CURRENT STATUS OF OCCUPATIONAL RADIATION PROTECTION FOR OUTSIDE WORKERS IN SPAIN
SPANISH RADIOLOGICAL PASSPORT

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The CSN (Consejo de Seguridad Nuclear) is the Spanish Regulatory Body in matters of Nuclear Safety and Radiation Protection.
The radiation protection of outside workers in Spain is governed by Royal Decree 413/1997 which transposes the provisions of Directive 90/641/Euratom.

Scope: R.D. 413/97 applies to any outside worker (category A or B) performing work activities in controlled areas in nuclear or radioactive facilities.
The ultimate goal of this Royal Decree is to ensure that the radiological protection of outside workers is equivalent to that offered to those workers permanently employed by the operators of controlled areas in nuclear and radioactive facilities in Medicine, Industry, etc.
Definitions

Outside Undertaking means any natural or legal person, other than the operator of a nuclear or radioactive facility, performing work activities in controlled areas of such facility.

Controlled Area means any work area subject to special regulation and access control for the purpose of protection against ionising radiation.
Outside Worker means any exposed worker performing activities in a controlled area in nuclear or radioactive facilities whether employed temporarily or permanently by an outside undertaking, including trainees, apprentices and students, or whether he provides services as a self-employed worker.

Spanish Labour Regulations establish that workers supplied by Temporary Employment Agencies are not permitted to work in controlled areas; therefore they can not be employed by outside undertakings.
Royal Decree 413/1997
Duties and Responsibilities

Obligations of Regulatory Authority

Obligations of Facility Operators

Obligations of Outside Undertakings

Obligations of Outside Workers

REAL DECRETO 413/1997, de 21 de marzo, sobre protección operacional de los trabajadores externos con riesgo de exposición a radiaciones ionizantes por intervención en zona controlada.

El Real Decreto 53/1992, de 24 de enero, por el que se aprueba el Reglamento sobre protección sanitaria contra radiaciones ionizantes, tiene por objeto establecer las normas básicas de protección radiológica para prevenir la producción de efectos biológicos no estocásticos y eliminar la probabilidad de aparición de efectos biológicos estocásticos, hasta valores que se consideran aceptables para los trabajadores profesionalmente expuestos y los miembros del público, como consecuencia de las actividades que impliquen un riesgo de exposición a las radiaciones ionizantes.
Royal Decree 413/1997.

Duties and responsibilities

Obligations of Regulatory Authority

• Create and maintain the National Registry of Outside Undertakings (REE).
• Inspect the Outside Undertakings registered in the REE.
• Distribute the radiological passport to the Outside Undertakings registered in the REE.
• Establish the format and content of the individual radiological passport.
Obligations of Outside Undertakings

a) Providing their workers, on a biannual basis, with the basic training in the field of radiation protection.

b) Notifying the CSN the starting date of each basic training course at least 20 days before its actual initiation.

c) Requesting the Radiological Passbook to the CSN, assigning them to the workers, and completing the passports’ specific section.
Royal Decree 413/1997.

Duties and responsibilities

Obligations of Facility Operator

a) Previous to the beginning of the activities, ensuring that workers have received the basic training on radiation protection.

b) Previous to the commencement of the activities, providing outside workers with all specific information and training according with the particular conditions both of the controlled area and of the activities assigned to them.

c) Completing the Radiological Passports’ section.
In order to facilitate the practical implementation of the provisions of Royal Decree 413/97 the CSN has developed three additional regulations:

- In July 1997 the CSN approved a Resolution creating the National Registry of Outside Undertakings (REE).
- In May 2001 the CSN approved the Instruction IS-01*, on the definition of the format and content of the radiological passport for outside workers.
- In April 2003 the CSN approved the Instruction IS-06* which defines the basic and specific training programmes in radiation protection for outside workers in nuclear power plants and fuel cycle facilities.

* CSN Instructions are compulsory standards issued to regulate specific matters in radiation protection. They provide guidance on how satisfy the requirements of the basic regulations (Royal Decrees, etc.).
In order to verify the fulfillment of the requirements provided by these Instructions and by RD 413/1997.

