

# **RADIATION PASSBOOK AND TRAINING MODEL FOR OUTSIDE WORKERS IN SPAIN**

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## **1.- INTRODUCTION**

European Directive 90/641/Euratom established the general framework for operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas. In Spain this Directive has been transposed through Royal Decree 413/1997, which established specific responsibilities regarding Radiation Passbook and the training in radiation protection of outside workers.

The Spanish radiation passbook was introduced in 1990 and since this time, Nuclear Safety Council (CSN), as the regulatory authority has required that all outside workers entering controlled areas should have radiation passbooks. Recently, CSN has implemented improvements in the Spanish radiation passbooks taking into account the previous experience and the Directive 96/29/Euratom.

With regard to training in radiation protection of outside workers, in 1998 the CSN and the Association of the electricity utilities (UNESA) initiated joint efforts to define a new radiation protection training model for Spanish outside workers. This model should involve both the outside undertaking and the nuclear power plants. Several options already implemented in other European countries were studied and as result a model based on the following criteria was developed:

- An initial training course which is responsibility of the outside undertaking.
- A specific course which will be responsibility of the operators of the controlled area in which outside workers perform the activities.

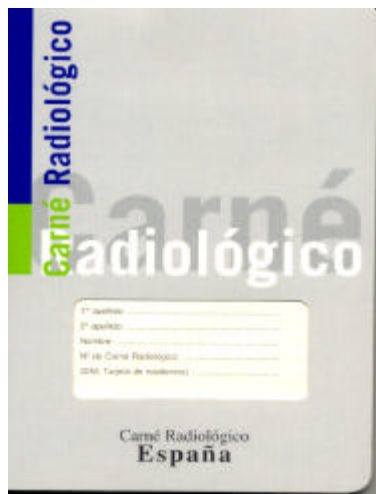
## **2.- RADIATION PASSBOOK**

The operational protection of outside workers is regulated by the Royal Decree nº 413/1997, according this legislation all outside workers must have an individual radiological monitoring document (radiation passbook) containing all necessary information to ensure the radiological protection of these kind of workers (training information, health data, dose information).

The Royal Decree nº 413/1997 empowered the Nuclear Safety Council to establish and to modify the format and content of the radiation passbook. So, the CSN performed an Instruction nº IS-01, which was published into national legislation on 31<sup>st</sup> of May of 2001.

This Instruction IS-01 defines the format and content of new Spanish radiation passbook. For designing the format of the new radiation passbook the CSN has taken into account the previous experience obtained since 1990 in using the past radiation passbook. So, the radiation passbook has been designed in such way that is possible to be filled in mechanically, ensures the reliability of the data included, and avoids unauthorised modifications of the data (coloured paper (beige) and sewing pages). The new radiation passbook has been put in force since 1 of January of 2002.

Following figure shows the design of the new Spanish radiation passbook:



1. INFORMACIÓN A CUMPLIMENTAR POR LA EMPRESA EXTERNA EN LA APERTURA DEL CARNE

1.1. DOMICILIO DEL TITULAR (a complimentar también en caso de cambio de los datos iniciales):

C: Peñ. Volador n.º 3  
 Población: Algete Provincia: Madrid  
 Teléfono: 91- 33333 propio/ajeno (subrayar lo que proceda)

C: \_\_\_\_\_  
 Población: \_\_\_\_\_ Provincia: \_\_\_\_\_  
 Teléfono: \_\_\_\_\_ propio/ajeno (subrayar lo que proceda)

C: \_\_\_\_\_  
 Población: \_\_\_\_\_ Provincia: \_\_\_\_\_  
 Teléfono: \_\_\_\_\_ propio/ajeno (subrayar lo que proceda)

