



THE REGULATORY CONTROL OF RADIATION SOURCES IN TURKEY

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Abstract. In Turkey, the national competent authority for regulating activities involving radioactive sources is the Turkish Atomic Energy Authority, which implements the responsibility for the safety and security of radiation sources through its Radiation Health and Safety Department. The report describes the organization of the regulatory infrastructure for radiation safety in Turkey and, after a brief explanation of the current legal framework for such purpose, it refers to how the management of radiation sources is carried out and to the new provisions regarding radiation sources, including inspections of licensees and training on source safety. Finally, the report provides information on the İkitelli radiological accident in Turkey and the current public concern about radiation sources after it happened.

REGULATORY INFRASTRUCTURE OF TURKEY

In Turkey, the national authority for regulating activities involving radioactive sources is the Turkish Atomic Energy Authority (Turkish abbreviation TAEK). As can be seen from Figure 1, the Radiation Health and Safety Department (RSGD) of the TAEK is responsible for the safety and security of radiation sources. The RSGD operates radiation monitoring centres in five regions; the Health Physics Division of the Çekmece Nuclear Research and Training Center (ÇNAEM) operates radiation monitoring centres in the other two regions, the measurement results being sent to the RSGD for evaluation.

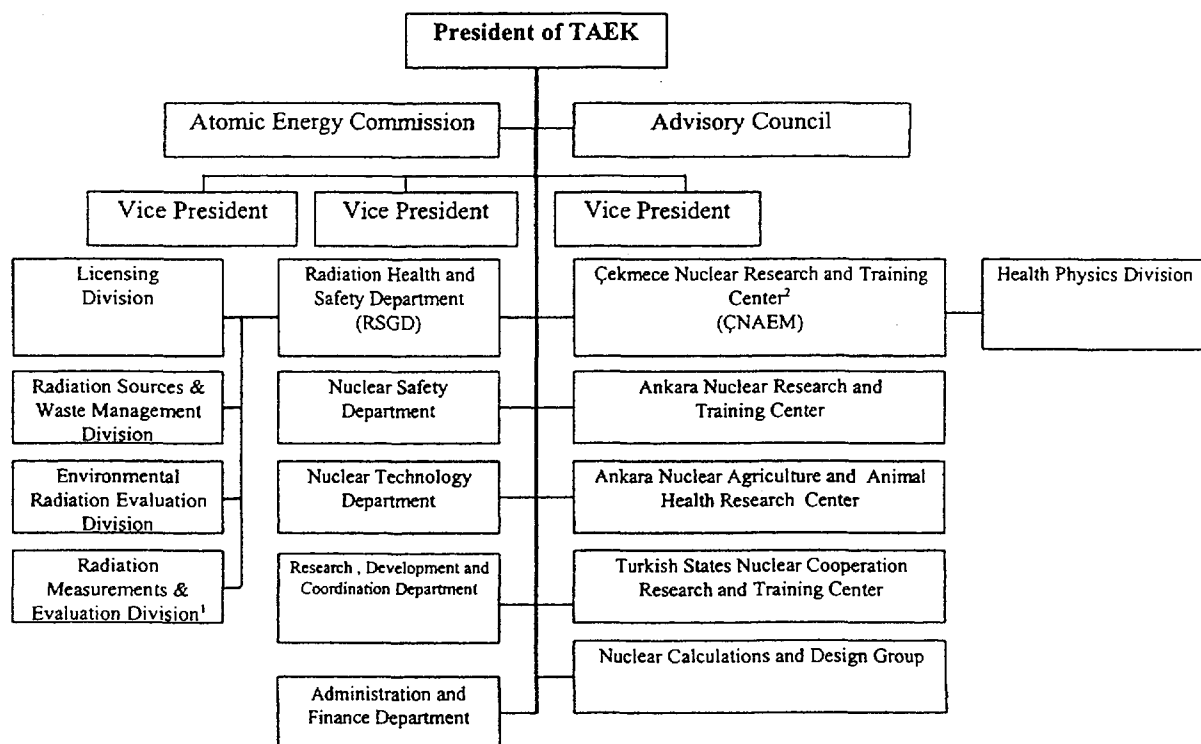


Figure 1

CURRENT LEGISLATION

The Turkish Atomic Energy Act, the basic law, states as its objective the promotion of nuclear energy R & D and utilization for peaceful purposes; it deals in very broad terms with the control of nuclear materials, nuclear reactors and nuclear waste and with protection against radiation hazards. A Radiation Safety Decree provides for a licensing regime for the use, production, import, export, transport and storage of radiation sources. The recently published Radiation Safety Regulation is based on the BSS and EC Directive 96/29/Euratom.

