



DIFFERENT TRAINING PROGRAMS FOR THE TRANSPORT OF RADIOACTIVE GOODS PROPOSED BY THE INSTN

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To meet the statutory requirements of the ADR pertaining to training, the INSTN (National Institute for Nuclear Sciences and Technology) proposes different courses on the transport of radioactive materials.

Presentation of the INSTN

The INSTN is a higher educational institution established in 1956 within the CEA (French Atomic Energy Commission) and is placed under the joint supervision of the Ministries of Education and Industry.

The INSTN is in charge of organizing :

- National and European academic courses for students, engineers and technicians.
- Vocational training sessions for participants of any origin and nationality, including secondary school physics teachers or experts from industrialized or developing countries.
- Training through research coordinated by the Institute, as well as assistance and guidance to PhD and post-PhD students.

As a training tool and vector for the CEA's knowledge to spread to universities, engineering colleges, industrial companies and the medical sector, the INSTN engages in European dynamics and is helping the formation of partnerships and the establishment of networks, and therefore organizes training sessions in English.

The transport of radioactive materials is one of the various fields in which the INSTN is involved. In fact the Institute is the only organism in France approved by the Ministry of Transport and by the *Direction Générale de la Sûreté Nucléaire et Radioprotection* (DGSNR) to dispense training for the drivers of radioactive materials.

The different trainings proposed by the INSTN

- Initial training for the drivers :

This training lasts five days. It groups together the basic training and the specialization of class 7 (7 being the number attributed in the list of the classes of dangerous goods) and concerns drivers never having transported such goods before.

The basic training lasts two and a half days and is a common-part syllabus in all training organisms. Moreover it is a compulsory passage to achieve the specialization. It covers the general requirements governing the carriage of dangerous goods, the main types of hazard, the technical equipment on vehicles, the placarding and the prohibitions on mixed loading in the same vehicle. In the second part of this training, specific to radioactive materials, is developed the theoretical notions pertaining to radioactivity, to hazard of contamination and exposure as well as radiation protection. The statutory aspect of the transport of these goods and the measures to be taken in the event of an accident are approached in a detailed manner.

After completion of the initial training, the knowledge is verified by a written examination. The modalities of this exam are defined in the ADR. The INSTN respects these specifications in order to keep the habilitation.

The most difficult aspect is having personnel with no scientific background to understand complex, theoretical ideas. This is why the teaching method used alternates theory and practical training/exercises. Practical training accounts for 25% of the overall course, especially through exercise of extinction of fires, demonstration of chemical reactions and manipulation of detection equipment. This type of training, where the attendees are actively involved, is only achievable in small numbers. The law stipulates that there cannot be more than 25 students at one time.

This training answers to the point 8.2.1 and 8.2.2.4 of the ADR.



Simulated accident involving a vehicle transporting radioactive materials

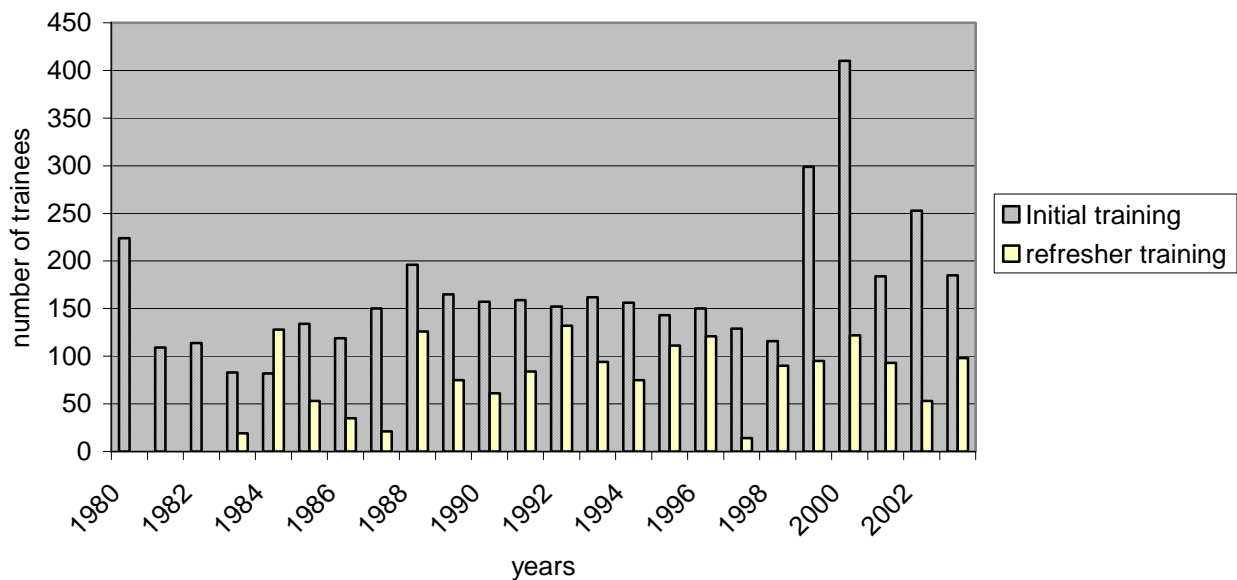
- Refresher training for the drivers

The requirement foresees a refresher course with a periodicity of 5 years, accessible to drivers already holders of the certificate of driver's training for class 7. This enables students to refresh their memories and constitutes an opportunity to bring them up-to-date with the latest techniques and regulations. It also means that they stay alert and dangerous behaviour is thereby avoided. The subjects dealt with are the same as those covered during the basic training period. The students already know the basics and therefore less time is spent (21 hours), The end-of-course test is the same as for the previous training.