The work involves inspections and assessments in nuclear power plants during refuelling outages, in nuclear facilities, and in Outside Undertaking on the aspects of occupational radiation protection and on the application of the ALARA principle.
The REE was created by Resolution of the CSN on July 16, 1977. According to this Resolution, any contractor company willing to perform work activities in controlled areas must make the necessary arrangements to register in the REE before starting such activities.

At November 1\textsuperscript{st} of 2011 there are 1,388 Outside Undertakings registered in the REE; most of them, performing work activities in nuclear power plants.
The radiological passport was already implemented in Spanish NPPs at the end of the eighties, even before the approval of European Directive 90/641.

Before considering making it compulsory the CSN decided to run a pilot-study, who carried out into three phases over a period of four years: 1986-June 1990.

After completing this pilot-study, the CSN sent an official instruction to the operators of Spanish NPPs making compulsory the use of the radiological passport.

In 1997, following the approval of Royal Decree 413/97, the use of radiological passport was legally required for all outside workers.

Finally in 2001, the CSN approved the format of a new model of radiological passport (IS-01), which was put into force on January 2002.
The radiological passport is an official, personal and non transferable document.

In order to ensure the non transferability of radiological passports, the cover of the document has a window to make visible the name of the worker and a photo.
The identification of the worker
Picture and Signature
2nd Surname, First name, Middle names
Unique identification number: National Identity Number.
Social security number
Sex
Date of birth
Nationality

Name, address and Information of the outside undertaking

The outside undertaking is responsible for filling in the identification data for outside undertaking and regarding the identification of the worker
The radiological passport is divided into six sections.
A. The Objective of the radiological passport

B. Conditions of use

C. Nationwide use

D. Validity Period: Fixed period of 3 years in Spain

E. The procedure for asking or renewing a radiological passport.

F. The procedure for replacing a radiological passport when it has been lost or deteriorated
General Information

G. RESUMEN DE LAS DISPOSICIONES LEGALES RELATIVAS A LA PROTECCIÓN OPERACIONAL DE LOS TRABAJADORES EXTERNOS (*)

DEFINICIONES

a) Zona controlada: zonas sometidas a regulación especial a efectos de protección contra las radiaciones ionizantes.

b) Trabajador externo: cualquier trabajador clasificado como profesionalmente expuesto, según lo dispuesto en la legislación vigente, que efectúe actividades de cualquier tipo en la zona controlada de una instalación nuclear o radiactiva y que esté empleado de forma temporal o permanente por una empresa externa, incluidos los trabajadores en prácticas profesionales, aprendices o estudiantes, o que preste servicios en calidad de trabajador por cuenta propia.

c) Titular: persona física o jurídica que tiene, con arreglo a la legislación nacional, la responsabilidad y la autoridad sobre el ejercicio de alguna de las prácticas o actividades laborales previstas en el artículo 2 del Reglamento de Protección Sanitaria contra las Radiaciones Ionizantes.

d) Empresa externa: cualquier persona física o jurídica, distinta del titular de la instalación, que haya de efectuar una actividad de cualquier tipo en una zona controlada de una instalación nuclear o radiactiva.

e) Sistema de vigilancia radiológica: conjunto de medidas destinadas a aplicar, en lo que afecte a los trabajadores externos, las disposiciones legales correspondientes a la protección radiológica contra las radiaciones ionizantes.

f) Documento individual de seguimiento radiológico: instrumento para el registro de datos, donde se recogen los aspectos relevantes relativos al trabajador, procedentes de la aplicación del sistema de vigilancia radiológica.

OBLIGACIONES DE LA EMPRESA EXTERNA

a) Obligaciones de la empresa externa

- Proporcionar a sus trabajadores la información y formación relativas a la protección radiológica exigidas en ejecución de su trabajo, de acuerdo con lo establecido en la legislación vigente.

(*) Legislación de referencia: Real Decreto 783/2001, de 6 de julio, por el que se aprueba el Reglamento de Protección Sanitaria contra Radiaciones Ionizantes, Real Decreto 413/1997, de 21 de marzo, sobre protección operatoria de los trabajadores externos con riesgo de exposición a radiaciones ionizantes por intervención en zona controlada.

- Registrar en el documento individual de seguimiento radiológico (carné radiológico) las dosis asignadas por el sistema dosimétrico oficial.