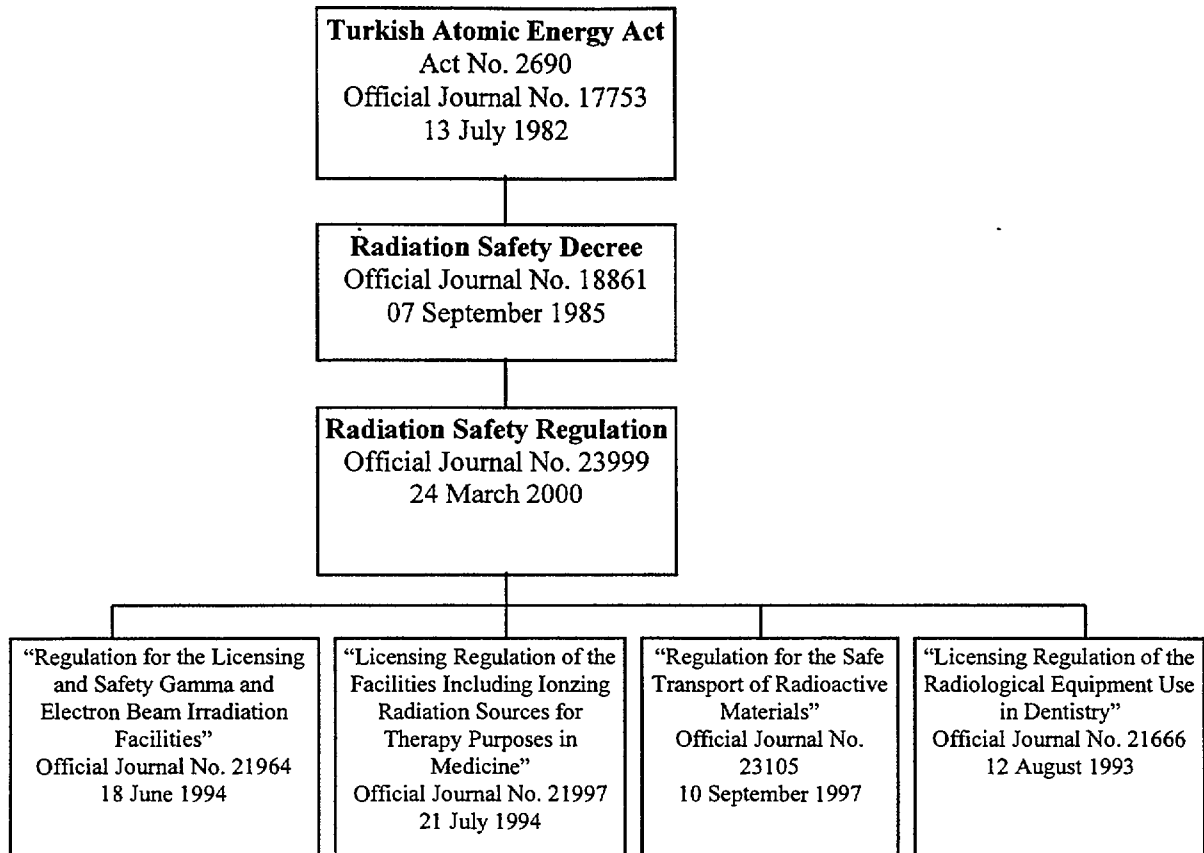


Figure 2

THE MANAGEMENT OF RADIATION SOURCES

The Radiation Source and Waste Management Division of the RSGD is responsible for granting permission for the import, export, transport, maintenance, etc. of radiation sources and of devices containing radiation sources. The Radiation Safety Regulation requires that companies wishing to engage in such activities first obtain a licence. Some other important aspects of the national system for ensuring the safety of radiation sources are as follows:

- (a) Permission is needed also from the TAEK every time a source is imported into, exported from or transported within Turkey. In order to obtain permission to transport sources, the consignor must comply with the Turkish Regulations for the Safe Transportation of Radioactive Substances; the consignor must provide the TAEK with, inter alia, details of the transport route and emergency plans. Imported sources are subject to customs controls by TAEK officials.

