport, whether domestic or international and whether peaceful or military, and contains provisions related to the sabotage of facilities. Most industrial and developing countries are guided by these recommendations in the establishment and operation of their physical protection systems.

In order to assure that adequate physical protection is provided, State systems must establish conditions which would:

a) minimise the possibilities of unauthorised removal of nuclear material or of sabotage;
b) provide rapid and comprehensive measures to locate and recover missing nuclear material; and
c) minimise the effects of sabotage.

10. NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL

Article 10. Nuclear Material Accountancy and Control

Nuclear material is subject to State accountancy and control within the framework of the State system for accountancy and control of nuclear material for the determination of location, movement and losses, as well as about their export and import.

The State Regulatory Body shall issue the necessary directives and instructions in the area of accountancy and control of nuclear material.

ILG COMMENT

IAEA Safeguards Agreements according to INFCIRC/153 Corrected

Safeguards are technical means of verifying compliance with legal obligations relevant to the peaceful uses of nuclear energy. Their objectives are political, that is, to assure the international community of the peaceful nature of safeguarded nuclear activity and to deter the diversion or misuse of safeguarded materials or facilities through the risk of early detection.

The application of the IAEA's safeguards is primarily based on information provided by the State of the nuclear material or equipment that should be subject to safeguards. The IAEA has a right to undertake special inspections to ensure that all nuclear material that is subject to safeguards are in fact safeguarded and for that purpose to obtain and have access to additional information and locations to guard against possible undeclared activities.

Safeguards cannot by themselves prevent a violation by a State of its obligations not to divert nuclear material from peaceful purposes, and cannot assess the future intentions of States. The system is designed as an early warning mechanism to initiate the necessary procedures for remedial action in case of violation. Under the IAEA Statute, non-compliance with safeguards obligations is to be reported to the United Nations for appropriate action.

Safeguards agreements set out the parties' basic rights and obligations, relevant to the application of safeguards. Detailed implementation procedures are found in a technical set of subsidiary arrangements to the agreements, which are tailored to the specific requirements of safeguarded facilities.

Subsidiary arrangements are considered confidential, and are accessible only to the IAEA Secretariat and the State Party.

A fundamental requirement in an NPT/INFCIRC/153 safeguards agreement with the IAEA is the establishment of State System of Accounting and Control (SSAC) . A strong SSAC is the primary deterrent to theft and illicit trafficking of nuclear material. Material accounting and control is designed to assure that the location and amount of all nuclear material in a State is known and confirmed through periodic inventory taking.

In Article 1 of an INFCIRC/153 agreement between a non-nuclear-weapon State and the IAEA, the State undertakes to accept safeguards on all source and special fissionable material in all peaceful nuclear activities within its territory, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.

Article 2 of an INFCIRC/153 safeguards agreement provides for IAEA's right and obligation to ensure that safeguards will be applied.

IAEA INFCIRC/540 ("The Additional Protocol")
In May 1997, the IAEA Board of Governors adopted a model protocol to comprehensive safeguards agreements that grants IAEA broader rights of access to sites and information. States accepting the Protocol will provide additional information on nuclear and related activities. Moreover, the IAEA will have greater access to activities and locations to detect clandestine nuclear programmes.

The Protocol is the direct outcome of a two-part process for achieving a strengthened and more cost-effective safeguards system. Part-1, approved by the IAEA Board in 1995, includes:

- Environmental sampling at locations to which the IAEA has access for design information verification or inspections. It is considered a powerful tool for detecting the presence of undeclared activities at or near declared nuclear sites;
- "No-notice" inspections at the strategic points of all nuclear facilities;
- IAEA's right of access to records of activities carried out before a safeguards agreement enters into force, to help ensure that all material has been declared;
- Use of advanced technologies that can operate unattended to transmit information to IAEA headquarters.

Part-2 measures incorporated in the Protocol include:

- An "expanded declaration" to provide information on activities related to the nuclear fuel cycle. This will help give the IAEA a better understanding of a State's nuclear programme, its future directions, and the kinds of nuclear activities the programme's infrastructure could support;

- Access to any place on a nuclear facility site, to any decommissioned facility, and to any other location where nuclear material is present; to nuclear-related manufacturing and other locations identified by the State in its expanded declaration; and to other locations identified by the IAEA;
- The use of environmental sampling and other measures at these locations.

European Union (EU)/Euratom Safeguards Agreements
Is not reported here, since the legislation is focused on the NIS and Russia. However, the Euratom safeguards, as carried out in EU Member States, is based on the Treaty on Atomic Energy, including Regulation No. 3276.

11. EXPORT/IMPORT CONTROL

Article 11 State System for Export/Import Control

The State Regulatory Body shall establish and maintain a control system in order to ensure the fulfilment of the requirements of the Treaty on the Non-Proliferation of Nuclear Weapons. The requirements of the control system shall include, both the responsibility of any export or import licensee to verify the fulfilment of licensing conditions, and the responsibility of the State Regulatory Body to ensure that the licensee has the competence and the possibilities for fulfilment, and if necessary, to perform relevant audits and inspections.

The Government issues detailed directives about the control system.

ILG COMMENT
A State that is a party to the NPT cannot evade the obligations of controlling that the NPT requirements are properly fulfilled. This means that the State must establish and maintain a control system for export/import control. It is necessary in such a system, that the customs authority is taking active part. Also the police authority could be involved. The overall and co-ordinating responsibility stays, however, with the Government and the State Regulatory Body.

NPT Requirements
The basis for all international regimes for nuclear export control is the NPT. In accordance with Article III.2 of the NPT:

"Each State party to the Treaty undertakes not to provide:
(a) source or special fissionable material, or
(b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material,
to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this article".

The Zangger Committee

The NPT does not elaborate on the meaning of EDP. For this reason, fifteen States formed a group, in 1971, called the NPT Exporters Committee for the purpose of interpreting the meaning, or intention, of Article III.2.b, i.e. to clarify what should be considered as "equipment or material especially designed etc.". This group later became known as the "Zangger Committee" (ZC), named after its first chairman.

The ZC members agree on Memoranda and a Trigger List of items that are considered as Article III.2.b items. The list is called Trigger List, because the export of such items "triggers" the safeguards requirement. It is made public through the IAEA as document INFCIRC/209, as amended. Other than this publishing support, there is no IAEA involvement in the functions of the ZC. The Committee member States are exporters, or potential exporters, of nuclear materials or products. They are under the obligation to observe and follow the Memoranda agreed by the Committee, including the Trigger List. The obligations are, however, not legally binding.

The Nuclear Suppliers Group

Following India's nuclear test explosion in 1974, the need for control supplementary to that provided by the Zangger Committee Trigger List was experienced. In 1975, seven States met in London to exchange views on how the nuclear export control system could be strengthened. This initiative was first known under the name "the London Group", but became later the "Nuclear Suppliers Group" (NSG). In parallel with the ZC, an NSG Trigger List was established. The List is very similar to the ZC Trigger List and both parties strive for the harmonisation of the two Lists, to the extent possible, in view of the different mandates.

NSG development activities made a pause until the disclosure of Iraq's nuclear weapons programme. In 1992, the NSG introduced "Dual-Use Items" and established a Dual-Use Items List, accompanied by Separate Guidelines.

The NSG has two set of Guidelines:

- Part 1 Guidelines (including the Trigger List) for so called "Dedicated Use Items", i.e. source and special fissionable material and items especially designed or prepared for the processing, use or production of special fissionable material (so called EDP items); and
- Part 2 Guidelines for Dual-Use Items, which are items or products that are not EDP, but that can be used for both nuclear and non-nuclear purposes.

Part 1 Guidelines require the recipient State to provide evidence that the material will not be used for the development of nuclear devices. The requirement applies also to the transfer of technology. Furthermore, the recipient State must conclude a full-scope safeguards agreement with the IAEA. In common with ZC practice, the NSG member States notify the IAEA Director General about their intention to abide by the Guidelines.

The NSG Guidelines and Trigger List are published by the IAEA in document INFCIRC/254, as amended. As with the Zangger Committee, the IAEA has no other involvement in the NSG.

12. STATE REGULATORY BODY

Article 12.1 State Regulatory Body

ILG COMMENT
In this article shall be identified the State Regulatory Body or Bodies for nuclear activities in the areas of nuclear safety, radiation safety, and nuclear non-proliferation and the scope and objectives of the Body.

Article 12.2 Duties of the State Regulatory Body

The duties of the State Regulatory Body are:

- to control the implementation and fulfilment of national laws and international treaties and conventions in the nuclear area, of which the State is a party;
- to draft, approve and issue rules, requirements, directives and instructions in the areas of nuclear non-proliferation and nuclear and radiation safety;
- to establish and monitor the State system for control and inspection of nuclear activities and the use and handling of radioactive sources;
- to establish and monitor emergency plans that cover activities to be carried out in the event of a radiological emergency.

ILG COMMENTS
There should be a responsible and competent State authority, and the structure, power and independence of that authority should be stated in the Law, in particular with respect to the authority's function as a State Regulatory Body. The independence should be both vis-à-vis operators and State authorities that may have the direct management authority for facilities.

There could be more than one authority, as long as the respective responsibilities are clearly delineated.

It is of essential importance that the State Regulatory Body has the competence to efficiently supervise the operation of nuclear facilities and to deal with all the matters concerning safety and safeguards that are controlled by laws and regulations. The competence of the State Regulatory Body must be of the same standard as that of the industry. This is a prerequisite for obtaining a high safety standard and also for an effective and fruitful co-operation between the authority and the facilities. Only in this way can the risks for abnormal safety or safeguards incidents be kept at a minimum.

13. STATE CONTROL SYSTEM

Article 13.1 Responsibility of Regulatory Body

The State Regulatory Body shall assure itself:

- that a licensee that is operating a nuclear installation has in place a satisfactory system aimed at preventing the proliferation of nuclear weapons or other nuclear explosives, as well as the unauthorised use of nuclear material, nuclear items and nuclear waste;
- that the licensee has established a system for quality assurance with the purpose to ensure that the operation of the nuclear installation is done in accordance with established rules and procedures;
- that the quality assurance system must include procedures for the implementation of prompt actions in case of abnormal deviations in the operation of the installation, and for preventing the re-occurrence of such deviations, and that the quality assurance system must be described in relevant documents and must be approved by the State Regulatory Body;
- that responsible personnel maintains a high level of relevant competence;
- that the operation is conducted in conformity with an effective safety culture;
- that the safety responsibility among operating personnel is clearly perceived; and
- that the licensee's internal control is being maintained and being subject to continued updating and improvement.

Article 13.2 General Supervisory Rights

The State Regulatory Body shall be entitled, in order to carry out the supervision required by this Law, and by the provisions issued hereunder and by the State's commitments under international treaties in the field of nuclear energy, to

- inspection and control of nuclear activities and for this purpose have access to any place and person where such activities are being carried out, as well as to carry out measurements required by the supervision, take and receive samples and install equipment necessary for the supervision;
- obligate anyone carrying out the nuclear activities to submit reports in the prescribed form, as well as other necessary information and notifications, and to keep materials and operations accounting in the prescribed forms and to inspect these accounts.

What is prescribed above shall also apply, to such extent as required by control referred to in the State's commitments in international treaties and agreements in the field of nuclear energy, to such persons approved by

the State Regulatory Body as in the presence of a representative of that Body carry out supervision referred to in such treaties.

ILGCOMMENTS
A fundamental condition for a State Regulatory Body should be the provision of instructions and guidelines for the inspection and control function. These instructions should include the mandate and area of responsibility, including the right to exercise that mandate and the means of enforcement, such as right of entry, arrest, search, seizure.

The State Regulatory Body must ensure the existence of an organisational and administrative system for the purpose of maintaining a high level of safety and operational reliability, physical protection, safeguards and radiation protection.

A major objective for the national nuclear control system must be an efficient and appropriate control and supervision of both installations and individuals, aiming at a strict and complete implementation of State laws and regulations and of other requirements that are stipulated as licensing conditions. To meet that objective in an effective way, modern control procedures and routines should be used. This would include the establishment of a kind of teamwork-interaction between, on one side, the State Regulatory Body's control activities and, on the other side, the quality control and quality assurance established and operated by the installations.

One can identify two major areas for the State Regulatory Body control, i.e.
- the System Entry Control, and
- the Continuous Surveillance.

The System Entry Control comprises the licensing process, and the way in which that is carried out will lay the ground for the future implementation of control and surveillance measures. Before a license is granted, the applicant must demonstrate to the State Regulatory Body that he, or she, is in possession of the necessary qualifications for fulfilling all requirements stipulated by the Body on the basis of laws and regulations, i.e. qualifications with respect to financing, organisation, personnel, etc. It is then the task of the State Regulatory Body to judge, not only those qualifications per se, but also the Applicant's motivation and attitude with respect to the safe and reliable operation of the nuclear installation and his or her capacity and capability to ensure both a high safety culture and an efficient non-proliferation regime.

The emphasis of the control through Continuous Surveillance should be put on the installation system and process, i.e. the monitoring of the continuous fulfilment (or not) by the installation of the licensing conditions in all its parts and details. Furthermore, the Continuous Surveillance should include the study and analysis of the applicability and suitability of standards, procedures and routines, and how and to what extent they are used in the processes and in the handling of radioactive material. It should also be observed how experience

from quality assurance and internal quality control is accumulated and used, and how the management's responsibility is exercised.

With respect to the non-proliferation measures, the emphasis of the Continuous Surveillance should be laid on a thorough auditing of the procedures for handling and accountancy of the nuclear material at the installations, and of the physical protection of nuclear material both at the installations and in transit. In addition to the continuously implemented control routines, the concept of random spot-check inspections should be used.

As a general principle, the controlling authority should not be encouraged to prescribe to the operators *how* the different safety and non-proliferation measures should be implemented and carried out in detail; this should be left to the operators themselves. The control authority should *advise, clarify and approve* of measures that are put forward by the operators.

The State Regulatory Body in its inspection of nuclear facilities should as far as possible, apply modern supervision technique. Such a technique is so called Theme Inspections, at which each inspection occasion concentrates on a particular area, e.g. the internal control or the system for reporting of abnormal events. Regular inspections should be carried out in accordance with the description given in the Convention of Nuclear Safety. Finally, the inspection scheme should also include Spot Checks.

14. SANCTIONS

Article 14.1 Nuclear Energy Offences

Any such person who intentionally or inadvertently uses nuclear material or waste in his possession, or acts, when using nuclear energy, in some other way so that his action is apt to cause danger to the life, health or property of another person or the environment, shall be sentenced for a nuclear energy offence to imprisonment, for a maximum of [ten] years.

Any person guilty of a premeditate offence in such a way that this action may present a serious hazard to the life, health or property of another person or to the environment, shall be sentenced for nuclear energy felony to imprisonment for a fixed period, for a minimum of [four] years.

If an offence is such as is apt to cause only minor hazard or is insignificant when taking other considerations relating to the offence into account, the offender shall be sentenced for a minor nuclear energy offence to a fine, or to imprisonment for a maximum of [two] years.

An attempt at a premeditate offence referred to in this law is subject to punishment.

Article 14.2 Offence Involving a Nuclear Weapon or Other Nuclear Explosives Device

Any person intentionally importing, fabricating including research, keeping in his possession or detonating a nuclear weapon or other nuclear explosive, shall be sentenced for a nuclear explosive offence to imprisonment for a maximum of lifetime and a minimum of [ten] years.