- Solicitar del Consejo de Seguridad Nuclear y asignar a cada trabajador el documento individual de seguimiento radiológico (carné radiológico) y garantizar que dicho documento esté continuamente actualizado a los efectos pertinentes.

- Documento individual de seguimiento radiológico: la empresa externa deberá garantizar la cumplimentación de la siguiente información:

   a) Datos relativos a la identidad del trabajador, incluyendo sexo y fecha de nacimiento.

   b) Datos dosimétricos previos del trabajador.

   c) Nombre, dirección, fecha de inscripción y número de registro de la empresa a la que en cada momento pertenezca el trabajador.

   d) Datos que han de incluirse al término de la actividad:

      a) Dosis mensual asignada por el sistema dosimétrico oficial. En el caso de exposición no uniforme se consignará la dosis a los correspondientes órganos o tejidos.

      b) Dosis efectiva.

OBLIGACIONES DEL TITULAR DE LA INSTALACIÓN

- Posteriormente a la finalización de la actividad: registrar en el documento individual de seguimiento radiológico (carné radiológico) los datos referentes a la instalación, período de la actividad, dosis operacional estimada como consecuencia del seguimiento dosimétrico operacional que haya podido ser necesario y dosis interna determinada por los servicios técnicos dependientes del titular.

- Datos que han de incluirse al término de una actividad:

   a) Identificación de la instalación.

   b) Periodo cubierto por la actividad.

   c) Dosis asignada provisionalmente por el sistema dosimétrico operacional.

   d) Actividad incorporada y dosis efectiva comprometida en caso de que el trabajo haya podido implicar riesgo de contaminación interna.

OBLIGACIONES DE LOS TRABAJADORES EXTERNOS

- Todo trabajador externo tiene la obligación de colaborar con los responsables de protección radiológica, tanto de su empresa como del titular de la instalación, en su protección contra las radiaciones ionizantes, cumpliendo las normas establecidas por los mismos.

G. The legal requirements for the radiological passport, a summary of R.D. 413/97 with the duties and responsibilities of outside undertakings, operators and outside workers. Page 7.
The Information is filled in by the outside undertaking.

1.1 Name, address and Information of the outside undertaking. Page 8.

1.2 Dosimetry data (mSv). Page 8.

1.2.2 Dose records of prior exposures. Page 9.

The outside undertaking is responsible for filling in the identification data for outside undertaking.
2. Changes of employment.

The outside undertaking is responsible for filling in changes of employment.
3. Work activities carried out in controlled areas

Work activities carried out in controlled areas.
Pages 12-15.

The operator fills in the date of the entry in controlled areas and stamps.
4. Health surveillance

The occupational health service fills in the data regarding health surveillance.
5. Training in radiation protection

Pages 18-21.

5.1 Basic training:
The outside undertaking fills in the information regarding basic training.

5.2 Specific training: is filled in by the operator.
6.1 Doses from internal exposures

Spain has created a separate section in the passport for internal dosimetry, independent of the sections for official dosimetry and operational dosimetry.

The operator can fill in the internal doses if it has its own approved dosimetry service.
### 6.2 Operational dosimetry data

This data is filled in by the operator.

Both parties outside undertaking and operator collaborate to the section 6.2 is kept up to date.
6. Dosimetry data

6.3 Official dosimetry

Pages 36-41

6.3.1 Official dosimetry for the current year/every month, and the accumulated effective doses for the previous 4 years plus the current year.

The outside undertaking is responsible for filling in dosimetry data.

Dosimetry Services in Spanish NPPs are required (by the CSN), to analyze and justify any discrepancies of more than 20% between the operational data and the official data, prior to entering the official doses into the radiation passbook.
6.3.2 Non uniform exposure

Dose to hands, forearms, skin and ankles

The outside undertaking is responsible for filling in dosimetry data.
The CSN is responsible for the distribution of the radiological passport.

Outside undertakings must order from the CSN the number of passports required for their activities.

The CSN verifies that the applicant is in the REE

The CSN delivers the passports ordered to the Outside Undertaking without any economic cost.

