

**“ISSUES IN THE MANAGEMENT OF THE SPANISH
NATIONAL DOSE REGISTRY”**

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CONSEJO DE SEGURIDAD NUCLEAR

2-Dec-2014
Viena, Austria

2 Consejo de Seguridad Nuclear (CSN) / Nuclear Safety Council



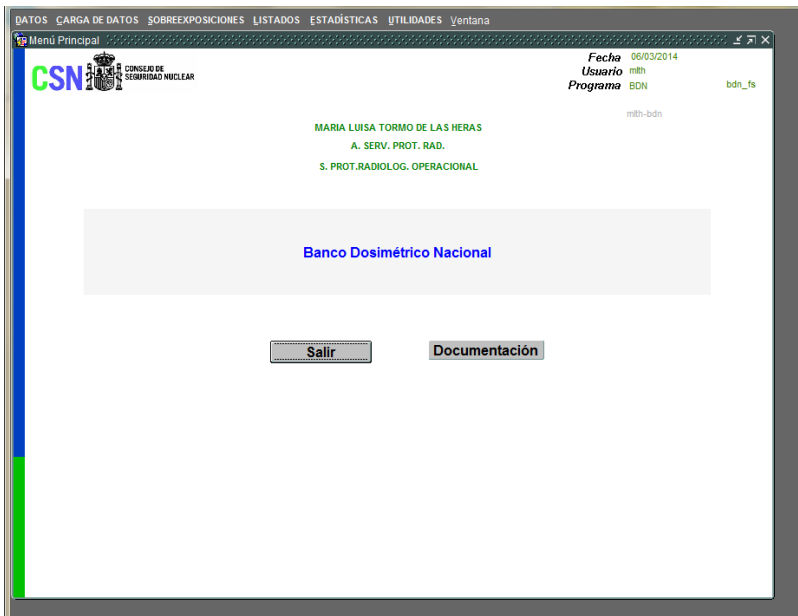
- Was set up in **1980** as an entity under Common Law, independent from the General State Administration.
- Is the **sole competent authority** in matters relating to nuclear safety and radiation protection.



CSN

3 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

NATIONAL DOSE REGISTRY



Aware of the remarkably demanding requirements included in the legislation*, the CSN decided, in **1985**, to create the **National Dose Registry** (BDN), in order to ensure the availability of individual records at any time.

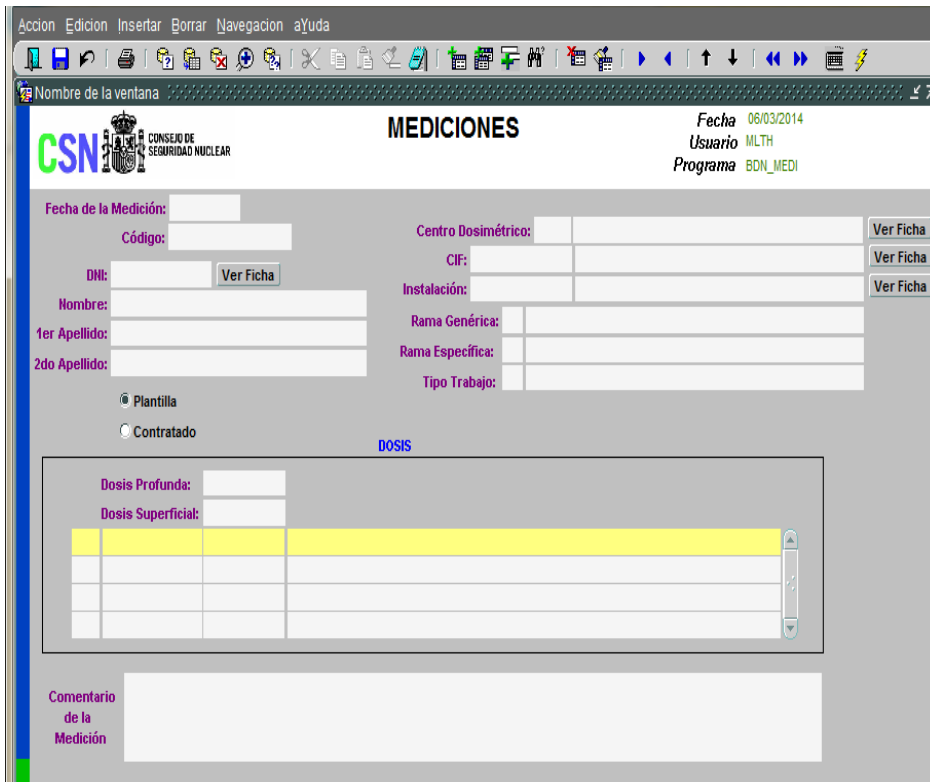
* The exposed workers' dosimetry records, must be filed by the title-holder of the practice until that time when the worker would have reached **75 years of age**, and **never less than 30 years**, starting from the date the worker ceases to work.