Different teaching methods are used during refresher courses since professional experience and situations experienced by drivers are used to further their knowledge. An interactive "question and answer" type method is used to stimulate the students' thought processes. Theoretical aspects are covered only when required, or in order to introduce changes in the regulations.

This training answers to the points 8.2.1 and 8.2.2.5 of the ADR.

INITIAL AND REFRESHER TRAINING COUSES FOR DRIVERS



- Initial training for the Safety Advisers

This training addresses every person coming from an undertaking including the carriage of dangerous goods by road or the related packing, loading, filling or unloading of dangerous goods by road and specifically appointed by the head of this undertaking.

The training lasts 5 days. The first day is optional and addresses persons who have no real knowledge in the nuclear field. It enables them to upgrade their knowledge in radioactivity and in radiation protection and to better understand certain statutory requirements subsequently. The second day, the trainee discovers the regulation in a detailed way following a vital lead: determination of packaging, proper shipping name, labeling, transport documentation. These subjects are analysed by working with the ADR, the regulation of the IAEA and the French regulation. The mornings are reserved for the theoretical work and the afternoons for practical work sessions: exercises or MCQ are proposed, allowing the trainees to assimilate the theory learnt previously and also to reduce the volume of attainments of the day. In order to maintain a liveliness in the teaching day one teacher gives the theoretical lecture and another one assures the practical part, so as to permit the trainees to revise the subjects presented differently. The last morning is reserved for a simulation of examination, that is to answer 50 questions of type MCQ and to realize a case-study in 4 hours. The copies corrected by the 2 teachers are handed back to the trainees and a collective correction is organized in the classroom. The candidates consequently become aware of their weak points and thus can optimally use the time left before official examination, organized by the approved body. This high level training enables the trainees to prepare themselves in optimal conditions and to succeed the examination of safety adviser imposed in chapter 1.8.3 of the ADR.

- Refresher training for the safety Advisers

The rule imposes on the safety adviser to sit an examination every 5 years so as to extend the validity of his certificate. The training, of a duration of 3 days, is realized in its entirety by the same teacher to avoid repetitions which could appear between the different trainers. The education begins with a presentation of the current statutory texts. Then, on the same theme as in the initial training, the teacher studies every statutory subject in detail, and continues with the realization of several questions (MCQ), similar to those of the examination before passing on to the following subject. On the third morning the candidate sits through a practice exam. The correction of copies is assured by an optical character reader that enables to return them back to the trainees quickly. The trainer corrects each question with the help of the trainees.

This training enables the trainees to update their knowledge and prepares them to pass the examination organized by the approved national organism in better predispositions. This training answers to the point 1.8.3 of the ADR.

- Transport safety of radioactive goods

This training of 3 days is intended for the staff of the CEA and its subsidiary companies working directly or indirectly in the field of the transport. This course was created on the initiative of the Risk Management Division of the CEA, to ensure that the staff of all the CEA centres receives the same training and in order to avoid disparities between them. The first day the European rules and the French rules are presented in a detailed way. On the second day the trainees receive information relative to the organization of transport in the CEA, rules appropriate to the CEA, the role and the responsibility of the main participants, the behavior to be held in a case of an incident, as well as the crisis-management. At the end of this theoretical part, the practical works are done by establishing transport documents from examples of real transports. In each item, which necessarily has to appear on the document, the trainee thinks about the mention to be indicated. The number of attendees for this training is small therefore ensuring an important interactivity between the trainees and the trainers.

This training answers to the points 1.3.1 and 8.2.3 of the ADR

Transportation courses realised for international trainings :

The INSTN has already organized for the IAEA a 3 week course, entitled « Safe Transport of Radioactive Material » intended for a public native of the eastern european countries and working generally in ministries. Experts of all nationalities intervened, thereby bringing a particular dynamics to this education as well as a cultural enrichment.

The subject of the transport is also explained in academic educations such as the European Radiation Protection Course (ERPC) in Saclay, France and the Post Graduate Educational Course (PGEC) in Rabat (Morocco).

Lectures in the field last about 6 hours. They can be given by a competent trainer of the INSTN in the field or an outside expert recruited by the INSTN. These courses are given in English.

Transportation courses realized for french trainings :

Within the framework of sessions quoted below, intended for the vocational training, the subject of the transport is approached:

- Decommissioning of the nuclear facilities
- Dismantling for reconversion of nuclear facilities
- Intervention and cleansing agent in radioactive environment
- Radiation protection for « personnes compétentes » (french RPO)
- Fuel cycle

In total, more than 500 persons followed a training among the five proposed yearly by the INSTN. To date more than 4000 drivers stemming from more than 350 companies were trained at the INSTN.

The necessity of training having considerably increased, the annual number of vocational trainings which was initially of about 15 is currently 35.

Also, the technical officers of the INSTN study all specific demands of trainings which are different from those existing and propose adapted training programs assured by experts.