From 2002 to November of 2011 the CSN has distributed 16,797 radiological passports of the new format.
Throughout 2010: a total of 3,986 radiation identity cards for workers of 282 companies.
Overall 39,320 radiological passports have been issued since 1986, and most of them for outside undertakings performing activities in the nuclear industry.
Each passport is accompanied by a card that requests the Outside Undertaking to enter the data necessary to identify both the passport owner and the Outside Undertaking itself.

The CSN enters this information into a database.

This database includes a software programme to detect if an outside worker has been provided with more than one passport; in this manner, the CSN ensures the non-plurality of passport.
Possibility of replacing the paper-based radiological passport:

- Implementation of magnetic stripe cards.
- Development of a Network Database.
Implementation of magnetic stripe cards

This technology would provide some benefits.

But, on the other hand, this technology requires appropriate hardware and software equipment (magnetic card, card reader/writer, card processing software, etc.) for the participants involved in the use of the radiological passport:

NPPs and fuel cycle facilities = 12
Approved dosimetry services = 25
Outside undertakings (hundreds) = (1,388)
Approved medical services (hundreds) = (1,388)
Radiation related facilities (thousands) = (1,388)

At that time (at the beginning of nineties), most of those actors were unable to bear the cost of acquiring the equipment necessary for this technology, for this reason the CSN concluded that this option was not viable.

Problem: The dosimetry was considered as health related information. The access to dosimetry data must be subject to strict security controls in order to preserve their confidentiality.

Since 1995, the CSN has been operating a National Dose Register (BDN) containing personal, employment and dosimetry data of all exposed workers in Spain.

No person outside the CSN is permitted to have access to the BDN.

the CSN concluded that this alternative was not viable.
Spanish NPPs require foreign undertakings to register in Spanish REE.

Means: Duties according to Spanish Royal Decree.
Does not mean: they have to provide their workers with the Spanish radiological passport; that is never the case. Indeed:

When foreign workers are provided with a radiological passport from other country, Spanish NPP accept it as valid; in fact, they enter data into the foreign passport.

When foreign workers are not provided with a radiological passport, Spanish NPP accept official certificates with information equivalent to that included in the radiological passport.
In most cases foreign operators are reluctant to enter data into the Spanish passport, due mainly to difficulties with the Spanish language.

It would be necessary to establish a uniform radiological passport, which should be common to all Member States and should be written in two languages, English and the native language of the State.
Dose Limits in Spain
Legal dose limit to apply to foreign workers

Dose Limits for exposed workers in Spain (R.D. 783/2001):
Effective dose limit of 100 mSv in 5 consecutive years, subject to a maximum effective dose of 50 mSv in any single year.

The amount of workers exposed to ionizing radiations who were subject to a dosimetry control in Spain in 2010 increased to 103,934. The collective dose corresponding to all workers was of 22,308 mSv/person.

NPPs total collective dose was 3,036 mSv/person of which 88% was accumulated for by outside workers.
Workers performing occasional jobs in foreign countries in which the legal dose limits differs from those currently adopted in their country.

For example it may not to be clear whether or not a Spanish worker with a dose exceeding 20 mSv should be permitted a very specialized task (a short duration) in a country in which the legal dose limit is 20 mSv per year.
The implementation of the radiological passport in Spain has been a difficult, complex and time consuming process.

Every participant involved in radiological protection of outside workers has an obligation defined in Spanish Law.

Spanish Outside Undertakings must register in a National Registry and are subject to the inspection of the Spanish Regulatory Body.

The CSN considered several practical alternatives to replace the paper-based radiological passport. None of these alternatives seems to be viable.

To ensure the radiological protection of itinerant workers, it would be necessary to establish a uniform Radiological Passport and should be written in two languages, English and the native language of the State.
Thank you for your attention

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Implementation of the radiological passport in non-nuclear facilities

The Licensees of the radioactive facilities in which companies providing technical or advisory services to radioactive facilities in Medicine, Industry, perform their activities usually do not require the radiological passport as a necessary condition for working in controlled areas.

These Companies require prior authorization to perform such activities. The authorization granted to them a condition which makes the licensee responsible for all the aspects related with the radiological protection of the workers employed by the company:

- Compliance with the dose limits.
- Compliance with ALARA principle.
- Basic information and training in radiation protection.
- Specific training for the activities to be performed.
- Personal protective equipment.
- Monitoring and recording of occupational doses.
- Medical surveillance.