An attempt at such an offence is subject to punishment.

Anyone who, in order to commit an offence referred to in this article, procures nuclear material or procures or manufactures explosive material, any component or device needed to explode a nuclear explosive or a formula or drawing needed in the fabrication of a nuclear explosive device, shall be sentenced for the preparation of a nuclear explosive device to imprisonment, for a maximum of lifetime and a minimum of [four] years.

Any such person who inadvertently commits an offence referred to in this article shall be sentenced for an inadvertent nuclear explosive offence to imprisonment for a maximum of [ten] years.

Article 14.3 Threatening with a Nuclear Explosive Device or a Nuclear Energy Offence

Any person threatening to explode a nuclear device, or threatening to use nuclear material or nuclear waste in his possession, or acting when using nuclear energy in some other way so that there is justified cause to consider the life, health or property of any person or the environment to be endangered, shall be sentenced to imprisonment, for a maximum of [ten] years, for threatening with a nuclear explosive device or a nuclear energy offence.

ILG COMMENTS

Punishment

A special non-proliferation problem arose after the collapse of the Soviet Union. In several of the new states, factories were closed which belonged to the nuclear weapons programme. Many highly qualified technicians and scientists were out of work. The same thing happened in Russia, when the nuclear weapons programme was reduced. These experts are in demand wherever illegal weapons activities are planned.

As preventive measures the non-proliferation legislation must contain sentences up to lifetime imprisonment for criminal activities involving illegal manufacturing

of nuclear weapons. This should serve as a deterrent for many of the experts in question.

In general it must be emphasised that, cases of smuggling or illicit trafficking that involve nuclear weapons, or which can lead to manufacturing of such weapons as a consequence of theft and smuggling, must be considered as serious crimes and criminal acts against humanity. In those cases, the penalty rate must be considerable and low or modest rates cannot be justified.

In cases where the criminal is directly involved in the illegal manufacturing or handling of nuclear weapons, the State should clearly indicate its reaction and position by stipulating a punishment of life imprisonment in combination with heavy fines. This could serve as a credible deterrent, which, however, might not prevent extreme political terrorists from criminal activities.

When the illicit trafficking act is a link in an organised terrorist plan to manufacture nuclear weapons, it is probable that an international crime organisation with economical assets is involved. In that case, the penal code should include claims on confiscation of economic funds and property.

Fast Proceedings

Whenever illicit trafficking can be suspected, it is normally the customs or the police that apprehends the suspect. It is of importance that the prosecutor is called in as soon as possible. If reasons are at hand, the prosecutor has to request at court that the suspect is arrested. He must then, as soon as possible, take proceedings against the arrested individual. Without delay, the court must then try the case and bring in a verdict. In extensive cases, the verdict might be delayed; the suspect will, however, remain in arrest.

Under all circumstances, it is important that the suspect is getting a fair trial. Already at the seizure, the suspect has the right to legal assistance. Detailed rules about the rights of an individual that is deprived of his liberty are given in the Convention on Human Rights and in directives from the European Union (EU). In Sweden, the Parliament has established a special authority (the Justice Ombudsman, JO) with the task to see to it that prosecutors and courts are adhering to the applicable rules and regulations.

Investigation Commission

One of the recommendations given in the Report on Combating of Illicit Trafficking (SKI Report 00:3) is to establish an International Investigation Commission for investigation, across borders, of serious cases of illicit trafficking. This should, in particular, be done when it concerns nuclear material, nuclear items, technology or expertise that can be used for manufacturing of nuclear weapons. In order to effectively investigate such crimes, large resources are needed. A commission can be a common platform for co-operation between national and international authorities, with are concerned with the crime.

When States co-operate, necessary resources in the form of expertise and laboratories can be shared between them, in the common interest of international security. A State in which the crime is detected and that, therefore, has to lead the investigation, may not have the resources needed. It can then, via the Investigation Commission, get access to the assistance and resources in another State.

As said before, illicit trafficking involving the manufacturing of nuclear weapons is a serious crime against humanity. It is, therefore necessary that all competent resources in a State be jointly utilised in the efforts to combat such a crime. Authorities and nuclear power enterprises, as well as customs, police, armed forces and other organisations, must put aside prestige and struggle for power, and concentrate on a common goal in a positive spirit of co-operation. The platform for that co-operation is an investigation commission.

14. LIABILITY FOR NUCLEAR DAMAGE

Article 14 Compensation for Nuclear Damage

Compensation to person who suffers damage caused by nuclear or radiation accident shall be determined in accordance with the Vienna Convention on Civil Liability for Nuclear Damage. The text of the Convention shall be translated into the national language of the State.

ILG COMMENT
It is assumed that [the State] has ratified (or is in the process of ratifying) the Vienna Convention on Civil Liability for Nuclear Damage of 21 May 1963. We, therefore, suggest that this is referred to in the Law.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG MODEL CONCEPT

OF A

STATE PHYSICAL PROTECTION

SYSTEM

Note:
This Model State Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: September 1996]

PURPOSE

1. This paper describes the components to be included in a State System for Physical Protection and the different steps towards the completion of such a system. It is intended to be used as a guide in the process of establishing a concept of a national system in a specific State.

2. It is assumed that the work to establish a State Concept on physical protection is done by the State itself, under the co-ordination of a body (ministry, authority, committee), assigned by the Government.

3. The responsible body might call for advisory assistance from experts, which could be provided on a bilateral basis within the framework of a "Co-ordinated Technical Support Plan" (CTSP), which is established by the International Atomic Energy Agency (IAEA). The IAEA is also offering assistance through the International Physical Protection Advisory Service (IPPAS). With respect to legislation, the ILG could be consulted.

4. The knowledge and information needed for working out a State System for physical protection must be collected and discussed with several concerned parties at State ministries and authorities, institutions, organisations and facilities. Studies would have to be carried out at actual locations.

INTRODUCTION

1. The objectives of a State System for Physical Protection are to prevent:
   - theft or unauthorised diversion of nuclear material, and
   - sabotage of nuclear facilities by individuals or groups.

   Physical protection measures and procedures would, thus, serve the safety of humans and environment by promoting nuclear/radiation safety and non-proliferation, and also by combating illicit trafficking. The measures are additional to, and not a substitute for, other measures established for safety purposes or for the purpose of nuclear non-proliferation.

2. The importance for any State with nuclear installations (facilities) and nuclear activities of establishing a national, or State, system for physical protection, that meets with international standards, is emphasised in a statement given in the Preface to the IAEA document INFCIRC/225 by the Director General:

"Although responsibility for establishing and operating a comprehensive physical protection system for nuclear materials and facilities within a State rests entirely with the Government of that State, it is not a matter of indifference to other States whether and to what extent that responsibility is fulfilled. Physical protection has therefore become a matter of international concern and co-operation."

3. The recommended approach and guidelines presented in this paper are based upon the assumption that the State is a party to:
   - the Treaty on Non-Proliferation of Nuclear Weapons (NPT) and has signed, or intends to sign, a safeguards agreement with the IAEA according to INFCIRC/153;
   - the Convention on the Physical Protection of Nuclear Material, (IAEA INFCIRC/274/Rev. 3) that entered into force on 1987-02-08, or, that it intends to become such a party and that it, therefore, wants to meet the obligations of the Convention.

4. Furthermore, the recommendations given in the IAEA document INFCIRC/225/Rev. 4 is applied, i.e. "Recommendations on the Physical Protection of Nuclear Material and Nuclear Facilities". Those recommendations reflect a broad consensus among the IAEA Member States and concern the requirements, which should be met by a State's Physical Protection System.

5. Finally, experience from the Swedish System for Physical Protection has been taken into account, including experience by staff and consultants of the Swedish Nuclear Power Inspectorate (SKI) from physical protection support activities in Lithuania, Belarus and Ukraine.

STATE CONCEPT COMPONENTS

1. The State System for Physical Protection is an organised set of administrative and technical measures. These measures concern the physical protection of nuclear material in use, in transit and in storage, and of nuclear installations. The State System should describe and specify the measures.

2. The State System for Physical Protection should be based on a number of components, which, during the initial phase of the establishment of a new or improved System, have to be analysed and elaborated with. This process of analysis and elaboration of the components is here referred to as the establishment of a State Concept for Physical Protection.

3. The components to be dealt with in a State Concept are:
   - Legislation and regulations;
   - Nuclear installations and activities in the State;

- Threat assessment;
- Emergency response capabilities of the State (armed forces, police, fire brigade, transport systems, communication systems, personnel resources including training);
- State System objectives and elements, including the State Regulatory Body and its organisational structure, responsibility, independence and competence, and the State's System of Accounting for and Control of Nuclear Material (SSAC).

LEGISLATION

1. The Basic Nuclear Law of the State should stipulate that the physical protection of nuclear material in domestic use, storage and transport in the State should be done in accordance with the Convention on the Physical Protection of Nuclear Material (IAEA INFCIRC/274/Rev. 3), i.e. the requirements on physical protection as stipulated in the Convention shall be adhered to and implemented.

2. The Convention requirements could be included in the Basic Nuclear Law, but preferably, they should be given in a separate law on physical protection, or in ordinances and regulations.

3. The Convention requirements apply to nuclear material used for peaceful purposes while in:
   - international nuclear transport, and
   - domestic use, storage and transport.

4. For nuclear installations (facilities) using nuclear material, like nuclear power or research reactors, requirements on physical protection referring to facility design (layout) are not specifically given in the Convention. Such requirements should, however, also be stipulated in law/ordinances/regulations and be based on the recommendations given in IAEA INFCIRC/225/Rev. 4.

5. There are Convention requirements referring to nuclear material categories (Annex II of the Convention): The nuclear material should, for the purpose of physical protection, be categorised in 3 categories: I, II and III, based on type and quantity.

   Annex I of the Convention specifies "levels of physical protection" for the different material categories.

6. There are also requirements referring to "punishable offences". Among "activities" that shall be made punishable offences are (Article 7 of the Convention):

- Unlawful receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material that can cause death, serious injury or damage to property;
- Theft or robbery of nuclear material;
- A threat to use nuclear material to cause death or serious injury or property damage.

The offences shall be made punishable by appropriate penalties.

7. Several Convention requirements concern undertakings by a State party to the Convention, related to reporting and communications with other States and with the IAEA on matters concerning international transports and in cases of unlawful events (e.g. theft, robbery or threat).

8. The Basic Nuclear Law, or the Law on Physical Protection, should identify the State Regulatory Body and the responsibility and authority of that body with respect to the implementation of the State Physical Protection System. If there are more than one State body or authority involved, arrangements should be imposed for overall co-ordination.

The objectives and elements of the State System are further discussed in chapter "State System Objectives and Elements" below.

NUCLEAR INSTALLATIONS AND ACTIVITIES

1. For all the installations and activities involving nuclear material in the State, relevant (technical and administrative) information and data should be compiled and recorded, to the extent necessary for getting an overview with respect to the requirements on physical protection measures and the interrelation between the different elements that will make up the State System.

2. The information should include:

a) for nuclear installations:

- types and quantities of nuclear material for the purpose of categorisation;
- documents, including technical drawings, identifying safety sensitive equipment, systems or devices, plant location and accesses, plant safety design and features;
- operation procedures and routines, communication systems;
- organisational structure and identification of staff functions and responsibilities.

b) for nuclear activities:

A survey/study of all types of nuclear activities (outside installations), that involve the handling of nuclear material, i.e.

- types and typical frequencies of transports of nuclear material within the State and in and out of the State;
- transport equipment used;
- procedures for the transport of nuclear material, including reporting and communication;
- typical transport routes for different transportation means;
- border exit points.

THREAT ASSESSMENT

1. An assessment of the threat of unauthorised removal (theft) of nuclear material and of sabotage is an essential element of the Physical Protection Concept. The threat assessment should result in a Threat Scenario for the State that should be the basis for the specific threat scenarios that have to be established for each facility and each type of nuclear activity.

2. The basis for the threat scenario is the concern that the possibility exists that theft of plutonium, highly enriched uranium or uranium-233 could lead to the construction of nuclear explosive devices by technically competent groups. The theft of these materials could lead to their use as radiological contaminants. An act of sabotage against a nuclear facility or against a shipment of nuclear material could create a radiological hazard to the public.

3. Fundamental factors to be considered for the formulation of the State threat scenario are of political and social nature, such as:
   - political situation in the State and in neighbour States;
   - the risk for harmful and illegal actions by criminal gangs and individuals.

   The scenario should be worked out in consultation with relevant staff from authorities, military forces and police.

4. For the specific threat scenarios for facilities or shipments, consideration must be given to assumed behaviours of adversaries, their technical knowledge and possession of weapons, explosives and equipment.

   Radiological hazards are strongly dependent on the threat to be considered, on the design of the facility or package and on its safety features. Consequently, a plant-specific or package design assessment of the potential for sabotage and associated radiological consequences should be made in close consultation between safety and physical protection specialists.

For facilities, such as power reactor plants, safety specialists should evaluate the consequences of malevolent acts to identify equipment, systems and devices, the failure of which could directly or indirectly endanger the public health and safety by exposure to radiation.

The potential for sabotage for different types of nuclear facilities is described in paragraph 4.3.1 of the document INFCIRC/225/Rev.3.

5. It should be kept in mind that factors affecting the threat scenario can change with time. The State should therefore continuously review the threat, and evaluate the implications of any changes for the levels and methods of the physical protection.

EMERGENCY RESPONSE CAPABILITIES

1. The emergency response capabilities, both locally and on a regional or State level, play an essential role in the attainment of the protection goal which is used as design basis for the Physical Protection System. It is therefore important that the State Concept includes a study with description and analysis of the existing resources to be used for the countering of criminal and harmful actions, so that necessary improvements, modernisation and replacements can be implemented as necessary. The means and capabilities to respond to criminal acts against nuclear facilities and transports, be it theft or sabotage, are essential for the implementation of physical protection measures and procedures.

2. An effective system for physical protection requires a designed mixture of facility or package design, hardware (in the form of security devices) and procedures. The procedures include both duties of guards and other organisations, such as customs, police, fire brigades, anti-terrorist forces and military forces. The communication links with and between these organisations are also important.

3. Other factors to be considered in the analysis of the emergency response capabilities are geographical location and communication routes (road, rail, ship and plane), as well as the equipment that is available to the concerned organisations.

It is also essential to know and analyse the time factor relevant to response or counter actions. In this context, the routines and practice with respect to training and emergency exercises are to be considered.

STATE SYSTEM OBJECTIVES AND ELEMENTS

1. For the implementation of the physical protection measures and procedures, that are stipulated in law, ordinances or regulations, a State System for Physical Protection must be established.

2. The objectives of the State System are:

   a) To establish conditions, through administrative and technical measures, which would minimise the possibilities for theft of nuclear material or for sabotage.

   b) To provide information and technical assistance that will help to locate and recover missing nuclear material and to minimise the effects of sabotage.

3. Two principles should be applied in meeting the objectives:

   a) Limiting access to a minimum number of individuals; this could be accomplished by the designation of protected areas, inner areas and vital areas, taking into account the plant safety design, the location and the threat circumstances;

   b) Predetermination of the trustworthiness of individuals that are regularly granted access.

4. The State Concept should identify the Regulatory Body responsible for the administration and control of the Physical Protection implementation and maintenance.