4 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

- Main objectives:
 - ✓ To provide a safe and secure long-term dose record keeping (**redundant** to that required to the licensee).
 - ✓ To facilitate a prompt identification of any **exceeding dose limit** (overexposure management module).
 - ✓ To provide data to carry out studies on **exposure trends** (to identify potential areas of ALARA concern).
 - ✓ To provide support to carry out **epidemiological studies** involving monitored workers.

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• INFORMATION INCLUDED IN EACH DOSE RECORD (“Mediciones”)



MEDICIONES Fecha 06/03/2014
Usuario MLTH
Programa BDN_MEDI

Fecha de la Medición:
 Código: Centro Dosimétrico: Ver Ficha
 DNI: Ver Ficha CIF: Ver Ficha
 Nombre: Instalación: Ver Ficha
 1er Apellido: Rama Genérica:
 2do Apellido: Rama Específica:
 Tipo Trabajo:

Plantilla
 Contratado

DOSIS

Dosis Profunda:
 Dosis Superficial:

Comentario de la Medición:

General

- Date
- Code

Worker's personal data

- Identification document
- Name, surname

Worker's job's data

- Facility's name
- Work sector (generic)
- Work area (specific)
- Job description

Dose (only personnel TLD)

- $H_p(10)$ / $H_p(0,07)$
- Other(extremity, internal)

Dosimetry Service Data

- Name
- Identification document number

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WORKER'S JOB DATA

WORK SECTOR (Generic)	WORK AREA (Specific)	JOB DESCRIPTION
MEDICINE	Diagnostic radiology / Nuclear medicine / Radiotherapy / Dentistry / Radiation protection services / Others	Doctors / Health assistant (nurse) / X-ray assistant / Assistant / Radiation protection workers / Other
GENERAL INDUSTRY	Radiography / Gammagraphy / Others Processing control / Gauges for measurements of density, positions and thickness / Well-logging in the oil and gas industry Production of radioactive materials /	Supervisor / Operator / Assistant Transport worker / Other
RESEARCH AND TEACHING	X-ray facilities / Sealed sources / Unsealed sources / Neutron sources Electron accelerator units/Mixed	Supervisor / Operator / Assistant Academic research and teaching personal / Other
NUCLEAR POWER PLANTS	Nuclear Power Plants	Normal operations / Refueling outage/ Nuclear reactor maintenance Shutdowns / Decommissioning
FUEL CYCLE	Mining / Milling / Nuclear fuel fabrication / Radioactive waste management	Normal operations / Decommissioning
NUCLEAR SAFETY COUNCIL	Nuclear Safety Council	Regulatory control
TRANSPORT	Transport	Waste transport / Nuclear fuel cycle transport / Radioactive material transport

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CURRENT STATUS OF THE DATA STORED IN THE BDN

(as to October 2014)

- More than 20 million dose records.
- More than 332,000 monitored persons.
- More than 65,000 facilities.

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- DOSE DATA SUBMISSION (1/2):
 - ✓ The data to the BDN are provided by Dosimetry Services (not the Radiation Protection Services nor the Medical Services).
 - ✓ It only includes doses assessed by individual TLD assigned to the workers (doses derived from area surveillance are not included).
 - ✓ Every month, Dosimetry Services (DS) must send telematically the dose records to BDN, through the CSN's website (www.csn.es).
 - ✓ Every DS must have been priorly authorized by the CSN to send data to the BDN, and thereby, is provided with a password to access to the system.