1.2. HISTORIAL DOSIMÉTRICO HASTA LA FECHA DE EMISIÓN DEL PRESENTE CARNE

1.2.1. DOSIS VIDA (mSv)

EXPOSICIÓN EXTERNA							CONTAMINACIÓN INTERNA		DOSIS EFECTIVA (Suma de (1) y (2))
(1) Dosis acumulada	Dosis subcutánea	Manos	Antebrazos	Piés	Tobillos	Cráneos	Otras zonas	(2) Dosis efectiva comprometida (mSv)	
<u>133</u>	<u>180</u>	-	-	-	-	-	-	<u>10</u>	<u>143</u>

Observaciones (reflexar aspectos relevantes en relación con las dosis recibidas por el trabajador como por ejemplo dosis no súbitas de exposiciones especialmente autorizadas):

1.2.2. DOSIS EFECTIVA DE LOS ÚLTIMOS 5 (CINCO) AÑOS (sin contar año en curso)

AÑO	EXPOSICIÓN EXTERNA (1)	CONTAMINACIÓN INTERNA (2)	DOSIS EFECTIVA (SUMA (1) Y (2))	OBSERVACIONES (*)
<u>1997</u>	<u>35</u>		<u>35</u>	
<u>1998</u>	<u>8</u>		<u>8</u>	
<u>1999</u>	<u>25</u>		<u>25</u>	
<u>2000</u>	<u>10</u>	<u>10</u>	<u>20</u>	
<u>2001</u>	<u>7</u>		<u>7</u>	

(\*) Reflexar aspectos relevantes en relación con las dosis recibidas por el trabajador como por ejemplo dosis no súbitas de exposiciones especialmente autorizadas.

El titular del presente carné: D. D. Juan Español Español declara la veracidad de la información referente a datos personales, formación y datos de exposición y sobre formación en protección radiológica anterior a la fecha de emisión del presente carné.

Firma del titular del carné

The new Spanish radiation passbook contains the following information:

- **Outside worker's identity:** includes the information necessary for the identification of the outside worker (name, surname, national identification document number or passport number, gender, date of birth, nationality and address)
- **Dose information before the issue of the radiation passbook:** effective dose equivalent from external exposure, from internal exposure and effective dose for the last five years.
- **Outside undertakings (employer):** name of the employer, national identification code, number in the CSN register for outside undertakings, dates of starting and finishing of the contract (for outside worker), occupational category, radiological classification, undertaking's stamp and signature of the undertaking responsible.
- **Operators (facility):** name of the facility, address, period of time covered by the activity, operator's stamp and signature of the operator responsible.
- **Health data (medical surveillance):** date and type of medical examination, medical classification, conditions for working and if any type of restriction for working applies, name and stamp of the approved occupational health service, national identification number and signature of the health physician.
- **Basic and specific training:** date, name of the training centre, training centre stamp and signature of centre's responsible person
- **Internal dosimetry:** date of assignment (day/month/ year), date of measurement (month/year), type of control (routine, special), total activity (Bq), radionuclides, effective committed dose, approved dosimetry service's stamp, and signature of approved dosimetry service's responsible person.
- **Dosimetric file which the operator (facility) must fill in:** operational external dosimetry-time period, dose record, operator's stamp, and signature of the operators responsible.
- **Dosimetric file which the undertaking (employer) must fill in:** Official external dosimetry-date (month and year),  $H_p(10)$  and  $H_p(0,07)$ , internal dosimetry-committed doses, effective doses- official external ( $H_p(10)$  plus internal doses), effective doses in the last five years, undertaking's stamp and signature of the undertaking responsible.
- **Doses of non-uniform exposure:** date (month and year), dose equivalent in different parts of the body (hands, forearms, feet, ankles and others), undertaking's stamp and signature of the undertaking responsible.

### 3.- TRAINING IN RADIATION PROTECTION FOR OUTSIDE WORKERS

The Spanish transposition of the European Directive through Royal Decree 413/97 distributed the responsibility for outside worker radiation protection training between the outside undertaking (basic training) and the nuclear and non-nuclear installations (as operator of controlled area is responsible to provide the outside worker specific training).