   It should also confirm the responsibility of the Regulatory Body to issue regulations for physical protection of nuclear facilities and material, and the function as licensee for nuclear activities. The licensing conditions should include the requirements on physical protection.

   Another responsibility of the Regulatory Body to be identified is the power to execute sanctions in accordance with the law. Furthermore, the Regulatory Body might serve as the State's contact point to foreign countries and to the IAEA in matters related to physical protection.

5. The State Concept should also identify who is responsible for the implementation of physical protection measures and procedures.

   In harmony with modern principles applied in the nuclear safety area, the responsibility should be assigned to the facility operator or the person or organisation that performs the nuclear activity, like the shipper of nuclear material. The role of the Regulatory Body would then be to prescribe the requirements and to control that the requirements are fulfilled. This should be done by means of a control system, based on periodic review

of the licensed activities at inspections by State authorised inspectors.

6. In line with the recommendations of INFCIRC/225/Rev.3, the State System should consider the implementation of quality assurance programmes at the nuclear facilities and for transportation of nuclear material. Such programmes should include periodic testing of detection, alarm and communication systems and periodic audits of security procedures. The programmes should also include exercises to test the training and readiness of escorts, guards and off-site response forces.

7. The State Concept should also recognise the State System of Accounting for and Control o Nuclear Material (the SSAC) as a necessary component in the chain of elements that would make up the State System for Physical Protection.

   The SSAC would be the tool for obtaining information on location, movements and quantities of nuclear material, and it would also be used for communicating data to foreign countries and the IAEA. Certain supplementary measures might be needed for the (confident) handling of information and data that are specific for physical protection with respect to missing material.

8. The State Concept should specify the desired "state of the art" of the physical protection hardware and systems that should be aimed at in the implementation of the State System.

   Policy related questions should also be addressed and clarified, e.g. to what extent should physical protection responsibilities be assigned to the armed forces; should guards routinely carry weapons; distribution of responsibilities and co-ordination and communication between concerned parties.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

PHYSICAL PROTECTION OF NUCLEAR MATERIAL

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: December 1996]

IUG
INTERNATIONAL GROUP OF LEGAL EXPERTS

IUG LAW CONCEPT

PHYSICAL PROTECTION OF NUCLEAR MATERIAL

This Law Concept is adapted for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the IUG in an Expert Consultation Programme in the field of nuclear legislation.

Edition 2 March 2007
(First edition December 1996)

INTRODUCTION

This document has been prepared on the basis of ILG's concept paper "Model Concept of a State Physical Protection System" (Edition 2, December 2000). The document might serve as a guide for the establishment of physical protection legislation, and it addresses the fundamental articles to be included in a law on physical protection of nuclear material.

In its original version from December 1996, this Law Concept covered physical protection of *both* Nuclear Material *and* Radiation Sources. This was suggested to the ILG by some NIS countries, in harmony with the approach taken in countries that were in the process of establishing new legislation on physical protection. Furthermore, it reflected the increased concern by the international community with respect to nuclear terrorism and illicit trafficking, since radiation sources could become a target for unauthorised removal for the purpose of harmful actions against both human beings and the environment.

The Convention on Physical Protection of Nuclear Material (Ref. IAEA INFCIRC/274) does not include Radiation Sources. Measures and procedures for the security and protection of Radiation Sources are recommended by the IAEA Safety Standards (Safety Series No. 115). Considering the similarity between these measures and procedures with those applicable for Nuclear Material, as well as the concern related to the illicit trafficking of Radiation Sources, the ILG supported the suggestion by some NIS countries and, consequently, recommended the approach as laid out in the December 1996 version. In the last paragraph of Article 1 of that version, a general formulation of the coverage of both nuclear material and radiation sources was suggested.

In its current version (Edition 2, December 2000), the Law Concept covers only nuclear material and nuclear facilities. A separate Law Concept on Physical Protection of Ionising Radiation Sources was presented by the ILG in April 1999.

It has been assumed that a law on Physical Protection, with an outline and content as suggested in this document, is established as a separate law, *in addition* to a "basic nuclear law" of the country. In consequence herewith, it is assumed that the fundamental requirements and principles related to the independence and responsibilities of the State Regulatory Body, as well as of the operators of nuclear facilities and of other nuclear activities, including procedures for licensing and systems for control of implementation of nuclear activities, are stipulated in the basic nuclear law, and not being repeated in the law on Physical Protection.

The same is true for basic terms and definitions, including the definition of Nuclear Material, Radiation Sources, Nuclear Facility and Nuclear Activities.

The suggested sentences in Article 29 should be reviewed by national legal experts in conformity with the legal practice of the State.

PREAMBLE

This law is based on the "Convention on Physical Protection of Nuclear Material" (Reference: IAEA INFCIRC/274/Rev. 3), to which [the State] is a party, and the document of the International Atomic Energy Agency (IAEA) "Recommendations on the Physical Protection of Nuclear Material and Nuclear Facilities" (Reference: INFCIRC/225/Rev. 4).

A State party to the Convention is obliged to report and communicate with other States and with the IAEA on matters concerning international transports in case of unlawful events (e.g. theft, robbery or threat). The Convention requests that each State party shall co-operate and consult as appropriate with other States on taking measures as may be necessary to establish jurisdiction over the offences in case of unlawful events.

CHAPTER 1 GENERAL PROVISIONS

Article 1
Nuclear Material in use, storage and transport shall be protected against theft or other unauthorised removal or damage and shall have adequate protection against acts of sabotage and terrorist attacks.

Nuclear facilities shall have adequate protection against acts of sabotage and terrorist attacks.

Article 2
The responsibilities to fulfil [the State's] duties according to the Convention on Physical Protection and to implement the administrative and technical measures of the IAEA document, referred to in the Preamble to this Law, rest with the State Regulatory Body.

Article 3
The State Regulatory Body shall establish a "State System for Physical Protection" of nuclear facilities and of nuclear material in use, storage or transport.

The objectives of the State System for Physical Protection shall be:

- to establish conditions which would minimise the possibilities for unauthorised removal of nuclear material or for sabotage, and

- to provide information and technical assistance in support of rapid and comprehensive measures by the State to locate and recover missing nuclear material and to minimise the effects of sabotage.

Article 4
The State Physical Protection System shall be based on an assessment by [the State] of the threat of unauthorised removal of nuclear material and of sabotage and terrorist attack.

The threat assessment for a nuclear facility and for nuclear material shall take into account, not only the attractiveness for the unauthorised removal of nuclear material, but also the potential risk for sabotage and terrorist attacks.

Article 5
The State Physical Protection System shall, for each nuclear facility, establish the requirements on facility design, equipment and procedures relevant to the physical protection, including security devices and the organisation of guards and the performance of their duties.

A physical protection system shall be designed specifically for each facility, taking into account the geographical location and [the State's] assessment of the threat to the facility. Emergency procedures shall be prepared to effectively handle any identified threats of different kind.

Close co-operation shall be established between physical protection and nuclear safety specialists to ensure that the physical protection measures take into account such measures that have been designed into the facility for nuclear safety purposes.

Article 6
Due to the vulnerability of nuclear material transports for unauthorised removal and sabotage, the State Regulatory Body shall ensure that extraordinary measures are taken for the physical protection of such transports.

Article 7
The State Regulatory Body shall, in accordance with the Convention on Physical Protection Annex I and II, establish the categorisation of nuclear material, in order to ensure an appropriate relationship between the material concerned and the protective measures.

Article 8
The State Regulatory Body shall approve and control the establishment, implementation and maintenance of physical protection systems for nuclear facilities and nuclear material.

Article 9
As a condition for licensing of nuclear facilities by the State Regulatory Body, satisfactory physical protection systems shall be established.

Article 10
When stipulating the licensing conditions with respect to physical protection, the State Regulatory Body shall take into consideration the following factors.

For physical protection of nuclear material in use, storage or transport:

- the material category according to the Convention on Physical Protection, Annex I and II;
- the location of the material (in use, in transport or in storage);
- the special conditions with respect to general risk or threat at the location or along the transport route;
- the positive contribution to the protection from the structure of transport containers.

For physical protection of nuclear facilities against sabotage:

- possible releases of radioactivity;
- the location of the nuclear facility;
- the particular circumstances prevailing to the State or the region.

Article 11
The applicant of a license shall demonstrate that he or she fulfils all the licensing conditions, in whole and in part, in order to get the application approved by the State Regulatory Body.

Article 12
At each nuclear facility, a security organisation shall be established, with a security chief specifically assigned the responsibility for the physical protection. The organisational structure and the security chief shall be approved by the State Regulatory Body.

Article 13
Physical protection systems for nuclear facilities shall include an emergency plan for dealing with irregular events in order to limit the consequences. The plan shall be reviewed and approved by the State Regulatory Body.

Article 14
Physical protection systems shall include an information system which enables the State Regulatory Body to be informed of any changes at nuclear sites or of transportation procedures or routes for nuclear material, which may affect implementation of physical protection measures.

In addition, the physical protection systems shall have access to information from [the State's] System of Accounting for and Control of Nuclear Material (SSAC).

Article 15
The State Regulatory Body shall take steps to ensure appropriate protection of specific or detailed information concerning the physical protection of nuclear

material in use, storage, or transport, and of nuclear facilities at which there is a potential risk for sabotage.

Article 16
The State Physical Protection System shall make provisions for periodic review by the State Regulatory Body of the licensed activities, and whenever a significant change takes place, to ensure continuous compliance with physical protection regulations.

To assure that physical protection measures are maintained in a condition capable of effectively respond to potential threats, the State Regulatory Body shall ensure that quality assurance programmes are implemented at facilities and for transportation of nuclear material. Such programmes shall include periodic testing of detection, alarm and communication systems and periodic audits of security procedure implementation. The programmes shall also include exercises to test the training and readiness of escorts, guards and off-site response forces.

Article 17
The State Regulatory Body may prescribe such measures as are needed in order to ensure compliance with this Law, in the form of regulations and directives.

CHAPTER 2 DETAILED REQUIREMENTS

Article 18
The operator shall establish plans for response to threat, theft, sabotage and terrorist attacks and shall foresee co-operation among various divisions of the facility and with external respond force(s) and other organisations included in the physical protection system of the facility.

The operator shall have a management system that shall include:

- physical protection procedures that document the structure of security organisation and detail the duties, rights and responsibilities of guards, watchmen, and other individuals responsible for security;

- provision for approval of these procedures and any revision of the procedures.

Article 19
At least one person who has the authority to direct the physical protection activities of the security organisation shall be on-site at all times.

Article 20
The operator shall ensure that personnel controlling the main technological processes at a nuclear facility are properly trained to take appropriate action in the event of threat or attack.

The control of main technological processes at a nuclear facility, including switching to less dangerous mode (shut down), shall be possible at least from two locations.

The operator shall periodically revise the compatibility of the physical protection system with nuclear and technical safety requirements and fire protection requirements.

The operator shall establish the system for opening and control of emergency exits in the case of accident or in the case of possible accident. The operator shall establish an order for letting through emergency services.

The operator shall give instruction to personnel that is potential to receive threat message by telephone, about actions in case of such message.

Article 21
For the assurance of physical protection in depth, the nuclear facility shall be divided into three category areas:

a) Vital Area,
b) Inner Area, and
c) Protected Area.

Depending on the type of facility, the nuclear material, and other circumstances, the number of areas in each category may be different from facility to facility.

Article 22
Equipment, systems or devices essential to safe operation of a nuclear facility, which are, alone or in combination, determined to be vulnerable to sabotage, shall be protected by being assigned to a Vital Area.

Article 23
Vital Area shall be enclosed by at least two physical barriers of sufficient strength. Vital Area barriers and Inner Area barriers, or parts thereof, shall be separated from Protected Area barriers.

Physical barrier is a fence or wall or a similar impediment, approved by the State Regulatory Body.

Article 24
Nuclear material of category I shall be used or stored in Inner Areas.
Nuclear material of category II shall be used or stored in Protected Areas.

Nuclear material of category III shall be used or stored within an area to which access is controlled.

Article 25
A Protected Area shall be under constant surveillance by a guard or by electronic means and be surrounded by a physical barrier. It shall have a limited number of controlled admittance points and be approved by the State Regulatory Body. Where the walls of a building serve as part, or all, of the perimeter of a Protected Area, all emergency exits on the perimeter wall shall be alarmed. All perimeter wall windows shall be permanently locked, alarmed and covered with firmly embedded bars.

Article 26
Every gate, door, window or other means of entry to, or exit from, a Protected Area, an Inner Area, or a Vital Area, as well as the procedures for opening and closing them, shall be so designed that unauthorised passing in or out of persons or transports or removal of nuclear material cannot take place.

Article 27
For the licensing of nuclear material transports, the State Regulatory Body shall consider that the achievement of the objectives of physical protection shall be assisted by:

- Minimising the total time during which the nuclear material remains in transport;

- Minimising the number and duration of nuclear material transfers, i.e. transfer from one conveyance to another, transfer to and from temporary storage and temporary storage while awaiting the arrival of a vehicle, etc.;

- Protecting nuclear material in temporary storage in a manner consistent with the category of that material;

- Avoiding the use of regular movement schedules;

- Requiring predetermination of the trustworthiness of all individuals involved in transport of nuclear material; and

- Limiting advance knowledge of transport information to the minimum number of persons necessary.

Article 28
The requirements of the Convention on the Physical Protection of Nuclear Material, and the administrative and technical measures of the Document INFCIRC/225/Rev. 4, and future amendments, shall be applied and adhered to in the applicable parts when the State Regulatory Body issues licenses for nuclear activities. Both the Convention and the Document shall be translated into the language of [the State] and be added to this Law as appendices.

Article 29

Any person who unauthorised removes nuclear material shall be sentenced for a nuclear energy offence to imprisonment for a fixed period, for a maximum of [ten] years.

Any person guilty of premeditate offence in such a way that this action may present a serious hazard to the life, health or property of another person or to the environment, shall be sentenced for nuclear energy felony to imprisonment for a fixed period, for a minimum of [two] years.

If an offence is such as is apt to cause only minor hazard or is insignificant when taking other considerations relating to the offence into account, the offender shall be sentenced for a minor nuclear energy offence to a fine, or to imprisonment for a maximum of [two] years.

An attempt at a premeditate offence referred to in this Law is subject to punishment.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

PHYSICAL PROTECTION OF IONISING RADIATION SOURCES

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: April 1999]

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

PHYSICAL PROTECTION OF IONISING RADIATION SOURCES

Note:
The Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2007
[First edition April 1999]

INTRODUCTION

1. It is assumed that the State already has established a Basic Nuclear Law and a law on radiation protection/safety, or a basic law that covers both nuclear and radiation safety.

   Depending on the nuclear structure of the State, there may also be a need for a separate law/regulation on physical protection of nuclear material and of nuclear facilities, such as power and research reactors. For that purpose, ILG has prepared two law concepts:

   a) "Model State Concept for Physical Protection" (ILG Concept Report 1996-09-01) and

   b) "Law Concept on Physical Protection of Nuclear Material and Radiation Sources" (ILG Concept Report 1996-12-19).

   These concepts refer, in applicable parts, to the Convention on Physical Protection of Nuclear Material (Ref. IAEA INFCIRC/274/Rev. 3).