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- DOSE DATA SUBMISSION (2/2):

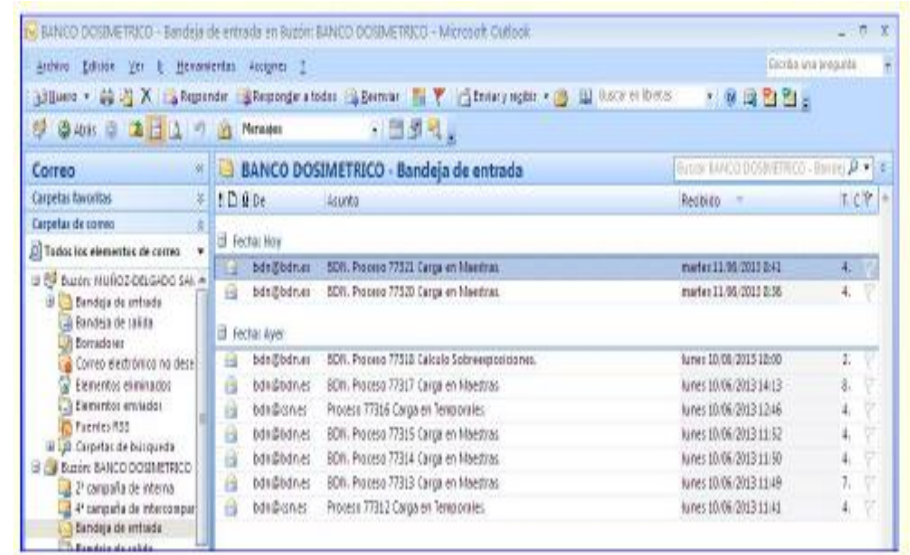
- ✓ Before being uploaded in the database the data are automatically proved for proper format and compatibility.
- ✓ A report is generated as a result of this **validation process**, whereby the user (DS) can obtain information about possible problems in the upload process (through the warning messages pointed out in the report).
- ✓ This is an **iterative** process in which the user (DS) can carry out small corrections until the whole file is finally validated and thus, the data are uploaded in the BDN.

10 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

• DATA UPLOAD PROCESS IN THE CSN:

✓ There is one operator fully dedicated to this mission: a specific module in the BDN is devoted to the upload and validation of the data sent by the DS.

✓ Associated to this module, there is an e-mail account (bdn@csn.es) whereby the operator is notified about the upload process (evolution, errors, incidences, etc.)



11 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

• STATISTICS AND DATA ANALYSIS

The classification model of the data included in the BDN opens **broad possibilities** for complicated and sophisticated statistical analysis (“ESTADISTICAS”), whereby CSN can identify exposure trends and different studies can be carried out.

There is **total flexibility** when selecting the different parameters to be considered in the statistics:

- ✓ Time period
- ✓ Dose intervals
- ✓ Dose type
- ✓ Work characteristics.

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ESTADÍSTICAS

ESTADÍSTICAS

Fecha 06/03/2014
Usuario MLTH
Programa BDN_ESTAD

Obligatorio

Fecha Inicio: Intervalo:

Fecha Final: Tipo Dosis:

Clase de Dosis

Todas las dosis Dosis NO administrativas Sólo dosis administrativas

Tipo Persona

Plantilla
 Contratado
 Ambos

Opcional

Ramas Genéricas

Rama Agrupación Ninguna

Ramas Específicas

Rama Agrupación Ninguna

Tipos de Trabajo

Tipo Agrupación Ninguna

Centros Dosimétricos

Centro Agrupación Ninguna

Instalaciones

Instalación Agrupación Ninguna


Empresas

Empresa Agrupación Ninguna

Lanzar Estadísticas Ver Cola Procesos Ver Intervalos

13

NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)


