

RADIATION PROTECTION LEGISLATION IN THE NORDIC COUNTRIES

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ABSTRACT

A close collaboration exists in the Nordic countries in the field of radiation protection. The radiation protection authorities attach major importance to a uniform interpretation of the international recommendations. The legal situation of the Nordic countries in the radiation protection field will be reviewed with the main emphasis on the new Swedish and Finnish laws.

INTRODUCTION

The Nordic radiation protection authorities attach major importance to a uniform interpretation of the international recommendations. However, no attempt has been made to formulate identical laws and regulations for all the five countries, since the legal and administrative framework of the five Nordic countries differs. A survey of the Nordic co-operation in radiation protection is available in ref (1).

DENMARK

The X-ray law was enacted already 1930 and the Radiactive Substances law in 1953. The laws are supplemented with orders issued by the National Board of Health. In refs (1), (2), and (3) the orders until end of 1990 are reviewed. In 1991 the following order is published:
No 319. On electron accelerators for the treatment of patients with energies from 1-50 MeV.

FINLAND

The new law published as no 1991:592 will come into force on 1st January 1992. The scope of the new Finnish law is rather extensive. Except for the utilization of radiation, it shall apply to activities involving exposure to natural radiation and non-ionizing radiation. Its basic objective is to protect human health.

The generally approved basic principles of radiation protection are contained in the law as the guiding principles of regulatory control:

- justification,
- optimization of radiation protection (ALARA), and
- individual dose limitation.

Any licenced employer using radiation or whose activities involve exposure to radiation shall be responsible for the safety of the activity. Any carrying out such an activity shall

with radiation. The employees are, in turn, obliged to collaborate in maintaining radiation protection.

The new law contains provisions concerning radioactive waste. The starting point has been that the same requirements should apply to all radioactive waste, regardless of whether it comes from nuclear or other operations. According to the model in the Swedish law on nuclear activities, the new law therefore lays down that persons conducting activities involving radiation must be responsible for the handling of radioactive waste and its storage in a satisfactory manner. Another similar rule is the scrapping of equipment that may produce radiation. A source of X-ray radiation may, for example, constitute a hazard by being connected to the electricity grid. In view of this, it is prescribed that equipment capable of generating hazardous radiation must, before being scrapped, be rendered harmless.

According to the radiation protection law, a licence is in principle required for activities involving sources of ionizing radiation. Where non-ionizing radiation is concerned, the principle is that a licence for such activities involving the source of radiation is required only after a specific decision by the Swedish Institute of Radiation Protection.

According to the new law, penalties may be imposed both for intentional offences and for offences committed as a result of negligence. Depending on the seriousness of the offence, the penalty may vary from a fine to imprisonment for a maximum of two years.

According to the statement issued by the Parliament, it is essential for the main responsibility for radiation protection to be concentrated in a single radiation protection authority (the Swedish Institute of Radiation Protection). The intention is that the law should, in many respects, obtain its specific content from regulations imposed by the Institute.

REFERENCES

1. Persson, L., 1987, Radiation Protection and Atomic Energy Legislation in the Nordic Countries, SSI-report 87-34, Swedish Radiation Protection Institute, Stockholm.
2. Persson, L., 1990, Radiation Protection Legislation in the Nordic Countries, SSI-report 90-13, Swedish Radiation Protection Institute, Stockholm.
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The purpose of the new law is to protect people, animals and the environment against the harmful effects of ionizing and non-ionizing radiation. Ionizing radiation is defined in the law as the radiation of gamma rays, X-rays and particles or other radiation with similar biological effects, i e with such a high energy content that, in passing through materials, it is capable of releasing ions. Non-ionizing radiation is defined as optical radiation, radio-frequency radiation, low-frequency electric and magnetic fields and ultrasound or other radiation with similar biological effect. The law covers radiation that is both natural and produced or caused by human action.

The new law contains regulations concerning general obligations to be observed with respect to radiation protection. These regulations cover both ionizing and non-ionizing radiation. The central provisions concerning general obligations apply to persons conducting activities involving radiation. It is incumbent on such persons not only to follow the directives and conditions laid down but also, on their own initiative, to take all the measures required to maintain radiation protection. The duties of the person responsible therefore include planning and arranging activities in a manner that is acceptable from the viewpoint of radiation protection. Radiation protection must conform to a reasonable extent with technical development and be improved as new opportunities are afforded by development. The person responsible for activities must organize all the work in such a way that exposure to radiation is as low as may be reasonably demanded. This responsibility covers both employees engaged in the activity concerned and outsiders.

One obvious prerequisite of all activities involving radiation is that the person conducting the activities concerned is skilled in handling the equipment and the source of radiation. The training requirements must simultaneously be defined according to the potential hazardousness of the source of radiation, the nature of radiation protection and the other circumstances that may affect radiation hazards in a factory, or in the handling of radioactive substances. The provision may also entail, for example, a duty on the part of persons conducting activities involving radiation to ensure that the doses of radiation to which employees are exposed are registered. This may be done by general monitoring of the radiation level in the work premises or by measurements of doses received by individuals.

One important element in radiation protection is that facilities, premises, machinery and other technical devices, as well as protective equipment, are continuously checked and well maintained. This responsibility is included in the duties to be observed by the person conducting activities involving radiation.

According to the law, persons conducting activities involving radiation should, by means of clear and comprehensible instructions, signs or in some other way obtain a good knowledge of the conditions under which the activities are conducted and be informed of the risks that may be associated

thus be responsible for the safe performance of the activity and for having available the appropriate expertise.

The so-called safety license sets the basis for the regulatory control of the utilization of radiation. The licensing procedure is intended for ensuring that

- radiation is used sensibly and acceptably,
- radiation equipment and shields are technically acceptable,
- the operating personnel and organization are competent, and
- radioactive waste is appropriately taken care of.

Type testing is a form of regulatory control which applies to i a radiation sources used as consumer goods and many devices producing non-ionizing radiation.

The law also contains provisions concerning i a patient safety, monitoring of natural radiation, radiation work as well as radioactive waste.

Finland has a modern nuclear energy law which entered into force in 1988 on which the enforcement of the regulatory control of the use of nuclear energy mainly rests. Therefore, the provisions of the radiation protection law which apply to the use of nuclear energy are restricted to:

- The requirements concerning justification, optimization and individual dose limitation apply to nuclear energy, too. By virtue of the radiation protection law, maximum radiation doses are confirmed by which individual dose limitation is implemented, and
- The monitoring and registration of doses of nuclear power plant workers shall comply with the radiation protection law.

The Finnish Centre for Radiation and Nuclear Safety is entrusted with the enforcement of the regulatory control.

ICELAND

The Radiation Protection Act and its complementary ordinance were issued in 1985 and 1986, ref (1). In ref (2) the regulations published since then are reviewed.

NORWAY

The radiation protection law relating to the use of x-rays and radium, etc. published in 1938 has remained unchanged since then, ref (1). The complimentary Royal decrees and regulations are reviewed in refs (1) and (2). Recently the process has started to propose a new law to the Norwegian parliament.

SWEDEN

With effect from 1st July 1988 a new radiation protection law came into force in Sweden. In ref (2) the legal text of the act and its complementary ordinance is given. Regulations issued by the Swedish Radiation Protection Institute are reviewed in refs (1), (2), and (3).