   Based upon experience obtained in the co-operation and communication with several States since 1996, ILG is now presenting a new Concept Report that is supplementary to the previous documents. It addresses physical protection of Ionising Radiation Sources and should be used as a guide by a State that develops a separate law/regulation on that subject, or establishes a law that covers physical protection of both nuclear material and radiation sources.

   The overall objective of such a law/regulation would be to protect man and the environment from radiation hazards or nuclear threats due to illegal handling of ionising radiation sources.

2. The suggestion to develop a separate law/regulation on physical protection of ionising radiation sources is in harmony with the approach taken (or considered) in States that are in the process of establishing new legislation on physical protection. It also reflects the increased concern by the international community with respect to nuclear terrorism and illicit trafficking involving ionising radiation sources, since such material has become a target for unauthorised removal for the purpose of harmful actions against both human beings and the environment.

3. The Convention on Physical Protection of Nuclear Material does not include radiation sources. Recommended measures and procedures for the safe handling, security and protection of radiation sources are given in the IAEA document "International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources", referred to as the BSS, (IAEA Safety Series No. 115).

Considering the similarity between the measures and procedures recommended in the BSS with those applicable for nuclear material and nuclear facilities, and the concern about illicit trafficking of radiation sources, ILG supports the approach to establish a separate law/regulation for the physical protection of radiation sources, and to fully base the technical/implementing articles of such a law on the BSS recommendations.

4. It is assumed that the fundamental requirements and principles related to the independence and responsibilities of the State Regulatory Body, to the responsibilities of the operators of radiological activities, and to the procedures for licensing and to the State control system, are stipulated in the "Basic" nuclear law and the law on radiation protection/safety. Those fundamental requirements and principles are, therefore, not repeated in the model articles of this document.

5. Definitions

5.1 This document is applicable only to ionising radiation, including radioactive materials, accelerators, and X-ray machines. A ***"radiation source"*** is anything that may cause radiation exposure by emitting ionising radiation or releasing radioactive substances or materials. Depending on its physical form, radioactive material can either be a solid, a liquid, a gel or a gas. The chemical form of the radioactive substance or material may vary. A radioactive source is defined by IAEA to be sealed if it is (1) permanently sealed in a capsule; or (2) closely bounded and in a solid form. The capsule or material of a sealed source shall, according to the same definition, be strong enough to maintain leak-tightness under the conditions of use and wear for which the source was designed, also under foreseeable mishaps.

The radiation sources mentioned in this document are intended for industrial, medical, research or similar purposes. Radioactive sources or equipment containing such sources normally require a license for manufacture, trade and/or possession and use. Transport of radioactive material is not covered in this draft; reference is made the Regulations for the Safe Transport of Radioactive Materials, published by IAEA.

5.2.1 ***"Dangerous sources"*** are defined in this document as radiation sources of activities over the A1 and A2 values as defined in IAEA's transport regulations for sealed and open sources, respectively.

5.2.2 ***"Irradiation installation"*** is defined as a facility, system, equipment etc. where ionising radiation is used for technical, medical, research or similar purposes. Some examples are sterilisation plants; industrial level, density and thickness gauges; X-ray units; cancer tele therapy machines such as linear accelerators and cobalt units; isotope producing accelerators; and calibration set-ups.

MODEL LAW

PREAMBLE

This Law refers to the "Convention on Physical Protection of Nuclear Material" (Reference: the International Atomic Energy Agency, IAEA, document INFCIRC/274/Rev. 1), referred to as the Convention, to which [the State] is a party, and to the document of "The Physical Protection of Nuclear Material" (Reference: IAEA INFCIRC/225/Rev. 3). This Law is based on the "International Basic Safety Standards for Protection Against Ionising Radiation and for the Safety of Radiation Sources" (IAEA Safety Series No.115), in the following referred to as the BSS.

A State that is party to the Convention is obliged to report and communicate with other States and with IAEA on matters concerning international transports of nuclear material in case of unlawful events (e.g. theft, robbery, threat). The Convention also requests that the State parties shall co-operate and consult as appropriate, on taking measures necessary to establish jurisdiction over the offences in case of unlawful events.

The same procedure shall apply to unlawful events concerning international transport of dangerous radiation sources.

CHAPTER 1 GENERAL PROVISIONS

Article 1

Radiation sources shall at all times be protected against theft or other unauthorised removal or damage and shall have adequate protection against acts of sabotage and terrorist attacks.

Irradiation installations shall have adequate protection against acts of sabotage and terrorist attacks.

Article 2

The responsibilities to fulfil the State's duties according to this Law and to implement the administrative and technical measures of the IAEA documents, referred to in the Preamble to this Law, rest with the State Regulatory Body.

Article 3

The State Regulatory Body shall establish a State System for physical protection of radiation sources in use, storage, or transport.

The objectives of the State System shall be:

- to establish conditions which would minimise the possibilities for unauthorised removal of dangerous radiation sources or for sabotage and terrorist attacks; and

- to provide information and technical assistance in support of rapid and comprehensive measures by the State to locate and recover missing dangerous radiation sources and to minimise the effects thereof and of sabotage and terrorist attacks.

Article 4
The State System for physical protection shall be based on an assessment by the State of the threat of unauthorised removal of dangerous radiation sources and of sabotage and terrorist attack.

The threat assessment for irradiation installations shall take into account not only the attractiveness for the unauthorised removal of dangerous radiation sources, but also the potential risk for sabotage and terrorist attacks.

Article 5
Due to the vulnerability of radioactive material transports with respect to the risk for unauthorised removal and sabotage and terrorist attacks, the State Regulatory Body shall ensure that extraordinary measures are taken for the physical protection of such transports.

Article 6
The State Regulatory Body shall, in accordance with the Convention Annex I and II, and the BSS, establish a categorisation of radiation sources, in order to ensure an appropriate relationship between the sources concerned and the protective measures.

Article 7
The State Regulatory Body shall approve and supervise the establishment, implementation and maintenance of physical protection systems for radiation sources and irradiation installations.

Article 8
As a condition for licensing of irradiation installations by the State Regulatory Body, satisfactory physical protection systems shall be established.

Article 9
The applicant of a license shall demonstrate full compliance with all licensing conditions, in whole and in part, in order to have the application approved by the State Regulatory Body.

Article 10
At irradiation installations shall, as necessary, a security organisation be established, with a security chief specifically assigned the responsibility for the

physical protection. The State Regulatory Body shall approve the organisational structure and the appointment of the security chief.

Article 11
Physical protection systems for irradiation installations shall, as necessary, include an emergency plan for handling irregular events in order to limit the consequences. The plan shall be reviewed and approved by the State Regulatory Body.

Article 12
Physical protection systems shall include an information system which enables the State Regulatory Body to be informed of any changes at sites with dangerous radiation sources or of transportation procedures or routines for radiation sources which may effect implementation of physical protection measures.

In addition, the physical protection systems shall have access to information from the State's system of accounting for and control of radiation sources.

Article 13
The State Regulatory Body shall establish a computerised radiation sources accountancy system.

Article 14
The State Physical Protection System shall make provisions for periodic review by the State Regulatory Body of the licensed activities, and, whenever a significant change takes place, to ensure continuous compliance with physical protection regulations.

To assure that physical protection measures are maintained in a condition capable of effectively responding to potential threats, the State Regulatory Body shall ensure that quality assurance programs are implemented at facilities and for transportation of radioactive material. Such programs shall include periodic testing of detection, alarm and communication systems and periodic audits of security procedure implementation. The programs shall also include exercises to test the training and readiness of escorts, guards, and off-site response forces.

Article 15
The State Regulatory Body may prescribe such measures that needed in order to ensure compliance with this Law, in the form of regulations and directives.

CHAPTER 2 ADMINISTRATIVE AND MANAGEMENT REQUIREMENTS

Article 16 Authorisation: Registration or Licensing

The legal person responsible for any sealed or unsealed radioactive source or radiation generator shall, unless the source is exempted, apply to the State Regulatory Body for an authorisation, which shall take the form of either a registration or a license.

The legal person responsible for any ionising irradiation installation, mine or mill processing radioactive ores, installation processing radioactive substances, nuclear installation or radioactive waste management facility, or for any use of a source which the State Regulatory Body has not designated as suitable for registration, shall apply to the State Regulatory Body for an authorisation which shall take the form of a license.

Any legal person applying for an authorisation shall:

- submit to the State Regulatory Body relevant information to support the application;
- refrain from carrying out radiation activities until the registration or license, as appropriate, has been granted;
- make an assessment of the nature, magnitude and likelihood of the exposures attributed to the source and take all necessary steps for the protection and safety of both workers, the public and the environment;
- if the potential for an exposure is greater than any level specified by the State Regulatory Body, have a safety assessment made and submitted to the State Regulatory Body as part of the application; and
- demonstrate ample competence in the field of work covered by the license.

The legal person responsible for a source to be used for medical exposure shall include in the application for authorisation:

- the qualifications in radiation protection of the medical practitioners who are to be so designated by name in the registration or license; or
- a statement that only medical practitioners with the qualifications in radiation protection specified in the relevant regulations or to be specified in the registration or license will be permitted to prescribe medical exposure by means of the authorised source.

ILG COMMENT:
Typical practices that are amenable to registration are those for which: a)safety can largely be ensured by the design of the facilities and equipment; b)the operating procedures are simple to follow; c)the safety training requirements are minimal; and d)there is a history of few problems with safety in operations. Registration is best suited to those practices for which operations do not vary significantly.

Article 17 Authorised Legal Persons: Registrants and Licensees
Registrants and licensees shall bear the responsibility for setting up and implementing the technical and organisational measures that are needed for ensuring protection and safety for the sources for which they are authorised. Registrants and licensees shall specifically identify the individuals responsible for ensuring compliance with the BSS.

Registrants and licensees shall notify the State Regulatory Body of their intentions to introduce modifications to any practice or source for which they are authorised, whenever the modifications could have significant implications for protection or safety, and shall not carry out any such modification unless specifically authorised by the State Regulatory Body.

Article 18 Exemption
Practices and sources within a practice may be exempted from the requirements of the BSS, provided that such sources comply with:

- the requirements on exemption specified in Schedule I of the BSS; or
- any exemption levels defined by the State Regulatory Body on the basis of the exemption criteria specified in Schedule I.

Exemption shall not be granted for practices deemed not to be justified.

Article 19 Clearance
Sources, including substances, materials and objects, within notified or authorised practices may be released from further requirements of the BSS, subject to complying with clearance levels approved by the State Regulatory Body. Such clearance levels shall take account of the exemption criteria specified in Schedule I and shall not be higher than the exemption levels specified in Schedule I or defined by the State Regulatory Body on the basis of the criteria specified in Schedule I, unless otherwise approved by the State Regulatory Body.

ILG COMMENT:
Clearance of bulk amounts of materials with activity concentrations lower than the guidance exemption levels specified in Table I-I of Schedule I may require further consideration by the State Regulatory Body.

Article 20 Safety Culture
A safety culture shall be fostered and maintained to encourage a questioning and learning attitude to protection and safety and to discourage complacency, which shall ensure that:

- policies and procedures be established that identify protection and safety as being of the highest priority;
- problems affecting protection and safety identified and corrected in a manner commensurate with their importance;

- the responsibilities of each individual, including those at senior management levels, for protection and safety be clearly identified and each individual be suitably trained and qualified;
- clear lines of authority for decisions on protection and safety be defined; and
- organisational arrangements and lines of communications be effected that result in an appropriate flow of information on protection and safety at and between the various levels in the organisation of the registrant or licensee.

Article 21 Quality Assurance

Quality assurance programs shall be established that provide, as appropriate,

- adequate assurance that the specified requirements relating to protection and safety are satisfied; and
- quality control mechanisms and procedures for reviewing and assessing the overall effectiveness of protection and safety measures.

Article 22 Human Factors

Provision shall be made for reducing, as far as practicable, the contribution of human error to accidents and other events that could give rise to exposures, by ensuring that:

- all personnel on whom protection and safety depend be appropriately trained and qualified so that they understand their responsibilities and perform their duties with appropriate judgement and according to defined procedures;
- sound ergonomic principles be followed as appropriate in designing equipment and operating procedures, so as to facilitate the safe operation or use of equipment, to minimise the possibility that operating errors will lead to accidents and to reduce the possibility of misinterpreting indications of normal and abnormal conditions; and
- appropriate equipment, safety systems, and procedural requirements be provided and other necessary provisions be made:
  - to reduce, as far as practicable, the possibility that human error will lead to inadvertent or unintentional exposure of any person;
  - to provide means for detecting human errors and for correcting or compensating for them; and
  -to facilitate intervention in the event of failure of safety systems or of other protective measures.

Article 23 Qualified Experts

Qualified experts shall be identified and made available for providing advice on the observance of the BSS.

Registrants and licensees shall inform the State Regulatory Body of their arrangements to make available the expertise necessary to provide advice on the observance of the BSS. The information provided shall include the scope of the functions of any qualified experts identified.

CHAPTER 3 TECHNICAL REQUIREMENTS

Article 24 Security of Sources

Sources shall be kept secure to prevent theft or damage and any unauthorised legal person from carrying out any radiation activities mentioned in the BSS (paragraphs 2.7 - 2.9), by ensuring:

- control of a source not be relinquished without compliance with all relevant requirements specified in the registration or license and without immediate communication to the State Regulatory Body, of information regarding any decontrolled, lost, stolen or missing source;
- a source not be transferred unless the receiver possesses a valid authorisation; and
- a periodic inventory of movable sources be conducted at appropriate intervals to confirm that they are in their assigned locations and are secure.

Article 25 Defence in Depth

A multi-layer (defence in depth) system of provisions for protection and safety commensurate with the magnitude and likelihood of the potential exposures involved shall be applied to sources so that a failure at one layer is compensated for or corrected by subsequent layers, for the purposes of:

- preventing accidents that may cause exposure;
- mitigating the consequences of any such accident that does occur; and
- restoring sources to safe conditions after any such accident.

Article 26 Good Engineering Practice

As applicable, the siting, location, design, construction, assembly, commissioning, operation, maintenance and decommissioning of sources within practices shall be based on sound engineering which shall, as appropriate:

- take account of approved codes and standards and other appropriately documented instruments;
- be supported by reliable managerial and organisational features, with the aim of ensuring protection and safety throughout the life of the sources;
- include sufficient safety margins for the design and construction of the sources, and for operations involving the sources, to ensure reliable performance during normal operation;
- taking into account quality redundancy and suitability for inspection, with emphasis on preventing accidents, mitigating their consequences and restricting any future exposures; and
- take account of relevant developments in technical criteria, as well as the results of any relevant research on protection or safety and lessons from experience.

CHAPTER 4 VERIFICATION OF SAFETY

Article 27 Safety Assessments

Safety assessments related to protection and safety measures for sources within practices shall be made at different stages, including siting, design, manufacture, construction, assembly, commissioning, operation, maintenance and decommissioning, as appropriate, in order:

- to identify the ways in which normal exposures could be incurred, account being taken of the effect of events external to the sources as well as events directly involving the sources and their associated equipment;
- to determine the expected magnitudes of normal exposures and, to the extent reasonable and practicable, to estimate the probabilities and the magnitudes of potential exposures; and
- to assess the quality and extent of the protection and safety provisions.

Article 28 Monitoring and Verification of Compliance

Monitoring and measurements shall be conducted of the parameters necessary for verification of compliance with the requirements of the BSS.