Página 1 de 1
06-MAR-2014 12:55

ESTADISTICAS

BANCO DOSIMETRICO NACIONAL INFORME DE ESTADÍSTICAS FECHA: 06/03/2014 12:42:16

SELECCIÓN DE PICHAS . 01012013 - 31122013
 CLASE DE DOSIS . DOSIS NO ADMINISTRATIVAS
 TIPO DE DOSIS . PROFUNDA

INTERVALO	USUARIOS	DOSIS COLECTIVA	DOSIS MEDIA	PORCENTAJE	PORCENTAJE ACUMULADO
= 0.00	81274	0.00	0.00	77.148	77.148
> 0.00 <= 1.00	19619	6139.14	0.31	18.623	95.771
> 1.00 <= 6.00	4052	8952.54	2.21	3.846	99.617
> 6.00 <= 20.00	392	3315.81	8.46	0.372	99.990
> 20.00 <= 50.00	8	240.40	20.05	0.008	99.997
> 50.00 <= 1000000.00	3	292.51	97.84	0.002	100.000

TOTAL USUARIOS . 105348
 TOTAL DOSIS COLECTIVA . 18941.40

DATOS SIGNIFICATIVOS (> 0 <= 50 mSv)

TOTAL USUARIOS	. 24071
TOTAL DOSIS COLECTIVA	. 18647.89
TOTAL DOSIS MEDIA	. 0.77

Example of report obtained through the statistics



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• EXAMPLES OF THE NATIONAL DOSE REGISTRY APPLICATIONS (1/3)

- ✓ Spanish Nuclear Safety Council annual report to the Parliament.



Table 5. Doses received by professionally exposed workers in 2012

Facilities	Number of workers	Collective Doses (mSv.person)	Average individual dose (mSv/year)
Nuclear power plants	9,332	3,309	1.01
Fuel cycle, waste disposal and storage facilities and research centres (Ciemat)	1,124	87	0.54
Radioactive facilities			
Medical	81,615	11,529	0.63
Industrial	7,642	2,544	1.32
Research	5,881	342	0.32
Facilities in the dismantling and decommissioning phase	132	163	2.01
Transport	363	298	2.37

15 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

• EXAMPLES OF THE NATIONAL DOSE REGISTRY APPLICATIONS (2/3)

- ✓ Annual report on exposure trends in Spanish nuclear and radioactive facilities.

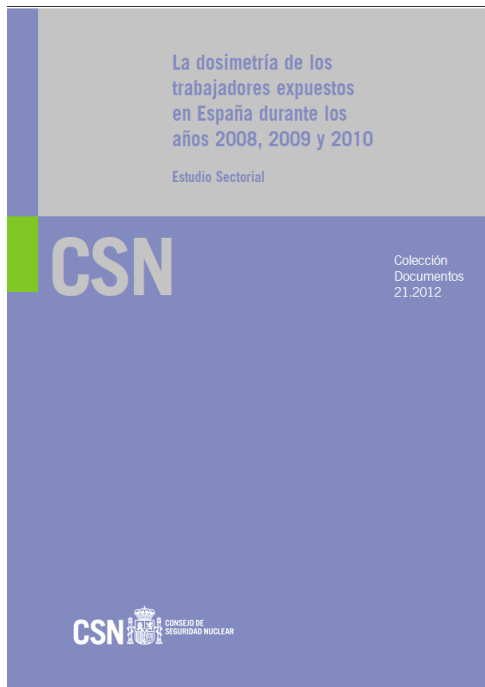
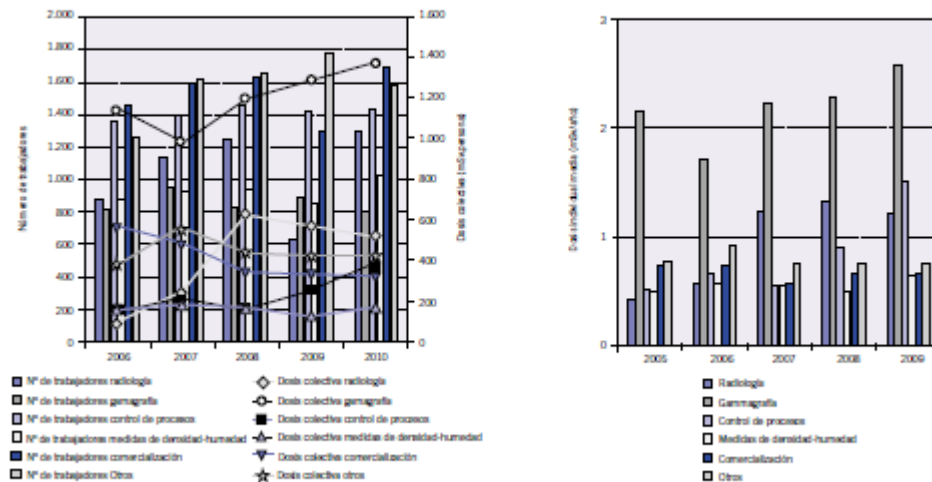


