

Radiation Protection Education of Executive Authorities in Austria

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1. Abstract:

Legal basis and the self-protection of the own action forces are the reasons, why the executive authorities (Federal Police and Federal Gendarmerie) in Austria are engaged with radiation protection.

The main task of education and training is delegated to the Civil Protection School, which belongs to the Department for Civil Protection in the Federal Ministry of the Interior. The possible missions range from control of transports with dangerous goods, accidents with radioactive materials, measurements after accidents in nuclear power plants, preventing illicit trafficking up to satellite crashes.

The education is split in three sections, one week each, with two examinations. For preserving the standard of education and readiness for duty a regular further education and obligatory advanced training is a basic premise.

The aim of the education is to educate autonomous and self dependent action-forces, which are under compliance of self-protection in a position, to detect radioactive sources or contamination, to measure them and to secure the dangerous zone.

The programs of the education and training include theoretical instructions and practical exercises. The programs are currently evaluated and updated according to the latest standards of pedagogics, didactics and technology.

This radiation protection education is offered in a modified form also to other action forces and authorities who were entrusted with tasks in radiation protection (e.g. fire brigade, red cross, telecommunications, customs, citizens of municipalities, provinces and ministries) to guarantee a most preferable basic training.

The programs are supplemented by special courses, as for example radiation detection with helicopters supported with a GPS-airborne monitoring system or special instruction courses in connection with border protection monitors to prevent the illicit trafficking of radioactive sources or nuclear material.

2. Introduction:

In Austria there are numerous action forces trained in radiation protection. Besides the Federal Armed Forces, the fire brigades and rescue organisations it is mainly the executive (Federal Police and Federal Gendarmerie), which ensures safety with a dense network of radiation detectors always ready in case of accidents and incidents connected to radioactive materials.

3. Legal Basis:

The Law for Radiation Protection obliges the authorities of the Federal Police and Federal Gendarmerie to measure and mark radioactive contamination and to observe whether pre-arranged security- and safety-measures are followed should extensive radiological cases of emergency occur.

In the Austrian Penal Code facts of the case such as wilful or negligent threat of nuclear power or ionising radiation as well as the illicit handling of nuclear and radioactive materials force the executive authorities to interfere.

Observing the compliance with international hazardous freight regulations according to the ADR (radioactive materials of class 7) is one area of responsibility of the Police and Gendarmerie.

Corresponding to the regulations of the Austrian Law of the Security Police the authorities for public civil protection (Police and Gendarmerie) must – within the framework of first general aid in cases of threats of radioactive materials - take first steps in warding off danger.

Last but not least it is the protection of the own action forces seen under the aspect of the Server's Law that can be taken as the legal basis for the training of action forces of the executive in radiation protection.

4. Organisation:

A consistent, tight and flexible structure is the prerequisite for an efficient mission. Thus each administrative district – depending on its size - has 4 to 6 fully trained officers in radiation protection; in the sphere of activity of each Federal Police Headquarters there are at least 18 to 36 of them. In the case of larger missions action forces can immediately be moved in from other Federal States. All over Austria there are approximately 800 people from the Police and Gendarmerie who are fully trained in radiation protection. Additionally each Federal State and each Federal Police Headquarters have one officer trained as a consultant for radiation protection. He is responsible for the organisation, co-ordination and advice concerning matters of radiation protection in his geographical area of responsibility.

5. Missions Possible:

- Detecting and measuring radiation and carrying out contamination controls after accidents in nuclear power plants.
- Detecting and pin-pointing radioactive fragments after a satellite with radioactive inventory has crashed.
- Search missions for lost or illegally deposited radiating sources.
- Fighting nuclear criminality and preventing illicit import of radioactive and nuclear materials.
- Preventative self-protection of one's own action forces.
- Participating in priority programs carried out by the police.