For the purpose of monitoring and verification of compliance, suitable equipment shall be provided and verification procedures introduced. The equipment shall be properly maintained and tested and shall be calibrated at appropriate intervals with reference to standards traceable to national or international standards.

Article 29 Records

Records shall be maintained of the results of monitoring and verification of compliance, including records of the tests and calibrations carried out in accordance with the BSS.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

LICENSING OF NUCLEAR ACTIVITIES

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: November 1997]

INTRODUCTION

1. "The license" is the basis for establishing an efficient State control ystem for all types of nuclear activities.

   In its international work and co-operation in the field of nuclear legislation with several of the, so called, Newly Independent States (NIS), the ILG is emphasising the necessity of making "Licensing" by a State Regulatory Body a compulsory requirement, and of including this requirement in the nuclear legislation. This is best done by incorporating the following text, either in a State's basic nuclear law (act), or in the very outset of a separate law on licensing and licensing procedures:

   "Any nuclear activities are prohibited except those under license granted by a State Regulatory Body. Nuclear activities that are performed without a license or that are inconsistent with [the State's} commitments under the Treaty on the Non-Proliferation of Nuclear Weapons and related agreements are considered as offences and will attract sanctions or penalties.

   A license can be cancelled by the State Regulatory Body, if conditions or requirements stipulated in the license are, to an essential degree, not fulfilled or adhered to, or when particular reasons with respect to safety and non-proliferation are at hand."

2. The concept of Licensing of nuclear activities can, in summary, be expressed in the following way:

   A licence applicant must demonstrate that he possesses the resources and competence to handle nuclear material in a safe and secure way.

   The State Regulatory Body has to judge and determine, whether the applicant (licensee) meets the requirements in a satisfactory way, with respect to organisation, staff competence and qualifications, instructions and manuals, quality assurance including internal control, financing, etc.

   The State Regulatory Body can withdraw the license, if serious shortcomings in the fulfilment of the licensing conditions occur. The possibility or risk of having the license withdrawn and the, often considerable, economical consequences of such a measure is considered the most effective means of getting the licensee to meet the obligations prescribed in laws and regulations.

GENERAL COMMENTS

1. Law structure

A basic issue is whether the State wishes to specify detailed requirements to be met by licensees (so called "licensing conditions"), in a generic and publicly available way in laws and regulations, or if it prefers to specify the licensing conditions on a case-by-case basis and applying to individual licenses and licensees.

For a State with a large nuclear industry, where many of the licensing requirements may have general application, promulgation through ordinances or regulations may be the preferable approach.

Where, on the other hand, the number of licensees is small, it might be more practical, and provide greater flexibility, to specify detailed licensing requirements and conditions on an individual basis. Confidentiality can also be an important consideration for choosing such an approach, e.g. details on physical protection arrangements cannot be included in general regulations.

In West European States one has, in most cases, taken the approach of stipulating only general requirements in the law, and of referring the detailed requirements to regulations. One is, thereby, avoiding the disadvantage of having to change or amend the law, whenever the detailed requirements have to be changed or supplemented as a consequence of technological development. It takes normally longer time to change requirements, when they are included in the law, since law amendments have to be approved by Parliament. Another disadvantage is that the law will be difficult to survey and may loose in simplicity and clarity, and, in spite of the details, not be sufficiently complete.

2. Other high safety activities (civil aviation)

When developing new legislation on licensing of nuclear activities, it might be of interest to the drafter of the law to know how the licensing issue has been handled in other industries, where safety is of imperative importance. In civil aviation, a comprehensive legislation work is currently going on, in particular with respect to the safety in flight. The Joint Aviation Authorities of the west European countries have prepared regulations in which the certification or the licensing has a prominent role. The regulation system is brief and the main rule is:

> *An operator shall not operate an aeroplane for the purpose of commercial air transportation otherwise than under, and in accordance with, the terms and conditions of an Air Operator Certificate (AOC).*

Thereafter follows, among others:

- *An applicant for an AOC, or variation of an AOC, shall allow the Authority to examine all safety aspects of the proposed operation.*

- *An applicant of an AOC must satisfy the Authority that he is able to conduct safe operations.*

- *An AOC shall be varied, suspended or revoked if the Authority is no longer satisfied that the operator can maintain safe operations. The operator must have a management organisation capable of exercising operational control over any flight operated under the terms of its AOC.*

- *An operator will not be granted an AOC, or a variation to an AOC, and the AOC will not remain valid unless he has satisfied the Authority that he has the ability to:*
  - *establish and maintain an adequate organisation;*
  - *establish and maintain a quality system in accordance with [special regulation];*
  - *comply with required training programmes;*
  - *comply with maintenance requirements, consistent with the nature and extent of the operations specified in [special regulations].*

3. International treaties and conventions

With respect to the area covered by the licensing procedure, the State should establish a regulatory regime covering the implementation of treaty commitments undertaken by the State, and any further domestic objectives the State may have, additional to treaty commitments.

The following treaties/conventions/agreements impose principal obligations, to be reflected in licensing conditions:

- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT).
  Most of the State's obligations will be reflected in a safeguards agreement with the International Atomic Energy Agency (IAEA), the conclusion of which is required in pursuance of Article III.1 of the NPT. There are certain obligations in the NPT, however, which may not be directly covered by the safeguards agreement, e.g. the obligation to control exports under Article III.2 (with corresponding implications for the control of nuclear items domestically).

- The Safeguards Agreement with the IAEA, pursuant to the NPT.
  The safeguards agreement covers the application of IAEA safeguards to all nuclear material within the territory, jurisdiction or control of the State, for the exclusive purpose of verifying fulfilment of the State's obligation under the NPT. An essential element of those obligations is

the establishment and maintenance of a State System for the Accounting and Control of nuclear material (SSAC).

- The Convention on Physical Protection of Nuclear Material (assuming that the State is a party).

- Bi-lateral agreements covering the supply of nuclear items, to which the State may be a party.

4. International recommendations

In addition to the above, while not on the level of a treaty commitment, there are the recommendations of the IAEA:

- On the Physical Protection of Nuclear Material, published as document INFCIRC/225 (currently INFCIRC/225/Rev. 3); and

- Regulations for the Safe Transport of Radioactive Material, published as IAEA Safety Standards in Safety Series No. 6, 1985 edition (as amended 1990), which are applied by most States having significant nuclear activities.

The State may wish its laws to cover matters additional to specific international obligations, for example in order to protect the confidentiality of sensitive nuclear technology. This might apply, among others, to export of nuclear equipment and technology (know-how), which should be subject to restrictions outlined in the IAEA documents INFCIRC/209 ("Trigger Lists") and INFCIRC/405 ("Full-Scope Safeguards").

It is recommended that the law shall stipulate that the IAEA standards and recommendations in the areas of physical protection, transport of radioactive material, and export of nuclear equipment and technology, are, in applicable parts, made compulsory requirements for the licensing of nuclear activities. There are several reasons why the requirements shall be compulsory; the most important being the following:

A State that is anxious to maintain a high safety culture in the nuclear power area must establish a special safety policy. The most important part of that policy is the adoption of, as a minimum, the recommendations and standards that have been worked out by international experts under the co-ordination and sponsorship of the IAEA and that are published as IAEA documents. These documents are the appropriate guides to be used by the operators to fulfil high safety and safeguards requirements in their nuclear activities. A deviation from these recommendations and standards can be accepted only, if the operator is applying a practice that is equivalent to or better than the IAEA standards.

5. Radiation Sources

The principal elements included in a law on licensing procedures for activities involving nuclear material are, in essential parts, applicable also for activities involving "Radiation Sources".

The major difference between nuclear materials and radiation sources, is, from the point of view of legislation and with respect to administrative requirements, that the former are placed under the obligations of the NPT (and the safeguards agreement with the IAEA), while the latter are subject to formally not obligating international safety standards.

It is recommended, that the requirements on the use and handling of radiation sources, including licensing and notification of such activities, should be established in separate laws or regulations, with appropriate references to the principal elements included in the State's Basic Nuclear Law (when applicable). Furthermore, it is strongly recommended that such laws/regulations on radiation sources follow the standard and practices recommended in the IAEA Safety Series No. 115 "International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources" (BSS). A fast and simple approach would be to make the BSS applicable in a separate article of the State's law.

6. Key features

The following key features should be reflected in the law:

(a) a national authority (State Regulatory Body) is designated as having responsibility for the administration of the Law or Regulations, and for establishing and maintaining the SSAC,

(b) nuclear activities and some radiation sources require a license, issued by the Regulatory Body;

(c) it is an offence to handle nuclear material or some radiation sources without a license (permit);

(d) licenses may incorporate conditions establishing more specific requirements;

(e) the Regulatory Body is given powers necessary to verify performance of requirements under the Law (Regulations) and under licensing conditions, including power to facilitate IAEA inspections, and even to revoke licenses.

In several countries, there is a, more or less, prevalent opposition against nuclear power. One example is Sweden, where the Government had to call for a referendum on the subject "for or against" nuclear power. Even if the yes-votes were in favour, the opponents are continuing their campaign. This

has made it necessary for the State Regulatory Body to commit itself to the duty of informing the public in important nuclear power matters.

These circumstances are reflected in the Swedish nuclear legislation. In all important nuclear matters, or where there is a clear public interest, administrative procedures are prescribed, which guarantee public insight in actual cases, and also give the interested parties, individuals or organisations, the possibility to submit comments.

As can be seen in the Model Law Articles below, these procedures should be applied in a number of licensing cases.

7. Terms and definitions

In order to cover not only nuclear material and equipment, but also nuclear technology and know-how, it is recommended to incorporate the following definition of "Nuclear Activities", either in the State's Basic Nuclear Law, or in the law on licensing, whichever is applicable. (The recommendation is based upon the Swedish Nuclear Act).

By Nuclear Activities is meant:

1) the erection, possession or operation of a nuclear installation;

2) the acquisition, possession, transfer, handling, processing, transport or other dealings with nuclear material, nuclear items or radioactive waste;

3) the import into and export out of [the State] of nuclear material, nuclear items or radioactive waste;

4) the export from [the State] of:

   a) a mineral from which nuclear material is practicably recoverable;

   b) anything made from nuclear material, or a product of which such material forms part;

   c) equipment or material that has been specially designed or arranged for processing, use or production of nuclear material, to the extent that the Government prescribes;

   d) nuclear technology and know-how;

5) the grant or transfer to a person abroad of the right to manufacture equipment or material of the kind referred to in item 4c, to the extent prescribed by the Government;

6) the sales, grant, offer for a consideration, borrow, gift or procurement, to a person abroad of an equipment or material referred to in item 4c and is found abroad, to the extent prescribed by the Government.

The provisions of item 5 and 6 also apply to grant, transfer and procurement that takes place abroad by an authority of [the State] or company or person domiciled or permanently residing in this country.

8. Offences and penalties

Even if the revocation, by the State Regulatory Body, of a license can have considerable economical consequences, it is important for the general law obedience, that severe sanctions for offences are stipulated, either in the licensing law, or in other laws. The following offences should be included:

- Handling of nuclear material or radiation sources without a licence or permit, as applicable;
- Breach of a licence condition;
- Unauthorised communication of sensitive nuclear technology;
- Attempting to produce a nuclear explosive device, or assisting in this;
- Modification of facility without approval;
- False or misleading statements;
- Failure to maintain correct accountancy or safety related records;
- Interference with containment or surveillance device;
- Obstruction of national or international inspector.

Offences relating to the Physical Protection Convention are:

- Stealing of nuclear material;
- Demanding nuclear material by threats;
- Use of nuclear material causing injury or damage;
- Threat of use of nuclear material.

MODEL LAW ARTICLES

INTRODUCTION

Article 1
Terms and definitions used in the Basic Nuclear Law of [the State] have the same meaning in this Law (Regulation).

Article 2
Nuclear activities and the use of radiation sources are subject to compulsory licensing, in accordance with the requirements stipulated in the Basic Nuclear Law of [the State].

Article 3
The Government grants permits for the design and construction of nuclear installations and for the storage and disposal of radioactive waste and spent fuel elements, with the exclusion of shallow ground disposal of low level waste inside or outside of nuclear installations.

Article 4
The State Regulatory Body authorised to issue licenses, excluding permits referred to in Article 3, for nuclear activities and the use of radiation sources is [.....].

Article 5
The State Regulatory Body is obliged to obtain comments from other State authorities which might be concerned with the licensing application. Such other State authorities might be those concerned with the environment, housing and settlement, traffic and transport, natural resources, health and working conditions.

LICENSING PROCEDURE

Article 6
The licensing procedure is divided into three parts:

- the application
- the consultations with the concerned parties
- the granting of the license, including construction permit and operation permit.

Article 7
The application for a license to construct and operate a nuclear installation has to be submitted to the State Regulatory Body. The application shall comprise a description of the proposed site, and documents describing the design and mode of operation to the extent that the safety of the nuclear installation can be assessed.

Simultaneously with the application, and at least six months before the construction starts, the applicant shall submit to the State Regulatory Body a Preliminary Safety Report, outlining the general safety concept of the nuclear installation and analysing the impact of possible incidents and accidents.

During the construction of a nuclear installation, the State Regulatory Body shall follow up on and have full insight in the planning and construction activities, and shall maintain a competent dialogue with the licensee on matters related to nuclear and radiation safety.

Article 8
The State Regulatory Body shall communicate the application to a number of national and local bodies for the purpose of obtaining their comments in accordance with the requirement of Article 5. These bodies are: [.....].

Article 9
The application and all documents related to it, including the comments and review reports by various national and local bodies, are public documents, and the State Regulatory Body shall facilitate for all interested parties and individuals to take part thereof. Interested parties and individuals may, on their own initiative, submit written comments to the State Regulatory Body.

Public information meetings, related to the application, may be arranged by the State Regulatory Body, or by local bodies, or by interested parties and individuals.

Article 10
As part of the licensing procedure for a major nuclear installation, the applicant (licensee) shall allow and arrange for the full insight by a local safety committee into the safety and radiation protection measures at the nuclear installation, in order to provide information to the public. The licensee must furnish the local committee with relevant documents related to the safety and radiation protection of the installation, and provide access to the installation to the committee.

Article 11
A condition for granting a license for a major nuclear installation is, that construction of new buildings within a radius of 2 kilometres from a nuclear power plant shall be forbidden. Beyond that distance and up to a radius of 10 kilometres, a low population density shall be maintained.

Article 12
The State Regulatory Body shall review and approve the Preliminary Safety Report, submitted by the applicant in accordance with Article 7, taking into account the comments obtained from the different national and local bodies, as well as from interested parties and individuals. The State Regulatory Body shall submit the Preliminary Safety Report, together with its own comments and recommendations, to the Government.

Article 13
After the Government has granted a permit, in accordance with Article 3, the licensee shall submit to the State Regulatory Body, at least six months before construction starts, documents demonstrating that he is able to fulfil the conditions laid down in the license, including the testing programme.

During the construction period, and at least six months before the start of operation involving nuclear material, the licensee shall submit to the State Regulatory Body a Final Safety Analysis Report

Article 14
The granting by the State Regulatory Body of an operation permit shall be done in two steps:
- permit for initial test operation, and
- permit for full operation.

The permit for initial test operation shall be granted after the State Regulatory Body has approved the Final Safety Analysis Report, and after the pre-operation tests have been successfully concluded, and after the radiation protection arrangements at the nuclear installation have been approved and accepted.