Figura 16. Análisis comparativo de la dosis colectiva y la dosis individual media en instalaciones radiactivas industriales. Años 2006-2010



16 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

- EXAMPLES OF THE NATIONAL DOSE REGISTRY APPLICATIONS (3/3)
 - ✓ CSN contribution to international studies of UNSCEAR, OECD, IAEA, EURADOS, EC, etc.
 - ✓ Data source for reports required by Court in worker's claims.
 - ✓ Useful tool for many of the functions that the CSN has been entrusted with, such as:
 - Inspection to radioactive facilities (data source: number of monitored workers, accumulated doses in the facility, or by the workers, etc.).
 - Management of dose limits exceeding cases.
 - Implementation of regulatory requirements from ALARA point of view.
 - Others

17 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

- DATA PROTECTION AND CONFIDENTIALITY:
 - ✓ According to Spanish regulations on personal data protection (Law 15/1999), dose records must be regarded as health related information, thus, **maximum level of confidentiality**.
 - ✓ Every two years the Spanish Data Protection Agency audits the BDN.

18 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

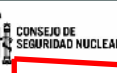
- ACCESS TO THE DATA BASE:
 - ✓ Only the **Dosimetry Department staff** has access to the BDN in their personal computers, via digital certificate of their identity.
 - ✓ There are different levels of access to the database, which vary from writing and reading permission (3 pax), to just reading permission (10 pax).
 - ✓ This hierarchy helps to ensure the **traceability** of all the accesses, enquiries and changes made in the BDN, and that the data remain secure.
 - ✓ Each level of access is linked to the user's ID.

19

NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

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TRABAJOS

CSN  **CONSEJO DE SEGURIDAD NUCLEAR**

COLA DE TRABAJOS

Fecha 23/10/2014
 Usuario MLTH
 Programa BDN_TRABAJO!

Visto	Id	Usuario	Fecha de Carga	Estado	Observaciones
<input type="checkbox"/>	80428	MLTH	23-10-2014 12:10:17	EJECUCION	CÁLCULO DE ESTADÍSTICAS A TRAVÉS DE PL - JOI
<input type="checkbox"/>	80428	SOBRE	22-10-2014 05:10:01	FINALIZADO	CÁLCULO DE SOBREEXPOSICIONES Y ALARMAS
<input checked="" type="checkbox"/>	80427	PMDS	22-10-2014 10:10:20	FINALIZADO	PROCESO FINALIZADO CORRECTAMENTE
<input checked="" type="checkbox"/>	80426	PMDS	22-10-2014 10:10:00	FINALIZADO	PROCESO FINALIZADO CORRECTAMENTE
<input checked="" type="checkbox"/>	80425	PMDS	22-10-2014 10:10:51	FINALIZADO	PROCESO FINALIZADO CORRECTAMENTE
<input checked="" type="checkbox"/>	80424	PMDS	22-10-2014 10:10:40	FINALIZADO	PROCESO FINALIZADO CORRECTAMENTE
<input type="checkbox"/>	80423	PMDS	22-10-2014 10:10:40	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80422	PMDS	22-10-2014 10:10:18	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80421	PMDS	22-10-2014 10:10:03	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80420	PMDS	22-10-2014 10:10:52	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80419	PMDS	22-10-2014 08:10:16	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80418	WEB	21-10-2014 06:10:51	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80417	SOBRE	21-10-2014 05:10:01	FINALIZADO	CÁLCULO DE SOBREEXPOSICIONES Y ALARMAS
<input type="checkbox"/>	80416	PMDS	21-10-2014 11:10:02	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80415	PMDS	21-10-2014 11:10:25	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80414	PMDS	21-10-2014 11:10:08	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80413	PMDS	21-10-2014 11:10:33	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80412	PMDS	21-10-2014 11:10:31	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80411	PMDS	21-10-2014 10:10:59	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80410	PMDS	21-10-2014 10:10:41	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80409	PMDS	21-10-2014 10:10:24	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80408	PMDS	21-10-2014 10:10:18	FINALIZADO	CARGA EN TABLAS MAESTRAS
<input type="checkbox"/>	80407	PMDS	21-10-2014 10:10:07	FINALIZADO	CARGA EN TABLAS MAESTRAS

Actualizar Información Ver Trabajo Listado

TRACEABILITY

ASSURANCE:



- Who?
- When?
- What?
- Has the enquiry been seen?



