THE GERMAN SYSTEM TO PREVENT, DETECT AND RESPOND TO ILLICIT USES OF NUCLEAR MATERIALS AND RADIOACTIVE SOURCES

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The German system to prevent, detect and respond to illicit uses of nuclear materials and radioactive sources consists of a variety of different elements:

- International and national laws and regulations covering safeguards, physical protection, and import/export control;
- Licensing and regulatory supervision of all activities related to nuclear materials and radioactive sources, including import and export;
- Responsibility of the licensee to ensure compliance with licensing conditions; sanctions.
- Law enforcement by police, security and customs authorities; prosecution and penalties.
- Detection of illicitly trafficked radioactive materials through intelligence and technical means; analysis capabilities.
- Response arrangements for normal and for severe cases of illicit use of nuclear materials;
- Participation in international programmes and POC-systems.

The Federal Republic of Germany is a federation of 16 States (called "Länder"); for constitutional reasons functions like licensing and regulatory supervision of most of the activities related to nuclear materials and radioactive sources, law enforcement, detection and analysis, and response (prosecution, hazard prevention) rest with State authorities; international obligations, import/export licensing and control, and licensing of nuclear transports are taken care of by Federal authorities.

Safeguards measures have been implemented in Germany in accordance with the Non-Proliferation Treaty and with safeguards agreements based on INFCIRC/153; they are going to be enhanced to meet the requirements of INFCIRC/540 (The Additional Protocol). As Germany is a member of the European Union, the Euratom Treaty and the Euratom-Ordinance Nr. 3227/76 together with the Verification Agreement between the IAEA, the European Commission and the European Member States have led to safeguards measures jointly implemented by the IAEA and by Euratom.

The relevant international law for the **physical protection** of nuclear material in force in Germany is the Convention on the Physical Protection of Nuclear Material; the categorization scheme for nuclear material contained in Annex II of the Convention became legally binding in Germany through the ratification process. The recommendations on physical protection objectives and fundamentals and on physical protection measures specified in INFCIRC/225/Rev. 4 have been taken into account in various national regulations pertaining to the national design basis threat, the physical protection of LWR nuclear power plants, of interim spent fuel storage facilities, of facilities containing category III material, of nuclear material and radioactive waste transports by road or railway vehicles, aircraft or sea vessels; additional guidelines cover requirements for security guards, physical protection commissioners and escort personnel, for reporting of security relevant events, and for advance notifications of shipment of nuclear material.

The relevant national legislation for the **licensing and supervision** of all nuclear activities and activities with radioactive sources are the German Atomic Energy Act and the Ordinance on the Protection Against Damage and Injuries caused by Ionising Radiation; a specific ordinance covers the security clearance for trustworthiness. The following activities need a license or authorization by the competent authorities: import/export of nuclear material, transportation of all radioactive substances, storage and use of nuclear and other radioactive substances, construction and operation of all nuclear facilities. Physical protection, including trustworthiness of all personnel, and safeguards measures are licensing conditions as far as nuclear materials are concerned; for radioactive sources security measures are required, including trustworthiness of relevant personnel. The respective licensee is responsible to ensure the implementation of the licensing conditions at any time; he is subject to permanent regulatory supervision by the competent authorities; for cases of non-compliance **sanctions** are specified in the national legislation, including administrative penalties, amendment or revocation of the license.

Additional legislation and regulations covering the **export** of nuclear materials and technology are the German Foreign Trade Act and the Foreign Trade Ordinance, supplemented by the Zanger Committee Trigger List and by the NSG Guidelines, Parts 1 and 2, as published in the IAEA document INFCIRC/254. The War Arms Control Act pertains to the export of weapons components and items usable for weapons construction. The export licensing authority is the Federal Office for Foreign Trade; it is supported by an interdepartmental advisory group. Compliance control of nuclear import and export activities with legal requirements is carried through at the national borders, at sea- and airports, and also inside the country by the Customs Border Control, and by the Customs Investigation Service.

Penalties for offences against nuclear laws and regulations, especially for any kind of illicit use of nuclear materials and radioactive sources, are stipulated in the German Penal Code. The penalties may range from fines to imprisonment for up to ten years, even up to lifetime imprisonment in very severe cases. Criminal investigations will be carried through by State and – in special cases by the Federal – Criminal Investigation Offices; in addition, the Customs Crime Office has a wide competence for criminal investigations of its own.

Detection of cases of illicit use of nuclear materials or radioactive sources will be either through intelligence and criminal investigation activities, also making use of under-cover agents and of information available through intelligence services and other security authorities. For the detection of radioactive substances by technical means, the police and the customs authorities are equipped with hand-held detectors and car-mounted systems. They will be supported by the radiation protection authorities with sophisticated detection and analysis systems. An in-depth chemical and physical analysis of confiscated nuclear material will be made by the European Institute for Transuranium Elements, of other radioactive materials by university institutes or nuclear research centres.

Regulations and recommendations for the joint **response** of State and Federal authorities (nuclear supervisory and radiation protection authorities, law enforcement and customs authorities, explosives disablement services, fire brigades, etc.) in cases of illicit use of nuclear materials or radioactive substances are in place. They cover the assignment of responsibilities and tasks, coordination and leadership, communication links, reporting and alerting procedures and systems; they pertain to search, detection, safe access, analysis, estimation of radiological consequences, mitigation of radiological consequences of disablement, storage of seized material [1]. In severe cases, the interdepartmental

coordination group on State level may be assisted by a Joint Staff on Federal level, which could deploy a Federal Support Group formed out of experts from the Federal Office for Radiation Protection, the Federal Office for Criminal Investigation and the Federal Border Police; this group is especially equipped and trained.

REFERENCES

[1] KRÖMER, P.W., FECHNER, J.B., KILLUS, W., Experience with Illicit Trafficking in Nuclear Materials in Germany, Situation report and co-operation between law enforcement and radiation protection authorities (Proc. Conference on Physical Protection of Nuclear Materials: Experience in Regulation, Implementation and Operations, 10-14 November 1997;