The full operation permit shall be issued by the State Regulatory Body after approval of the safety performance achieved during the operation test programme. In the permit, the instructions and conditions shall be stipulated, which have to be observed by the operator for the operation of the installation.

A routine operation permit shall be granted after approximately two years operation of the installation.

Article 15
A general condition for receiving a license is, that the applicant has demonstrated that he has organised and systemised the operation of the nuclear installation in such a way that nuclear and radiation safety requirements are adequately fulfilled, as well as requirements on safeguards and physical protection, all in accordance with the international conventions, commitments, circulars or other documents published by the IAEA documentation series. The applicant shall also be ready to demonstrate, that he continuously fulfils the requirements. This general condition shall also be a prerequisite for receiving other licenses, wherever applicable.

Another general condition is, that the applicant commits himself to facilitate for the State Regulatory Body the performance of the Body's follow-up (supervising) and control activities.

Article 16
The provisions on licensing procedures stipulated in the foregoing articles are, in general, applicable to main nuclear installations. For other licensing matters, related to export and import, physical protection and radiation protection in hospitals or laboratories or where there is not a direct public interest, the State

Regulatory Body may apply a simplified procedure for granting a license or permit.

Article 17
Violation against license or licensing conditions is referred to the Criminal Law (Code).

Article 18
Decision according to license application or license or licensing conditions can be appealed at the [Court].

APPENDIX

FEES TO BE CHARGED BY THE STATE REGULATORY BODY

Introduction

1. Terms and definitions used in the Basic Nuclear Law of [the State] have the same meaning in this Law (Regulation).

Application fee

2. When an application is submitted to the State Regulatory Body, or when a licensing case is being examined by the Body, an application fee shall be paid to the Body. This fee amounts to the following:

for a license for	[$]
a) acquisition, possession, transfer, handling and processing of nuclear material or radioactive waste	1300
b) transport of nuclear material or radioactive waste	1500
c) export of nuclear material or nuclear or dual-use equipment (items)	600

If the examination by the Body of an application involves expenditures that considerably exceed the amounts given above, then an additional fee shall be paid with 100 $ per hour for work carried out by the Body.

3. For examination by the Body of application other than what is referred to in § 2, a fee of 100 $ per hour shall be paid for work carried out by the Body.

Supervision (control) fee

4. For supervision (control), performed by the State Regulatory Body, of the adherence to the Law [Basic Nuclear Law, or the Law on Licensing] and of conditions and requirements stipulated by the Body on the basis of the Law, a supervision fee shall be paid quarterly. The fee is the following, for the supervision of:

	[$]
a) nuclear power plant	100 000
b) nuclear fuel fabrication plant	20 000
c) nuclear research facility	20 000
d) facility for handling, storage or final disposal of spent (irradiated) nuclear fuel	30 000
e) facility for handling or storage of radioactive waste, other than spent nuclear fuel,	10 000
f) facility for final disposal of radioactive waste, other than spent nuclear fuel	20 000

The obligation to pay supervision fee commences the calendar quarter after the quarter during which license has been granted, and it ceases with the quarter following the quarter during which the facility is not any more used for its intended purpose, or when the State Regulatory Body concludes that continuous supervision is not needed any more.

5. For supervision by the State Regulatory Body, required as a consequence of nuclear non-proliferation agreements by [the State] , (safeguards), a special fee shall be paid to the Body for each quarter, or part thereof. The special fee is the following for:

	[$]
a) nuclear fuel fabrication plant	60 000
b) nuclear research facility	20 000
c) nuclear power plant	30 000
d) separate storage facility for spent nuclear fuel	30 000

6. For supervision by the State Regulatory Body other than that referred to in §§ 4 and 5, supervision fee shall be paid with 100 $ per hour for work carried out by the Body.

7. Supervision fee shall be paid by the licensee, after billing by the State Regulatory Body. Other supervision fee than that charged per hour, shall be paid in advance per calendar quarter.

Research fee

8. The licensee for construction, possession or operation of a nuclear power plant, shall pay to the State Regulatory Body a fee for such nuclear safety research that shall be initiated by the Body. The fee amounts to [200 000 $] per calendar quarter for each nuclear power reactor. It shall be paid from the calendar quarter that follows the quarter during which license has been granted, and it ceases with the quarter following the quarter during which the reactor is permanently shut down and has been notified to the Body.

General conditions

9. Expenses incurred by the State Regulatory Body for engaging consultant in matters other than those referred to in §§ 4 and 5, shall, to the extent the consultant work can be referred to one or more specific facilities, be reimbursed by the licensee of that or those facilities in accordance with the law.

10. Fees according to this law [regulation] shall be received and accounted for by the State Regulatory Body.

11. If there are specific motives and reasons, the State Regulatory Body may reduce or remit fees.

12. Decision by the State Regulatory Body can be appealed at [.....].

Fees for radiation protection supervision by a State Regulatory Body

Annual fees for activities involving radiation sources:

Type of activity	*[$]*
Lasers for measurements, communication or entertainment	700
Medical applications:	
x-ray diagnostics	700
external radiation therapy	700
inter- cavity therapy	1500
nuclear medicine	1500
Odontological application	350
Veterinary medical application	350
Research activities:	
Laboratories with open radiation sources	1500
Other laboratories	350
Big accelerators	3000
Industrial activities:	
Material testing	700
Control and supervision	100
Radiation sterilisation	3000
Trade with radiation sources	700

In addition, a licensee for the construction, possession or operation of a nuclear power reactor for industrial power generation must pay the following fees per calendar quarter:

for financing contribution to the State Body	50 000
for emergency preparedness for reactor accidents	80 000
for radiation safety research	30 000

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

EXPORT/IMPORT CONTROL OF NUCLEAR MATERIAL, EQUIPMENT, TECHNOLOGY, ETC.

NOTE:
This Law Concept is intended for use by a State for preparing a draft law or regulation, Which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 3 March 2001
[First edition: March 1997]

Article 1
This Law shall apply on the export from and the import into [the State] of material, equipment and technology, which have been agreed by the Nuclear Suppliers' Group (NSG), listed and circulated through circular INFCIRC/254 Part 1 and Part 2 (NSG) to the International Atomic Energy Agency (IAEA) member States. The circulars shall be translated into the [State] language and be added to this Law as appendix 1 and 2, and they should be continuously updated.

What is stated in this Law about nuclear material shall, in applicable parts, be applied for radiation sources, if necessary from a safety point of view.

ILG COMMENT:
The judgements made within the NSG and the list of material, equipment and technology that is documented in the IAEA circulars, constitute the basic conditions for making it possible to meet with the requirements of the nuclear non-proliferation treaty (NPT). It is important to observe that also other than nuclear material is listed, e.g. heavy water.

Article 2
The State Regulatory Body shall establish and maintain a control system in order to ensure the fulfilment of the requirements of the Treaty on the Non-Proliferation of Nuclear Weapons. The requirements of the control system shall include, both the responsibility of any export or import licensee to verify the fulfilment of licensing conditions, and the responsibility of the State Regulatory Body to ensure that the licensee has the competence and the possibilities for fulfilment, and if necessary, to perform relevant audits and inspections. The Government issues detailed directives about the control system.

ILG COMMENT:
A State that is a party to the NPT cannot evade the obligations of controlling that the NPT requirements are properly fulfilled. This means that the State must establish and Maintain a control system. It is necessary in such a system, that the customs authority is taking active part. Also the police authority could be involved. The overall and co-ordinating responsibility stays, however, with the Government and the State Regulatory Body.

Article 3
According to Article 1 and 2, the State Regulatory Body shall establish a Programme In order to introduce and maintain the awareness of the industry and others who deal with national or international transactions of material, equipment and technology.

Article 4
In accordance with [the State's] Basic Nuclear Law, all imports and exports of material or items referred to in Article 1 is prohibited, except those under license granted by the Government or the State Regulatory Body.

Conditions for the granting of a license include:

a) that such material or items shall not be used for the production of nuclear weapons or other nuclear explosive devices or for any military purpose whatsoever, in conformity with the Treaty on the Non-Proliferation of Nuclear Weapons;

b) that such material or items shall be secured by measures providing physical protection at level not below the one given in the IAEA document INFCIRC/274/Rev. 1;

c) that such material or items shall be subject to a prior written agreement between the exporting and importing States not to transfer to a third country without consent of the country of initial transfer;

d) that nuclear material shall be subject to safeguards under a comprehensive safeguards agreement with the IAEA,

An additional condition for granting a license for non-nuclear material and items not covered by the IAEA safeguards shall, instead of d) above, be that the importing State maintains a system of control that the nuclear material or items are not being used in an unauthorised manner, and that periodic information on quantity, use and location be provided to the exporting State, as agreed between the parties. This periodic information shall also cover nuclear material which has been produced by the use of nuclear materials or items delivered by the exporting State.

ILG COMMENT:
Already in the Basic Nuclear Law of the State the fundamental principle of licensing should be manifested, namely that all nuclear activities that are not given a permit (license) are prohibited and illegal. The licensing procedure is governed by a number of conditions that must be fulfilled for making the activity legal.

It is also both important and necessary that the States are co-operating, on the basis of common trust, in order to prevent the loss or misuse of nuclear material and radiation sources. Such a co-operation would include a close contact and communication (through telephone, fax, e-mail, or other means), with the purpose to maintain a continuous and complete control of the material. Agreements concluded between the States form the basis for inter-State co-operation. It is natural that an exporting State wants to be convinced that strategically important nuclear material is received by the proper addressee and is being stored under maintained physical protection.

An exporting State can also have a direct interest in following the entire chain of material conversions; the last sentence of Article 4 refers to such an interest.

Article 5
Applications for export by individual license for a specific consignment of material or items referred to in Article 1 shall include declaration of the characteristics of the product, country of destination, uses including ultimate use, statement of ultimate use, the value of the product and intended usage, purchaser or other recipient, the intended time of export and the planned place of export. If a license has previously been granted, this shall be stated in the application.

Article 6
Matters related to the license to export material or items referred to in Article 1 are subject to review by the State Regulatory Body if the export is intended for recipients in a State which

- has a bilateral agreement with [the State] for co-operation in the nuclear energy area covering non-proliferation, or
- in a specific declaration to the IAEA Director General have bound themselves to apply export conditions specified by the NSG.

The State Regulatory Body may refer any case to the Government.

Article 7
For export to a State other than referred to in Article 6, the application for a license will be referred to the State Regulatory Body, who may obtain the requisite guarantees and declarations. The State Regulatory Body shall refer the case for governmental decision.

Article 8
In respect of Article 9 and 10 the following definitions apply:

"Natural Uranium" is uranium which contains the mixture of isotopes occurring in nature;
"Depleted Uranium" is uranium which contains less of the isotope uranium 235 than in natural uranium;
"Enriched Uranium" is uranium which contains more of the isotope uranium 235 than in natural uranium.

Article 9
Irrespective of the country of destination, the State Regulatory Body is authorised to grant licenses for export of the following quantities of uranium, plutonium, thorium or tritium in pure form or in the form of alloys, compounds or mixtures:

a) maximum 10 kilograms enriched uranium containing no more than five percent of the isotope uranium 235;

b) maximum 100 grams enriched uranium containing more than five percent of the isotope uranium 235;
c) maximum 10 grams of the isotope uranium 233;
d) maximum 10 grams of plutonium;
e) maximum 50 kilograms of natural or depleted uranium;
f) maximum 50 kilograms thorium;
g) maximum 1 gram of separated tritium.

Quantities in a) to g) above are intended for a period of 12 months.

ILG COMMENT:
As stated in Article 6, the State Regulatory Body is authorised to issue licenses in those cases where the conditions for control are already established. In Article 8, a similar authorisation is given, under the condition that the quantities in question are relatively small and that there is no risk for violating the NPT requirements.

Article 10
Unless otherwise stated in the annexes, the following products or items may be exported from [the State] without a license:

- products, such as instruments, apparatus or preparations for medical or similar purpose, which contain deuterium, tritium or lithium;
- natural or depleted uranium or compounds which contain such, for use as balance weights in aeroplanes, for radiation shields, for colouring ceramic products and glass, for alloys if intended for use other than for nuclear fuel and the uranium content is less than one percent by weight;
- activation masses for electrodes for gaseous discharge lamps, gaseous discharge tubes or electron tubes, incandescent nets or mantles, fireproof ceramics which are not nuclear fuel, luminous elements or powder, lenses or filters for electromagnetic radiation, alloys with a content of thorium not exceeding five percent by weight, containing;
- materials with a content of natural or depleted uranium or of thorium not exceeding 200 grams per ton;
- nuclear material in quantities of less than one per mill of the quantities referred to in Article 9.

Article 11
An application for the export of spent nuclear fuel shall include details on how the material will finally be processed. With regard to material which originates from a nuclear activity in [the State], the application shall include a guarantee from the exporter that he will take back the material if it cannot be processed in the intended way.

Article 12
This Law shall be applied for the re-export or transit of material or items referred to in Article 1.

Article 13
This Law shall be applied in applicable parts in applications for import of material or items referred to in Article 1.

In addition, the applicant shall submit the following documents to the State Regulatory Body:

(a) In the case of import of nuclear material and radiation sources, documents confirming that the applicant is authorised to carry out the activity that involves the handling of such material;
(b) The signed contract for the transport of the import items to [the State];
(c) In the case of import of radiation sources and isotope products for medical applications, the authorisation issued by the Ministry of Health of [the State] for the use of such sources and products.

Article 14
The importer shall, without delay, upon receipt of the material or items referred to in Article 1 notify the State Regulatory Body of the time and place of receipt, the storage place, and the fulfilment of the conditions stipulated in Article 4.

Article 15
A person who, without a license from the appropriate State authority, brings into or takes out of [the State] material or items referred to in Article 1, is liable to a term of imprisonment of up to [ten] years. The same term applies also when a person makes a false declaration or by other malicious falsehood which contributes to a material or item referred to in Article 1 being exported or imported in contravention of the Law.

Article 16
If the material or items referred to in Article 1 are considered to have trivial value and the offence is deemed to be minor, then a fine shall be imposed or a term of imprisonment of up to [six] month.

Article 17
If the offence is deemed to be serious, the penalty shall be imprisonment, with a minimum of [two] years, and maximum of lifetime.

In respective of the seriousness of the offence, judgement will take into account whether the offence was committed by professional or organised criminals.

ILG COMMENT TO ARTICLE 15, 16 and 17:
These Articles deal with offences against the law. The serious character of offences, that comprise participation, or intended participation, in the manufacturing of nuclear

weapons, is such that the penalties should be severe. The penalties suggested between square brackets in the Articles should reflect the seriousness of a criminal handling of nuclear material. It is generally accepted, that punishment constitutes a necessary means for preventing illicit trafficking of nuclear material and radiation sources. The serious character of the offences leads also to the conclusion that they should be referred to the Criminal Law.

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

SAFEGUARDS OF NUCLEAR MATERIAL

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 March 2001
[First edition: August 1999]

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ILG LAW CONCEPT

SAFEGUARDS OF NUCLEAR MATERIAL

Note:
This Law Concept is intended for use by a State for preparing a draft law or regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 3 - March 2001
[First edition August 1994]

INTRODUCTION

1. It is assumed, that the State is a party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and has signed a safeguards agreement with the International Atomic Energy Agency (IAEA) in accordance with the IAEA document INFCIRC/153 (corrected), and has signed (or intends to sign) the additional protocol to the safeguards agreement in accordance with the IAEA document INFCIRC/540 (corrected).