- ✓ But also, according to the regulations on personal data protection, the **workers must have access** to their personal data included in the database. This access is provided through the CSN web page, and requires the electronic certificate of the worker's identity.



The screenshot displays the CSN website interface. At the top, the CSN logo and name are visible. Below the header, a navigation bar contains four main sections: SEDE ELECTRÓNICA, CONCEPTOS, LEGISLACIÓN, and TRÁMITES. The 'SEDE ELECTRÓNICA' section is expanded, showing a list of sub-items including 'Conceptos', 'Legislación', 'Trámites', and various categories like 'Instalaciones no reguladas' and 'Protección radiológica de los trabajadores y medio ambiente'. The 'Protección radiológica de los trabajadores y medio ambiente' category is selected, leading to a page titled 'PROTECCIÓN RADIOLÓGICA TRABAJADORES Y M. AMBIENTE'. This page features a sub-section for 'Consulta de medidas del Banco Dosimétrico Nacional', which explains that it allows professionals to consult their dose records. A prominent blue button labeled 'Consultar Datos' is provided for users to access their information. A note below the button states that users must have a digital certificate on a cryptographic card to access the system.

21 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

SEDE ELECTRÓNICA  CONSEJO DE
SEGURIDAD NUCLEAR

jueves, 23 de octubre 2014

[Sede Electrónica](#) / [Trámites](#) / [Protección Radiológica de los Trabajadores y Medio Ambiente](#) / [Consulta de Medidas del Banco Dosimétrico Nacional](#)

Consulta de Medidas del Banco Dosimétrico Nacional

Titular

NIF / NIE

Nombre y Apellidos

Filtro de Búsqueda

 <= Fecha Medida <=   **Buscar**

Instalación

<= Dosis Superficial (mSv) <= <= Dosis Profunda (mSv) <=

Descargas

[Historial de Medidas](#)

[Ver nota de descargo](#)

CLÁUSULA DE INFORMACIÓN DEL TRATAMIENTO DE DATOS DE CARÁCTER PERSONAL

El Consejo de Seguridad Nuclear le informa de que los datos personales que proporcione en el registro previo para el uso de los servicios de la sede electrónica serán incorporados a un fichero automatizado de "Usuarios de Servicios Telemáticos" creado con la finalidad de acceder a los servicios telemáticos correspondientes inscrito a tal efecto en el Registro General de Protección de Datos. Dichos datos serán recogidos y tratados en cumplimiento de la Ley Orgánica 15/1999, de 13 de diciembre, de Protección de Datos de Carácter Personal y del resto de la normativa de desarrollo. Puede ejercitar sus derechos de acceso, rectificación, cancelación u oposición dirigiéndose por escrito a la siguiente dirección: Protección de Datos, Consejo de Seguridad Nuclear, c/ Pedro Justo Dorado Dellmans, 11, 28040 MADRID

✓ The system displays a "note" to the worker clarifying some issues about the information contained in the BDN.

✓ The data may not exactly correspond to those included in the worker's individual dosimetry record if:

- They are Cat-B workers, whose doses are assessed through area dosimetry.
- Any incidence may have caused a different dose than that obtained through the dosimetry read-out

22 | NATIONAL DOSE REGISTRY / BANCO DOSIMETRICO NACIONAL (BDN)

- PRACTICAL ISSUES

- ✓ Confidentiality restrictions imply many others related to back-up and traceability guaranties.
- ✓ An accurate job characterization is not always feasible for the Dosimetry Service submitter of the data.
- ✓ Management of such a big amount of computational data, implies a high incidence of mistakes that need to be effectively dealt with.

THANK YOU FOR YOUR ATTENTION

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