- (b) Radiotherapy facility operators must notify the TAEK each time a source is changed. The TAEK then carries out dose rate measurements to ensure that the shielding specifications of the installation for the new source are satisfactory. In addition, the output values of cobalt-60 teletherapy sources are checked, using TLDs, by the dose comparison method at the Secondary Standard Dosimetry Laboratory (SSDL) of the TAEK.

NEW PROVISIONS RELATING TO RADIATION SOURCES

The TAEK will take the following actions to prevent radiation accidents:

- (a) All radiotherapy centres (46) will be routinely inspected. Licence conditions will be reviewed and the details of cobalt-60 sources will be compared with the TAEK inventory. Furthermore, licensees will be informed of the procedures for re-exporting used teletherapy sources, and the TAEK will offer temporary storage at the ÇNAEM for such sources if necessary.
- (b) The output of all cobalt-60 teletherapy machines will be checked regularly with TLDs supplied by the TAEK's SSDL.
- (c) Companies which apply to the TAEK for permission to re-export sources will be required to specify the exact date when the sources will be delivered to the consignee. The re-export must take place not later than 15 days after [submission of] [approval of] the application, and the consignor must ensure that the consignee confirms receipt of the source(s).

INSPECTIONS OF LICENSEES

The Radiation Safety Regulation requires that the users of radiation sources and of devices containing radiation sources be inspected regularly in order to ensure that they are complying with the Regulation. Additional inspections may be necessary - for example, after an incident or accident. Inspections may involve one or more of the following:

- (a) ensuring that equipment, facilities, systems, buildings and operational procedures correspond to the Radiation Safety Regulation,
- (b) the examination of records relating of personnel, to the collection of radioactive waste, to radiation sources and to incidents or accidents,
- (c) interviews and/or consultations with licensee staff,
- (d) visual examinations of working practices,
- (e) checking systems operations and warning signs,
- (f) checking on the follow-up to previous inspections,
- (g) seeking deficiencies and problems not previously identified.

TRAINING IN THE SAFE USE OF RADIATION SOURCES

The provision of theoretical and on-the-job training in radiation safety, particularly for regulatory authority staff, is one of the most important activities of the TAEK (20 new regulatory officials have been recruited by the RSGD this year). The main topics are: the operation of systems of notification and authorization; the development of regulatory requirements; the inspection of premises; and the enforcement of the Radiation Safety Regulation.

One- and or two-day educational programmes have been organized for customs and civil defense officers who may encounter orphan sources in the course of their duties.

Training programmes have been organized for the purpose of making users of radiation sources thoroughly aware of the requirements of the Radiation Safety Regulation; booklets and other information material have been distributed to users, who — like regulatory officials — need to know how to deal with radiological emergencies that may arise owing to a breakdown of controls.

PUBLIC CONCERN ABOUT RADIATION SOURCES AFTER THE İKİTELLİ ACCIDENT

The İkitelli accident was the first major radiological accident in Turkey. News of the accident spread immediately after its discovery, and it was the main story in the next morning's newspapers. The media coverage continued for several days, and this created great public anxiety. Both the ÇNAEM and the medical authorities had to deal with many inquiries from members of the public concerned about their health.

Initially, the media compared the accident with the Chernobyl accident, which resulted in a significant overestimate of the effects, and public discussions tended to focus on identifying and punishing the responsible persons. Subsequently, a positive interaction developed between the media and the nuclear sector; journalists were free to interview radiation protection experts and were regularly provided with details of the actions being taken to minimize the health and environmental effects of the accident, and the authorities were perceived by the public to be providing accurate information.

The successful recovery of the abandoned source was reported by the media, and this, in conjunction with the open public awareness policy of the ÇNAEM administration, helped to reduce public concern.

The psychological impact of the accident on the public was high, as expected. The family most involved in the accident experienced great anxiety and social isolation from friends and relatives.

Previously, public concern about nuclear energy had related to the operation of nuclear power plants, to the production of isotopes at research centres and to nuclear weapon tests. This accident created a general awareness that medical and other applications of radioactive materials can also pose a considerable risk to the public and therefore require strict regulation.