2. It is also assumed that the State has already established a "Basic" nuclear law , covering the fundamental legislation principles and safety requirements related to nuclear activities. These fundamental principles and requirements should, as a minimum, have reference to the independence and responsibilities of a State Regulatory Body; the responsibilities of nuclear facility operators; the procedures for licensing; and the establishment and implementation of a State control system. They are, therefore, not repeated in the articles of the law concept presented in this document.

3. The introduction in a State's legislation of a separate law, or regulation, on safeguards of nuclear material should be seen as a response to the increased concern by the international community with respect to illicit trafficking and unauthorized use and removal of such material for the purpose of harmful actions against both human beings and the environment. Such a law, in combination with legislation on physical protection of nuclear material and facilities, and of import/export control of nuclear material, should lead to an improved defense against criminal activities concerning nuclear activities, and should be considered as one of the tools in the combating of illicit trafficking.

PREAMBLE

This Law acknowledges the [State's] Safeguards Agreement with the International Atomic Energy Agency (IAEA), including the Additional Protocol to the Agreement for the Application of Safeguards (referred to as "the Protocol"), and the requirements therein

- to accept safeguards by IAEA on all nuclear material within the [State's] territory;
- to establish a State System of Accounting for and Control of Nuclear Materials (an SSAC); and
- to provide IAEA with information and with access to locations as described in the Protocol.

Terms and definitions used in this Law are given the Safeguards Agreement (INFCIRC/153), in the Additional Protocol to the Agreement (INFCIRC/540) and in the IAEA Glossary (document IAEA/SG/INF/1).

CHAPTER 1 SCOPE OF THE LAW

Article 1
This Law applies to all nuclear activities associated with the acquisition, production, possession, use, storage, handling, processing, transport or other dealings with nuclear materials within the [State's] territory.

This Law also applies to nuclear activities and locations as referred to in Article 2 of the Protocol, including the provision for IAEA's access to those locations.

ILG Comment:
"Nuclear Materials" should be defined in the Basic Nuclear Law, and should be compatible with the definition given in the Safeguards Agreement. The Basic Nuclear Law may also include a definition of "Nuclear Activities".

CHAPTER 2 STATE SYSTEM OF ACCOUNTING AND CONTROL

Article 2
A State System of Accounting for and Control of Nuclear Materials (an SSAC) shall be established, implemented and maintained by the State Regulatory Body.

The main activities of the SSAC shall be:

- the recording and processing of information on nuclear material accounting and control, provided by facility operators and reported to the State Regulatory Body; and
- the collecting, processing and recording of the information on nuclear material by the State Regulatory Body and preparing of reports for evaluation internally and for submission to IAEA .

ILG Comment:
The State Regulatory Body and its responsibilities should be identified and stipulated in the Basic Nuclear Law.

Article 3
The objective of the SSAC should be to account for and control all nuclear material in [the State] that is subject to safeguards under the Safeguards Agreement with the IAEA, and to contribute to the detection of possible losses or unauthorised use, diversion or other removal of nuclear material.

The SSAC should also provide the essential basis for the application of IAEA safeguards pursuant to the provisions of the Safeguards Agreement with the IAEA.

Article 4
The SSAC shall be based on a structure of material balance areas, and shall make provisions as appropriate and specified in the Safeguards Agreement with IAEA for the establishment of such measures as:

a) a measurement system for the determination of the quantities of nuclear material received, produced, shipped, lost or otherwise removed from the inventory, and the quantities on inventory;
b) the evaluation of precision and accuracy of measurements and the estimation of measurement uncertainties;
c) procedures for identifying, reviewing and evaluating differences in shipper/receiver measurements;
d) procedures for taking a physical inventory;
e) procedures for the evaluation of accumulations of unmeasured inventory and unmeasured losses;
f) a system of records and reports showing, for each material balance area, the inventory of nuclear material and the changes in that inventory including receipts into and transfers out of the material balance area;
g) provisions to ensure that the accounting procedures and arrangements are being operated correctly;
h) procedures for the provisions of reports to IAEA.

Article 5
The SSAC shall establish procedures that ensure that the IAEA safeguards inspectors can effectively discharge their functions under the Safeguards

Agreement with IAEA for the exclusive purpose of verifying that nuclear material is not diverted to nuclear weapons or other nuclear explosive devices.

CHAPTER 3 RESPONSIBILITIES OF THE STATE EGULATORY BODY

Article 6
The State Regulatory Body shall (in regulations) establish:
a) the starting point of accounting for and control of nuclear material to be at least as early in the nuclear fuel cycle as is required in the Safeguards Agreement with the IAEA;
b) the provisions for termination of accounting and control to be upon determination that the nuclear material has been consumed or has been diluted in such a way that it is no longer usable for any nuclear activity or has become, in practice, irrecoverable;
c) the conditions for exemption from and termination of accounting and control to be consistent with the Safeguards Agreement with the IAEA.

Article 7
The State Regulatory Body shall establish the factors to be taken into account and the criteria to be met in the determination of nuclear material balance areas (MBAs). They should include the existence and location of key measurement points, containment, and surveillance possibilities. The State Regulatory Body shall approve the facility MBAs.

Article 8
The State Regulatory Body shall establish the requirements for accounting and operating records and reports for each MBA, providing relevant data on nuclear material transactions and operations that affect the accounting for and control of nuclear material.

Article 9
The State Regulatory Body shall establish categorisation of nuclear material in order to enable an appropriate verification procedure, as required in IAEA's guidelines.

Article 10
The State Regulatory Body shall establish the requirements for nuclear material, both in identifiable items and in bulk form, for accounting and operating records and reports for each MBA.

Article 11
The State Regulatory Body shall establish requirements for a measurement system and its acceptable grade of measurement uncertainty. The requirements shall include provisions for the determination of the quantities of nuclear material that is received, produced, shipped, lost or otherwise removed from the inventory. It shall also include provisions for the determination of inventory

quantities of such material based on sampling and destructive or non-destructive analysis, as appropriate.

Article 12
The State Regulatory Body shall establish requirements, when relevant, for the accounting and control of the flows of nuclear material, taking into account the degree of assurance to be obtained from containment or surveillance measures.

Article 13
The State Regulatory Body shall establish the requirements for the nuclear material physical inventories to be taken by the facility operators.

Article 14
The State Regulatory Body shall:
a) establish the requirements for identifying, reviewing, resolving and evaluating differences in all shipper/receiver measurements;
b) prescribe the procedures to be followed when shipper/receiver differences or their limits of measurement uncertainty exceed specified values.

Article 15
The State Regulatory Body shall:
a) establish the requirements
   - for the striking of nuclear material balances, and for calculating Material Unaccounted For (MUF) together with its limits of measurement uncertainty
   - for the determination of the components of the material balance through the use of measurements or derived estimates based upon measurements
   - for the evaluation of accumulations of unmeasured inventory and unmeasured losses and their limits;
b) require that MUF shall be held down to the lowest practicable level;
c) specify limits for MUF and for the measurement uncertainties associated with MUF, conforming substantially with the latest international standards and procedures to be followed to routinely monitor conformance to these standards;
d) prescribe procedures to be followed when MUF or the measurement uncertainties associated with MUF exceed the appropriate specified level.

Article 16
The State Regulatory Body shall require the setting up of a measurement control programme for safeguards purposes with the objectives of ensuring, inter alia, that the adequacy of routine operation of the measurement systems is confirmed; that measurement systems are recalibrated at appropriate intervals; that random and systematic errors are properly estimated for propagation so that the limits of measurement uncertainties associated with MUF can be established; and that clerical errors are, so far as practicable, detected and corrected.

Article 17
The State Regulatory Body shall establish requirements for international transfers of nuclear material with time specifications on necessary arrangements for advance notifications, accounting and control responsibility, and reporting on nuclear material shipped and received.

Article 18
The State Regulatory Body shall implement an audit and inspection programme with the purpose of assuring operator compliance with the requirements of the system of accounting and control for nuclear material. The objectives of the audit and inspection programme shall be, as a minimum:

a) to ensure that the capability of, and performance by, each facility operator for the discharge of his responsibility for accounting for and control of nuclear material satisfy the requirements of the Safeguards Agreement with the IAEA;
b) to derive assurance, through independent verification at facilities by the State Regulatory Body, that the accounting and control measures implemented by the facility operator are effective and, in conjunction with other measures, to conclude that there has been no unauthorised removal or use of nuclear material.

Article 19
The State Regulatory Body conduct periodic inspections at operating facilities to determine whether the performance of nuclear materials accounting and control reaches the standard set by the Body.

Article 20
Every facility operator shall institute a system for accounting and control of nuclear materials meeting the basic requirements of the SSAC. The facility operator shall describe the functions and responsibilities of the organisational units within the facility responsible for developing, approving and implementing nuclear material accounting and control at the facility. The system shall be approved by the State Regulatory Body. In this connection, the facility operator shall demonstrate that he has the ability to fulfil the requirements.

CHAPTER 4 RESPONSIBILITIES OF THE FACILITY OPERATOR

Article 21
The facility operator shall provide information on facility design and operations involving nuclear material in sufficient detail to permit evaluation of the adequacy of the facility accounting and control system for the application of the Safeguards Agreement with IAEA.

Article 22
The facility accounting and control system for nuclear material shall include the following:

a) assignment of organisational and custodial responsibilities for the nuclear material in the facility;
b) a system for recording and reporting nuclear material inventories and transfers that provides for adequate and timely measurement of material in inventory and being transferred; and for estimating measurement uncertainties;
c) procedures for;
   (i) the preparation, review and submission of reports to the State Regulatory Body, taking account of the required reporting frequency and maximum allowable time for submission after each reporting period;
   (ii) the striking of a material balance at intervals specified by the State Regulatory Body;
   (iii) the calculation and examination of MUF and shipper/receiver differences;
   (iv) the adjustment of accounts to accord with physical inventories, known biases, shipper/receiver differences, and correction of errors.
d) an information processing system for accounting at a facility to provide timely processing of working records, evaluation of data and identification of anomalies.

Article 23
The facility operator shall establish procedures for nuclear material flow measurements as necessary and when required for safeguards purposes.

Article 24
The facility operator shall establish procedures for nuclear material physical inventory taking that meet the requirements specified by the State Regulatory Body.

CHAPTER5 ADDITIONAL PROTOCOL TO THE SAFEGUARDS AGREEMENT

Article 25
The State Regulatory Body shall be responsible for the fulfilment of the requirements of the Protocol.

Article 26
The State Regulatory Body shall provide IAEA with a declaration, in accordance with Article 2 of the Protocol, containing:

a) a description and information on nuclear fuel-cycle related research and development activities not involving nuclear material, in accordance with Article 2.a(i) and 2.b(i) of the Protocol;

b) a description of each building on each site;
c) a description of the scale of operation for each location engaged in activities specified in Annex I to the Protocol;
d) information specifying location, operational status and estimated annual production of uranium mines and concentration plants;
e) information on source material which has not reached the composition and purity suitable for fuel fabrication;
f) information on nuclear material exempted from safeguards;
g) information on intermediate and high-level waste containing plutonium, high enriched uranium or Uranium 233;
h) information concerning export and import of specified equipment and non-nuclear material listed in Annex II of the Protocol;
i) general plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle;
j) information identified by IAEA of safeguards relevance at facilities and locations outside facilities.

Article 27
The State Regulatory Body shall provide for complementary access by IAEA to any place on a site; to any location identified in Article 26 d) - g); and to any decommissioned facility or decommissioned location outside facilities where nuclear material was customarily used.

Article 28
The State Regulatory Body shall provide for complementary access by IAEA for carrying out collection of environmental samples beyond declared facilities and locations, in accordance with Article 5.c and 9 of the Protocol.

Article 29
The State Regulatory Body shall establish administrative arrangements that facilitate IAEA's activities according to this Law.

CHAPTER 6 TERMS AND DEFINITIONS

ILG Comment:
The terms included in this Chapter are those mentioned in the text of the Law Concept. Other terms might also be included in the Law, in which case the definitions should agree with those given in the Safeguards Agreement (according to INFCIRC/153) or in the IAEA Glossary (document IAEA/SG/INF/1).

BOOK INVENTORY of a *material balance area* means the algebraic sum of the Most recent physical inventory of that material balance area and of all *inventory changes* that have occurred since the *physical inventory* was taken.

EFFECTIVE KILOGRAM means a special unit used in safeguarding nuclear material. The quantity in "effective kilograms" is obtained by taking:

a) for Plutonium, its weight in kilograms;
b) for Uranium, with an *enrichment* of 0.01 and above, its weight in kilograms multiplied by the square of its enrichment;
c) for Uranium with an enrichment below0.01 and above 0.005, its weight in kilograms multiplied by 0.0001; and
d) for Depleted Uranium with an enrichment of 0.005 or below, and for thorium, its weight in kilograms multiplied by 0.00005.

ENRICHMENT means the ratio of the combined weight of the isotopes Uranium-233 and Uranium-235 to that of the total uranium in question.

FACILITY means:

a) a reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant or a separate storage installation; or
b) any location where nuclear material in amount greater than one *effective kilogram* is customarily used.

INVENTORY CHANGE means an increase or decrease of nuclear material in a material balance area.

KEY MEASUREMENT POINT means a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory.

MATERIAL BALANCE AREA (MBA) means an area in or outside of a facility such that:

a) the quantity of nuclear material in each transfer into or out of each material balance area can be determined; and
b) the physical inventory of nuclear material in each material balance area can be determined when necessary, in accordance with specified procedures,

in order that the material balance for safeguards purposes can be established.

MATERIAL UNACCOUNTED FOR (MUF) means the difference between book inventory and physical inventory.

PHYSICAL INVENTORY means the sum of all the measured or derived estimates of quantities of nuclear material on hand at a given time within a material balance area, obtained in accordance with specified procedures.

SHIPPER/RECEIVER DIFFERENCE means the difference between the quantity of nuclear material as stated by the shipping material balance area and as measured at the receiving material balance area.

NUCLEAR FUEL CYCLE-RELATED RESEARCH AND DEVELOPMENT ACTIVITIES means those activities which are specifically related to any process or system development aspect of any of the following:

- conversion of nuclear material,
- enrichment of nuclear material,
- nuclear fuel fabrication,
- reactors,
- critical facilities,
- reprocessing of nuclear fuel,
- processing of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233,

but do not include activities related to theoretical or basic scientific research or to research and development on industrial radioisotope applications, medical, hydrological and agricultural applications, health and environmental effects and improved maintenance.

ANNEX 1 ILG Terms of Reference

1. The International Group of Legal Experts (the Legal Group) has been established with the purpose of co-ordinating support activities by donor countries in the area of Nuclear Legislation and Regulations in the Newly Independent States, including the Baltic States.

2. With a view to assisting, on request, in the development of a legal and regulatory framework of a good international standard, the Legal Group's objectives are to review nuclear laws and regulations, taking into account international conventions, agreements, codes of practice and legislation of other countries, and to suggest amendments and supplements as necessary. The Legal Group will also aim at harmonizing the nuclear laws of the countries concerned as appropriate.

