SPANISH MODEL FOR RADIATION PROTECTION OF OUTSIDE WORKERS AND INSPECTION OF OUTSIDE UNDERTAKINGS

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1.- SPANISH LEGAL FRAMEWORK

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 the following responsibilities for the Outside Undertakings, for the Operator of a controlled area (nuclear power plants and fuel cycle facilities) and for the Regulatory Body (in Spain this is the Nuclear Safety Council-CSN):

- Obligations of Outside Undertakings:
  - Ensure compliance with general principles and limitation of doses established in Royal Decree 783/2001, which laid down Council Directive 96/29 Euratom of 13 May 1996.
  - Provide to exposed outside workers the information and training in the field of radiation protection.
  - Guarantee that their workers are subject to assessment of exposure, control the doses of their workers and keep up to date dosimetric file of exposed workers.
  - Fill in the Radiation Passbook of the exposed workers in the points referred to dosimetric information according with the dosimetric file provided by approved dosimetry services.
  - Guarantee the medical survillance of exposed workers.
  - Provide all their workers an individual radiation passbook and guarantee that this document is kept up to date.

- Obligations of Operator of a controlled area:
  - Before each outside worker perform activities in a controlled area, the operator must:
    - Check that outside undertaking have made the especific arrangements to be registered in the National Registry for Outside Undertakings, which has been developed by the CSN.
    - Check that the outside workers has been passed as medical fit for the activities to be assigned to him.
    - Ensure that the worker has received the basic training in field of radiation protection according to the programme established by the CSN in national legislation.
    - Provide to the workers specific training according to the programme established for the CSN in national legislation and in connection with the characteristics of both the controlled area and the activities.
    - Ensure that the worker receives individual exposure monitoring appropriate to the nature of the activities, and ensure compliance with the general principles of limitation of doses
    - Ensure that the dosimetric data included in his radiation passbook are complete and keep up to date.

- Obligations of the Regulatory Body:
  - Create a National Outside Undertakings Registry.
    Any outside undertaking before starting the activities must make suitable arrangements to be registered in this database. So, the outside undertaking must present information in the CSN about identification of the facility, address, identification code of facility, explanation about the activities which will be undertake by the facility in controlled areas, a declaration of being provided with technical and human means in order to fulfil the duties concerning outside undertakings established in Royal Decree 413/1997. CSN performed a Resolution which was published into national legislation on 4th of october of 1997.
  - Establish the official format and content of the radiation passbook.
    The CSN performed an Instruction number IS-01 which was published into national legislation on 31st of May of 2001. This Instruction defines the format and content of new Spanish radiation passbook, which has been put in force since 1 of January of 2002.
  - Design and define the training model for outside workers.

The CSN performed an Instruction number IS-06, which was published into national legislation on 9th of April of 2003. This Instruction defines the legal framework, content of courses (basic and specific training in the field of radiation protection), structure, needs of qualification and skills of the trainers and period of validity of courses before retraining.

- Inspections of outside undertakings which are included in the National Registry in order to check that these entities fulfil the criteria referred in national legislation.

2.- USE OF TOOLS AVAILABLE IN THE CSN FOR PREPARING AN INSPECTION.

In order to ensure an adequate control of the Outside Undertakings in Spain, and to ensure compliance of these entities with the national legal framework, the CSN has developed a set of ORACLE databases which provide information about dosimetric data of exposed workers, registration of one entity in the National Registry, number of radiation passbooks which have been provided by the CSN to a specific entity, and whom belongs each radiation passbook, name of workers who have attended to a specific basic course in field of radiation protection, which entity have given the course, when, where and results of the course exam .

All these information is included in 3 different ORACLE databases, which are linked between them, so it is possible to check for a specific entity is all the information is full complement or not.

These databases are the following:

- National Dose Registry.

  Towards the end of the 1980s the CSN started to develop a national centralised system of individual dose records (so-called Banco Dosimetrico Nacional (BDN)). Currently the BDN contains dose of over 222.000 monitored workers from 36.800 facilities.

  At the moment of preparing an inspection to the outside undertaking concerned, the BDN is used for obtaining the following information:
  - Identification of exposed workers with doses over a specific value of interest established by the CSN.
  - Dosimetric data for the exposed workers who has been previously selected.
  - Identification of outside exposed workers who change frequently of entity.

- National Outside Undertaking Registry.

  Currently the number of outside undertakings registered in the National Registry is over 737, most of them undertake their activities in nuclear power plants and fuel cycle facilities.

  When preparing an inspection this computer tool is used for obtaining the following information:
  - Identification of the entities which are located in a specific area of Spain.
  - Confirm that all the entities which have been previously identified are registered in the National Registry.
  - Identificate the activities which are carried out by the outside undertaking in a controlled area.
  - Check if the entity has made a declaration of being provided with technical and human means in order to fulfil the duties related to outside undertakings in Royal Decree nº 413/97.

  Linking the national outside undertaking registry with the BDN it is possible to obtain information about the number and name of exposed workers who are working in the entity concerned.

- National Radiation Passbook Registry.

  Currently the number of records contained in this database or number of outside exposed workers with have a radiation passbook is over 6.000.

  When preparing an inspection this computer tool is used for obtaining the following information:
  - Identification of the ouside undertaking which has issued the radiation passbook for a specific worker.
  - Information of the radiation passbook owns a specific worker on:
    - Outside worker´s identity.
    - Number of radiation passbook
    - Date in which the radiation passbook was issued.

- Outside undertaking which issued the radiation passbook.
- Number in the national registry for the outside undertaking.

Linking the national radiation passbook registry with the BDN it is possible to obtain information about the number of radiation passbook for a specific exposed worker and the dosimetric data for the worker concerned.