In 1998 was set up a joint <<ad-hoc>> Group, which included representatives from UNESA Radiological Protection and training divisions and from CSN for defining a radiation protection training model for outside workers. The members of this Working Group carried out a survey in European countries in order to acquire knowledge of the training models implemented in other countries in response to the European Directive. In February of 2001 the CSN and UNESA agreed a consolidated approach for radiation protection training of outside workers.

A series of general criteria were taking into account in the design of the training model which derived from the experience accumulated by training division at nuclear power plants:

- The training must be aimed at a wide sector of workers, the majority of whom are unqualified persons, so the contents should be simple and focusing on aspects relating to every day activity and of practical application.
- Specific training should be oriented basically towards practical aspects relating to knowledge of the nuclear plant, the radiological risks associated to the activities in which the worker would be involved and the methodology established for protection against these risks

Taking into account these criteria two types of training have been established:

#### 3.1. Basic Training:

- *Objectives:* to instruct workers on the specific characteristics of the risks involved in ionising radiation and on protection against such risks.
- *Responsibility:* Outside undertakings
- *Programme:* The following topics have been considered for the basic training course:
  - Radiation and its effects
  - Legal and administrative aspects.
  - Description of risks and protection measures: external exposure, external contamination, internal exposure, identification of risks and prevention measures.
  - Practical exercises and practical sessions.
- *Duration of the basic course:* Theoretical topics: 4,5 hours; practical topics: 1,5hours
- *Evaluation:* An evaluation of the knowledge acquired has been considered necessary on completion of the course by means of a written test with 20 questions and a practical examination.
- *Accreditation:* Accreditation of successful completion of the course should be included in the outside worker's radiation passbook, filling in the training section.
- *Retraining :* Every two year the outside workers must attend a basic training course, and must undergo a written and practical examination, if the outside worker has reached the training objectives an accreditation should be included in the outside workers radiation passbook. This accreditation every two year included in the outside worker's radiation passbook is required as authorisation to work in a nuclear facility.

### 3.2. Specific training

- *Objectives:* to refresh and update the most important items learned during basic training and inform the worker of the specific radiological risks in the controlled areas, the measures to be taken and the specific performance standards.
- *Responsibility:* Operator of a controlled area in which outside workers perform activities.
- *Programme:* The following topics have been considered:
  - Physical concept and specific risk of the nuclear facility
  - Plant risk prevention methodology
  - Rules to be followed in controlled area
  - Actions in event of radiological emergencies
- *Duration of the specific course:* Theoretical topics: 4 hours
- *Evaluation:* An evaluation of the knowledge acquired has been considered necessary on completion of the course by means of a written test with 20 questions.
- *Accreditation:* Accreditation of successful completion of the course should be included in the outside worker's radiation passbook, filling in the specific training section.

### 3.3. Current situation

After defining the design and contents on radiation protection training for outside workers, the CSN has drawn up a draft of an Instruction, which once will bring into force in national legislation, it will define the legal framework, content of the courses (basic and specific training), structure, needs of qualification and skills of the trainers and validity of the courses.

At the same time, UNESA is developing a pilot project for basic training on radiation protection for outside workers involve in activities in the nuclear facility field. The course is being designed around the learning outcomes required for working as outside workers in the nuclear field.

At first stage, a modular course will be developed with successive modules; Part 1 (Radiation and its effects), Part 2 (Legal and administrative aspects), Part 3 (Description of risks and protection measures). Practical activities in order to apply the theoretical knowledge to real situations have been incorporated into the appropriate modules. This course has been designed for face-to face teaching, including traditional methods as lectures, tutorials and structured practical sessions and contemporary methods such as videos and computer exercises.

Additionally to this course and at second stage, UNESA has planned to develop a course based on multi-media interactive programmes. This multi-media tool will consist of a relational database containing information about the same topics included in the modular course. The visualisation of this information will be done with a personal computer, and special attention will be given to the interactivity of the system which will support multiple choice questions. The system will validate the responses, distinguishes between the correct and the wrong answers.

### REFERENCES

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