3. The activities of the Legal Group comprise:

   a) To review existing or draft laws and regulations in the area of:
   Nuclear Non-Proliferation Systems and Procedures, including Nuclear Material Accountancy and Control, Physical Protection, Export/Import Control;
   and with respect to nuclear laws, also
   Transport of Radioactive Material, Nuclear Safety, Radiation Protection, and Nuclear Liability.

   b) To suggest amendments and supplements, taking into account commitments by the States in international conventions and agreements, such as the Treaty on Non-Proliferation of Nuclear Weapons (NPT), the Safeguards Agreement with the IAEA, the Convention on the physical protection of nuclear material, the Vienna Convention on nuclear liability, and the Convention on nuclear safety.

   c) To suggest improvements to organizational structures of State authorities, including distribution of responsibilities and handling routines for licensing of nuclear operations and activities.

   d) To provide information on relevant international and national legal developments.

4. The Legal Group will carry out its task in close co-operation with the States, and will invite representatives of those States to participate.

Vienna November 1995

ILG
INTERNATIONAL GROUP OF LEGAL EXPERTS

ANNEX 2

ILG REGULATION CONCEPT

Certain Regulations for the Practical Implementation of the Convention on Nuclear Safety

Note:
This Regulation Concept is intended for use by a State for preparing a draft regulation, which would be reviewed and commented upon by the ILG under an agreed Co-operation Programme in the field of nuclear legislation.

Edition 2 December 2000
[First edition: March 1998]

PREAMBLE

This regulation is based on the Convention on Nuclear Safety, to which [the State] is a party in accordance with the [law or decree of (date)].

CHAPTER 1 BASIC REQUIREMENTS

1.1 The license of a nuclear facility shall:

1.1.1 Establish documented guidelines on how to maintain safety at the facility at a high level, and to ensure that the facility personnel that are engaged in safety important work are well familiar with the guidelines.

1.1.2 Ensure that the activities at the facility, in accordance with the guidelines, are directed and developed with support of a Quality System that covers activities important to safety.

1.1.3 Ensure that decisions concerning safety matters are taken after sufficient preparation and advice, so that the matters are covered in all respects.

1.1.4 Ensure that there is a sufficient number of personnel that have the competence and capability necessary for the kind of work that is important to safety, and that this has been documented.

1.1.5 Ensure that the tasks and responsibilities of the staff engaged in safety related work are well defined and documented.

1.1.6 Ensure that the personnel is given the tools and conditions needed for the execution of the work in a safe way.

1.1.7 Ensure that own experience, as well as experience and information from other similar activities, is being accumulated continuously, and that it is communicated to the persons concerned.

1.1.8 Ensure that, through these and other precautions, a high degree of safety is maintained and continuously developed and improved.

1.2 The Quality System referred to in paragraph 1.1.2 shall be kept up to date and be documented in a Quality Manual that shall include procedures and instructions that are needed for the control of activities important to safety.

The Quality System shall be evaluated periodically with respect to its function, suitability and efficiency; the evaluation shall be done by a quality assurance unit that is independent from the evaluated activities.

CHAPTER 2 DESIGN AND CONSTRUCTION

2.1 In order to fulfil the requirements of Chapter 1, a nuclear facility must be designed and constructed in such a way that component or system failures do not violate the overall safety of the facility. Furthermore, the facility must fulfill requirements on reliability and operational stability, on physical protection, and on the ability to maintain, control and test all safety related components.

2.2 Design criteria and design of components and systems shall be well tested under conditions that correspond to those that can exist for the intended applications at the facility. If this is not possible or reasonable, they shall have passed examinations and evaluations required with respect to safety.

2.3 The design solutions shall be adapted to the ability of the personnel to handle, in a safe way, the facility and the operational disturbances and accidents that may occur.

2.4 Buildings, devices, components and systems shall be designed, manufactured, assembled, checked and tested according to requirements that are adapted to their importance to safety.

CHAPTER 3 ANALYSIS AND REPORTING

3.1 Safety Analysis

Analysis of conditions important to safety shall be done before the start of construction of a facility. The safety analysis shall be based on a systematic inventory of such events, course of events and conditions that can lead to a radiological accident.

3.2 Safety Analysis Reports

A Preliminary Safety Analysis Report shall be established and submitted before construction of a facility is allowed to start. A Final Safety Analysis Report shall be done before the start of operation. The Safety Analysis Report shall contain the information listed in appendix 1. The Final Safety Analysis Report shall, in addition, contain the Technical Operational Specifications referred to in chapter 4.1.

Before construction and operation of a facility may start, the Safety Analysis Report shall be reviewed in accordance with chapter 3.3, and it shall be approved by the State Regulatory Body. From then on, the Safety Analysis Report shall be amended and be kept up to date, as appropriate.

3.3 Safety Review

The safety review shall include judgement and control of the applicable safety aspects related to a specific matter, and to what extent the applicable safety requirements on design, function, organization or activities are fulfilled. The review shall be carried out in a systematic way and it shall be documented.

A safety review shall be carried out, both within the organizational units of a facility that are responsible for the factual matters, and also within a specially established safety review function or unit, which shall be independent in relation to the organizational bodies responsible for the factual matters.

3.4 Safety Programme

After a facility has been taken into operation, the safety shall be continuously analyzed and judged in a systematic way. The need for safety improving measures, both technical and organizational, that arise from such analysis and judgements, shall be documented in a Safety Programme, which shall be reviewed and amended annually.

3.5 Frequent Safety Reviews

At least every tenth years, a new, overall safety analysis and judgement of the facility safety shall be carried out. The analysis, the judgement and the correcting or improving measures resulting from the analysis, shall be documented and be reported to the State Regulatory Body.

3.6 Modifications

Technical or organizational modifications of the facility, which can affect the conditions specified in the Safety Analysis Report, as well as principle modifications in the report, shall be subject to safety reviews.

Before implementation, the modifications shall be reported to the State Regulatory Body, that can decide whether further or other requirements shall be applied for the modifications.

CHAPTER 4 OPERATION OF FACILITIES

4.1 Technical Operational Specifications

Each facility shall have documented Technical Operational Specifications, containing information on which conditions and limitations for operation that shall be applied. Before the Technical Operational Specifications can be applied, they shall be reviewed, tested and approved by the State Regulatory Body.

The Technical Operational Specifications, together with the Operational Instructions of paragraph 4.2, shall ensure that the conditions that are analyzed and reported, or that are presumed in the safety analysis report, are maintained at the facility.

The Technical Operational Specifications shall be kept up to date. Modifications of the specifications shall be safety reviewed. Before the modified specifications are applied, they shall be reported to the State Regulatory Body, that can decide that further or other conditions or limitations shall be part of the Technical Operational Specifications.

4.2 Operational Instructions

Each facility shall have suitable and documented operational instructions, which shall describe the actions to be taken at normal operation, as well as at operational disturbances and accidents. Instructions that are relevant for the operation in accordance with the Technical Operational Specifications, and instructions to be applied at operational disturbances and accidents, must be safety reviewed before they are implemented.

The instructions shall be kept up to date. The concerned staff shall be well familiar with the instructions.

4.3 Continuous Inspection, Testing and Maintenance

Building parts, components, systems and other devices important to safety of a facility shall be regularly inspected and tested in order to check that they function in a safe way, and that there are no signs of harmful influence. In order to prevent operational disturbances and deficiencies of importance to safety at the facility, they shall be maintained according to special maintenance programmes that shall be documented.

The maintenance programmes shall be reviewed regularly, taking into account experience at the facility and at other similar facilities.

4.4 Emergency Preparedness

In the event of operational disturbances or incidents which can lead to radiological accidents at a facility, Emergency Measures shall be prepared in order to;

- immediately alert the emergency personnel at the facility,
- bring the facility back to a safe and stable state, and
- submit information on the technical state at the facility.

The Emergency Measures shall, before the facility is taken into operation, be documented in a plan that shall be safety reviewed, tested and approved by the State Regulatory Body. The plan shall be kept up to date, and its suitability shall be tested at regular exercises.

Modifications of the plan that may affect the Emergency Measures, shall be safety reviewed. Before the modifications are implemented, they shall be reported to the State Regulatory Body, that can decide that further or other measures shall be prepared for.

There shall be assigned personnel, suitable management rooms, technical systems, means and protective equipment to the extent necessary for carrying out the Emergency Measures.

4.5 Review of Events and Conditions

Occurred events and revealed conditions of importance to safety shall be reviewed in a systematic way, in order to clarify course and causes, and to take measures for preventing a recurrence.

Information about the results of the reviews shall be dispersed within the organization and contribute to the improvement of the safety at the facility. The results shall be reported to the State Regulatory Body in accordance with the requirement of chapter 6.1.

CHAPTER 5 NUCLEAR MATERIAL AND RADIOACTIVE WASTE

5.1 Each facility shall keep an inventory record over the nuclear material and the radioactive waste at the facility. The record shall be kept up to date.

5.2 The Safety Analysis Report according to chapter 3.2 shall prescribe the measures that have to be taken for the safe containment of the nuclear material and the radioactive waste at the facility during handling, storage and final disposal. The Safety Analysis Report shall also prescribe the measures needed for the safe containment of the nuclear material and the radioactive waste during transport to or storage or final disposal in another facility.

5.3 If radioactive waste is generated of a kind and amount different from what is stated in the Safety Analysis Report, then the measures that need to be taken for the safe containment of the different waste must be documented in a plan. Before the implementation of the measures, the plan shall be safety reviewed and reported to the State Regulatory Body, that may decide that further or other measures shall be taken for the safe containment of the different waste.

5.4 Before the start of decommissioning and dismantling of a facility, the measures to be taken for the safe containment of the nuclear waste generated shall be documented in a plan which shall be safety reviewed in accordance with chapter 3.3, and be tested and approved by the State Regulatory Body.

CHAPTER 6 REPORTING TO STATE REGULATORY BODY

6.1 Occurred events and revealed conditions of essential importance to safety at a facility shall be reported without delay to the State Regulatory Body. Also other events and conditions of importance to safety or to the physical protection shall be reported to the State Regulatory Body. More detailed instructions on the requirements of reporting should be issued by the State Regulatory Body.

Routine reporting of the operational status of a facility and of activities important to safety shall be made to the extent required by the State Regulatory Body.

CHAPTER 7 DOCUMENT FILING

7.1 Technical facility documentation and Safety Analysis Reports shall be filed at the facility as long as the nuclear activity is maintained.

7.2 Documentation of the facility operation and of other activities important to safety shall be filed at the facility during the time necessary for
a) the clarification and analysis of occurred events and their causes,
b) the performance of regular safety reviews,
as long the nuclear activity is maintained at the facility.

CHAPTER 8 EXCEPTIONS

8.1 The State Regulatory Body may grant exceptions from these regulations, if there are specific reasons to do this.

APPENDIX

The Safety Analysis Report shall include information on:

Facility site

Design requirements, standards and norms

Description of the facility and its function

Radioactive material

Radiation safety

Operation of the facility

Analysis of operational conditions

References

Drawings, schemes and diagrams

ANNEX 3 ILG REVIEW REPORTS

Title of Report	Date of Report
ARMENIA	
Comments and Suggested Amendments to the Draft Law of the Republic of ARMENIA on the Peaceful Use of Nuclear Energy	1997-01-29
Second Review Report of the Draft Law of the Republic of Armenia on the Peaceful Use of Nuclear Energy	1997-12-12
Supplement to the Review Report 1997-12-12 on Armenia's Law: Licensing Conditions	1997-12-12
BELARUS	
Suggested Amendments and Comments to the Draft Law of the Republic of Belarus on Radiation Safety and Activities involving the Use of Nuclear Energy	1996-04-20
GEORGIA	
ILG Review Report in the form of a Law Concept Fundamental Requirements for Nuclear Legislation the Republic of Georgia	1996-07-01
Suggested Amendments to the Draft Law on Nuclear and Radiation Safety of the Republic of Georgia	1996-11-19
KAZAKSTAN	
Suggested Amendments and Comments to the Draft Law on Atomic Energy Use of the Republic of Kazakstan	1996-02-08
Suggested Amendments and Comments to the Draft Law on Radiation Safety of Population of the Republic of Kazakstan	1996-03-25
Comments and Suggested Amendments to the Draft Law of the Republic of Kazakstan on Radioactive Waste Management	1997-02-12

LATVIA

Comments on the Draft Basic Regulations For Protection against Ionising Radiation of the Republic of Latvia 1996-04-25

LITHUANIA

Proposed Amendments and Comments to the Draft Nuclear Energy Law of the Republic of Lithuania 1995-10-12

MOLDOVA

ILG Review Report in the form of a Law Concept Fundamental Requirements for Nuclear Legislation in the Republic of Moldova 1996-08-10

Comments and Suggestions to the Draft Law on Radiation Protection of the Population of the Republic of Moldova 1996-08-20

Comments on the Draft Law on Radiation Safety of the Republic of Moldova 1997-04-28

RUSSIAN FEDERATION

Comments on Accounting and Control Recommendations for Nuclear Materials in the Form of Accounting Units at Nuclear Facilities 1998-06-04

Comments on Control and Accountability Recommendations for Nuclear Materials in Bulk Form at Nuclear Facilities 1998-06-08

Comments on Inspection Arrangements for the State of Record Keeping and Control of Nuclear Materials and Ensuring Guarantees of their Non-Proliferation and Regulations Governing Inspections of Nuclear Materials Accounting and Control at Fuel Cycle Facilities 1998-06-09

Comments on Provision on Target Inspection of Nuclear Material Accounting, Control and Physical Protection connected to Loss, Revealing of Not-Taken-Into-Account Surpluses, Theft or Unauthorised Use of Nuclear Materials and Provision on Target Inspection of Physical Protection of Nuclear Materials, Nuclear Facilities and Nuclear Materials Storage Facilities 1998-06-10

Comments on The Federal Law on the Use of Nuclear Energy of the Russian Federation	1998-06-30
Comments on Rules on Physical Protection of Nuclear Materials, Nuclear Installations and Storage Sites of Nuclear Materials and Provision on Supervision of Physical Protection of Nuclear Materials, Nuclear Facilities and Storage Facilities of Nuclear Materials	1999-02-15
Comments on State System for Nuclear Material Accounting and Control	1999-04-12
Comments on Requirements for Organisation of Material Balance Areas at Nuclear Facilities and Nuclear Material Storage Sites	November 2000

UKRAINE

Suggested Amendments and Comments to the Law of Ukraine on the Use of Nuclear Power and Radiation Safety	1996-04-26
Comments and Suggested Amendments to the Draft Law of Ukraine on Protection of Human Beings against Radiation	1997-01-10
Comments and Suggested Amendments to the Draft Law of Ukraine on Physical Protection of Nuclear Installations, Nuclear Material and Radiation Sources	1996-12-20
Comments and Suggested Amendments to the Draft Law of Ukraine on Permissive Activities in the Area of Use of Nuclear Energy	1997-04-22
Principal Elements of National Law/Regulations on Accountancy and Control and Licensing of Nuclear Material in Ukraine	1996-06-30

www.ski.se

STATENS KÄRNKRAFTINSPEKTION
Swedish Nuclear Power Inspectorate

POST/POSTAL ADDRESS SE-106 58 Stockholm
BESÖK/OFFICE Klarabergsviadukten 90
TELEFON/TELEPHONE +46 (0)8 698 84 00
TELEFAX +46 (0)8 661 90 86
E-POST/E-MAIL ski@ski.se
WEBBPLATS/WEB SITE www.ski.se