3.- POINTS WITH ARE CHECKED WHEN PERFORMING AN INSPECTION TO OUTSIDE UNDERTAKINGS.

The CSN in order to ensure compliance of outside undertakings with national legislation the official plan of inspection for these entities is carried out on one hand at the Head offices of these entities and on the other hand during the periodical inspections at nuclear power plants as part of the inspection plan for ensure compliance with criteria in Occupational Radiation Protection.

Next are presented the points which are checked in each inspection:

3.1. Inspections carry out at Head offices of Outside Undertakings.

Inspectors pay attention to the aspects which are included in following check list:

- Verify all data which are contained in the national outside undertaking registry are truthful and are kept up to date (name of the employer, address, number of identification in the national registry of CSN, radiological classification, activities, person responsible of outside undertaking).

- Verify the ouside undertaking is being provided with technical and human means in order to fulfil the duties concerning outside undertakings established in Royal Decree 413/1997.

- Aspects concerned with radiation passbook such as:
  - Which is the entity who has issued the radiation passbook.
  - When was issued this radiation passbook and who signed it.
  - Verify the radiation passbook is correctly filled up and it is kept up to date.
  - Verify that the radiation passbook include correct information about the facilities in which worker has performed activities of any sort in a controlled area as outside worker (name of facility, period covered by the activity, operator´s stamp and signature of the operator responsible).
  - Check dosimetric data, (external and internal doses), included in the radiation passbook agree with dosimetric data included in the BDN.
  - Verify that the estimation of effective dose received yearly by the outside worker (official external Hp(10) plus internal doses), has been correctly calculate according with dosimetric data.
  - Verify that estimation of effective doses in last 5 years by outside worker has been correctly calculate and filled up.
  - Check the correct clasification of the exposed worker according national legislation.
  - Verify that the workers are subject to medical surveillance under the conditions laid down in national legislation.
  - Check that the workers has been passed as medically fit for the activities to be assigned to them.
  - Verify that the radiation passbook has been filled up regarding to basic training in field of radiation protection.

- Aspects concerned with radiological monitoring system:
  - Verify that workers are subject to assessment of exposure under the conditions laid down in national legislation.
  - Obtain information about which is the method set up for keeping the dosimetric registry of workers (computer programme, paper).
  - Verify that data included in this registry is supported by dose records which are submitted monthly by the Approved Dosimetry Services (ADS).
  - Verify that existing individual records for each exposed worker.
  - Verify that medical classification records of each exposed workers are kept.
  - Check security measures which have been taken for preventing any forgery or misuse of, or illegal tampering with dosimetric and medical data for each worker.
  - Obtain information about who is the person responsible of keeping and fill up dosimetric information.

- Aspects related to training in field of radiation protection:
  - Verify that outside exposed workers have received the information and basic training in field of radiation protection in compliance with the Instruction performed by CSN (IS-06).
  - Verify training records existing.
  - Obtain information about which is the method set up for keeping the training records (computer programme, paper).
  - Compare that information keep in training records agree with the information fill up in radiation passbook for each outside worker.
  - Obtain information about who is the person responsible of keeping and fill up this information.

3.2. Inspection carry out at Nuclear Power Plants and Fuel Cycle facilities.

Inspectors carrying out periodical inspection related to Occupational Radiation Protection pay attention to the aspects which are included in following check list:

- Aspects concerned with radiological monitoring system:
  - Verify that data related to internal dosimetry performed by the ADS placed at nuclear power plants to ouside worker have been correctly filled up in the radiation passbook of outside workers by the Approved Dosimetry Service´s responsible person.
  - Verify that internal dosimetry data contained in radiation passbook of outside worker agree with the dosimetric records keep in ADS.
  - Verify that data related to operational external dosimetry (time period, dose record) have been correctly filled up in the radiation passbook of outside worker by the Radiation Protection Service´s technician.
  - Verify that operational external dosimetry data contained in radiation passbook of outside worker agree with operational dosimetry records keep at the nuclear power plant.

- Aspects related to training in field of radiation protection:
  - Verify that radiation passbook include information pointing out that outside workers has received specific training in connection with the characteristcs of both controlled area and the activities they are going to carry out in compliance with the Instruction performed by the CSN (IS-06)
  - Verify the teachers for given specific training fulfil the criteria established by the CSN.
  - Verify specific training records existing.
  - Obtain information about which is the method set up for keeping the specific training records (computer programme, paper).
  - Compare that information keeps in specific training records agree with the information fill up in radiation passbook for each outside worker.
  - Obtain information about who is the person responsible of keeping and fill up this information.

4.- CRITERIA FOR SELECTING AN OUTSIDE UNDERTAKING FOR BEING INSPECTED

As it has been aforementioned currently the number of outside undertaking which are registered in the National Registry developed by the CSN is over 737.

Due to the great number of entities registered the CSN have not enough human resourcers (inspectors) in order to perform an annual inspection of the total whole of entities. At this moment, the annual target objective of the CSN is to inspect a maximun number of 30 outside undertakings.

So, the CSN has established a set of criteria which are applied in order to select or choose an outside undertaking to be inspected, the main objective is to ensure all these entities work properly so it has been neccesary in order to reach this objective to take priority in the inspection of some entities over the total whole.

Criteria established when arranging an inspection are based on:

- Outside undertakings with bigger number of workers performing activities as outside exposed workers.
- Outside undertakings whose outside exposed workers show greater values of dose.
- Entities get involved in incidents which have been reported by operator of a controlled area to the CSN or have been found by inspectors of CSN during inspection carry out in nuclear power plant or fuel cycle facilities.

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