6. Education and Training:

The education and training course for radiation detectors with the Federal Police and Federal Gendarmerie is split in three sections, one week each, and – after passing two exams - is completed with the award of the special position of a Police- or Gendarmerie- radiation detector. This special duty is defined in a server's decree of the Federal Ministry of the Interior and entitles the holder to wear an operational badge. The education and training take place at the Civil Protection School of the Federal Ministry of the Interior and follow the latest pedagogical and didactic methods. The course is carried out in close co-operation with renowned scientific facilities such as the Austrian Research Centre Seibersdorf or the Nuclear Institute of the Universities of Austria.

In a modified version this education and training scheme is also offered for different action forces (i.e. fire brigades, rescue organisations, customs, ...), whose tasks include radiation protection. Thus a general basic education and training in radiation protection independent of individual organisations (and therefore offering a uniform terminology and strategy) can be guaranteed.



6.1. First Section:

The first part of the education and training mainly serves the purpose to prepare the participants for their future tasks. Special emphasis is given to fundamental nuclear physics, definition, detection processes and familiarising with technical equipment. During a field day the correct detection and measuring of radiating sources is practised. The end of the course is marked by a simulated field-mission assuming an extensive radioactive contamination.

6.2. Second Section:

On passing the second section of the education and training program the officer of the Police or Gendarmerie is entitled to participate in radiation detection missions together with a fully trained radiation detector. Only in urgent emergency situations is he allowed to work on his own. In this course the participants already have to know about detection methods, they have to carry out practical measurements of contamination and must prove basic knowledge in the theory of radiation protection.



The course ends with an generally accepted “Radiation Protection – Achievement test in Bronze”, carried out by the Austrian Research Centre Seibersdorf).

In this exam the candidate must score a certain number of points in four practical missions and one theoretical exercise.

6.3. Third Section:

After passing the third section of the education and training scheme the officer of the Police or Gendarmerie is regarded as fully trained, independent and acting on his own authority. The aim of the third section primarily concentrates on the command of radiation detection missions. It finishes with the “Radiation Protection – Achievement test in Silver” (see above). Parts of the exam are: drawing up contamination maps after accidents in nuclear power plants; considering solutions for traffic accidents involving radioactive materials. The sound knowledge is completed by an excursion to a research reactor and the teaching of the overall scheme of Austria’s extensive observation for radioactive contamination.

7. Specialised Courses:



For the fast pin-pointing of radiating sources and radioactive contamination specialised training courses for radiation detection from the air by helicopters have been held for decades. Two air detection probes including high-volume Geiger-Müller tubes are linked to a laptop with an integrated global positioning system (GPS) via an radiation detection measuring instrument. At an altitude of 100 metres and a speed of 80 km/h these probes securely detect an activity of less than 100 mCi Cobalt 60. The system is further equipped with data-transmitting software which transfers the measuring- and positioning-data taken to the headquarters. There they can be transmitted to decision-finding systems or graphical information systems.

The special advantages of this system are mainly its very simple operation, its quick readiness for use, its high sensitivity of detection and excellent possibilities of evaluation.

Austria-wide the Federal Ministry of the Interior is the only organisation having at its disposal 10 airborne monitoring systems of this kind including data acquisition in the field of measuring and positioning as well as data transmission.



8. Further Education and Training:

A basic premise to preserve the standard of education and the readiness for duty are a regular further education and obligatory training.

Thus each radiation detector of the Federal Police and Federal Gendarmerie must yearly participate in a two days' training course including field-missions. These courses are offered by the Civil Protection School of the Federal Ministry of the Interior.

Additionally each radiation protection consultant yearly has to undergo schooling in his field of responsibility. There the special conditions of each regional area of activity are taken into account individually.

The premise for continuous duty in this special service is the regular participation in the further education and training schemes.

9. Equipment:

Each of the close to 800 radiation detectors in the Federal Police and Federal Gendarmerie is equipped with his personal protective clothing consisting of the protective suit, filter mask, gloves and boots as well as a personal thermoluminescence dosimeter.

For the task of radiation detection almost 200 cases with measuring instruments are available all over Austria. Each of these cases contain a radiation meter for measuring dose rate and contamination, a contamination measuring instrument and a digital warning- and alarm-dosimeter which can be read directly.

Marking instruments are used for marking and securing the danger zone. These instruments come with radiation warning signs and extensive cordoning material.



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