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EVALUATION OF THE OUTSIDE WORKERS DIRECTIVE OPERATIONAL IMPLEMENTATION

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CONTENT

TABLES

EXECUTIVE SUMMARY

Context

In the beginning of the 1980ies, the problem of outside workers' radiation protection within the nuclear facilities was raised. The so-called outside workers, who are workers belonging to contracted companies (undertakings) received 80% (and even more) of the collective dose in most of nuclear facilities, and most of the time higher individual doses than the permanent workers of the nuclear operators. Outside workers' radiation protection issue was not explicitly taken into account into the 1980 Basic Safety Standards.

Regarding that situation, the European Commission (EC) issued the Directive 90/641/Euratom. The purpose of this Directive is to ensure at the European Union level that the radiological protection situation for the outside workers is equivalent to that offered to those workers permanently employed by the operators of the controlled areas.

The evolution of the context during the latest years - implementation of new Basic Safety Standards, enlargement of the European Union as well as the increase of dismantling and waste handling activities - has lead the EC DGTREN to investigate the possibility to review and improve the Directive 90/641/Euratom.

The EC DGTREN thus awarded the CEPN with a contract in order to evaluate through a survey the level of implementation of the Directive 90/641/Euratom into the European Union national regulations as well as its operational implementation. In addition, a Seminar was held at the Luxembourg EC facilities on 29th and 30th November 2005, gathering EC representatives, national regulatory bodies representatives, operators, outside undertakings and trade union representatives in order to discuss this topic.

Results of the survey on the implementation of the Directive 90/641/Euratom

Regulatory Authorities, Operators and Outside Undertakings, from both the 25 EU Members States, as well as Candidate (Bulgaria, Croatia, Romania, Turkey) and Associated Countries (Norway, Switzerland), were solicited for that survey. Data from 28 countries were collected, among which answers from 26 Regulatory Bodies, 19 Operators and 5 Outside Undertakings.

The first result is that the outside workers population in European Countries can be roundly estimated to, at least, 100 000 people, mainly working for the nuclear industry. It is also quite probable that there are a few thousands working in the medical sector and non-destructive testing areas.

According to the information provided by the regulatory bodies, the Directive 90/641/Euratom has been completely implemented in most of the answering countries, excepted in France, Norway, Slovakia and Turkey. Nevertheless, inconsistencies between some definitions provided by the Directive 90/641/Euratom and the Basic Safety Standards appear. Definitions as well as sharing of responsibilities are therefore not understood in the same way from one country to another.

The term operator was not defined in the previous 1980 BSS Directive (Council Directive 80/836/Euratom). A definition is provided in the Council Directive 90/641/Euratom: operator means any natural or legal person who under national law, is responsible for a controlled area in which an activity required to be reported under Article 3 of Directive 80/836/Euratom is carried on. The term "outside undertaking" was defined in both the Council Directive 90/641/Euratom and the 1996 BSS Directive. Those definitions are different:

- Directive 90/641: outside undertaking means any legal or natural person, other than the operator, including members of his staff member, performing an activity of any sort in a controlled area,
- 1996 BSS Directive: an outside undertaking is any natural or legal person who carries out the practices or work activities referred to in Article 2 and who has the legal responsibility under national law for such practices or work activities.

The implementation of the Directive Euratom 96/29 has had an influence on the outside workers' regulation in 11 countries. Some specific standards have been issued in Spain in order to adapt the requirements of the Royal Decree 413/97 to the provisions of the new European BSS. In the United Kingdom, the outside workers' radiation protection did not change from an operational point of view, but the corresponding regulation was integrated into the "general" radiation protection regulation. In Estonia, Slovenia, Poland, Malta, Lithuania and Latvia, the EC Directive 90/641/Euratom was implemented after or in the same time as the EC Directive 96/29/Euratom. The Finish regulation has extended the provisions detailed in the Outside Workers Directive to workers exposed to natural sources.

According to the Regulatory Authorities, 14 countries have implemented a reporting and recording system. 21 countries have answered (answers from regulatory bodies and others) that they have issued an individual radiological monitoring document (passport).

The non-transferability (from one worker to another) and non-plurality (no worker with several passports) of the individual radiological monitoring document (support) is ensured for most of the answering Regulatory Bodies (the support is managed by the Competent Authority, the support is issued by a central registry with an identification number for each worker…). Furthermore, national individual supports can also be issued to monitor foreign outside workers (12 countries out of 24 answers) and native outside workers performing their job in a foreign country (14 countries out of 24 answers). Regarding this question, it is unanimously expressed that an uniform passport for all the EC countries, written in national language and English would be undoubtedly a step forward.

From an operational point of view, almost all the operators who partly rely on to outside undertakings (mainly nuclear operators):

- Check the medical surveillance and fitness of the outside workers,
- Provide them with specific training in connection with the work and working area's characteristics,
- Ensure that protective equipment is provided to each outside worker and that exposure monitoring and assessment doses are carried out,
- Require the collaboration of outside undertakings to favour the optimisation of radiation protection.

Additionally, 75% of operators ensure that the radiological data of each worker are recorded into a radiation passport or a network, and 50% set up dose constraints and intervention level for outside workers.

The answering outside undertakings affirm they provide their workers with specific information and training on radiation protection and ensure the assessment of exposure and medical surveillance of their workers are implemented. Answers provided by outside undertakings clearly outline that there is a large variety of situations (languages, sharing of responsibilities, regulatory requirements, medical and exposure information

required) and, as a consequence, a real need in Europe for a harmonization of practice for both exposure assessment and medical surveillance.

The necessity for a uniform European network or radiation passport was outlined through this work, however, there is no clear consensus on what would have to be this European reporting system and several questions are raised:

- Would it just consist in a European radiation passport?
- Would it be completed by a European outside workers' exposure database?
- Would it be just limited to outside workers or would it be extended to all the exposed workers?
- Would it concern all sectors or just the nuclear operators?

EC Seminar on outside workers' radiation protection

A Seminar was held at the Luxembourg EC facilities on 29th and 30th November 2005, gathering EC representatives, national regulatory bodies representatives, operators, outside undertakings and trade union representatives in order to discuss outside workers' radiation protection. Sixteen Member States were represented, among which five New Member States. It has then been a first opportunity for DGTREN representatives to discuss outside workers topics with new Member States representatives since they joined the Union.

The survey carried out by the CEPN, as well as the different presentations, have demonstrated the existence of differences in national approaches to the practical implementation of the Directive 90/641/Euratom, while aiming to the same fundamental objective: ensuring that outside workers benefit from the same level of protection as permanently employed workers.

Scope and definitions of the Directive

During the seminar it was proposed by several working groups that outside workers' radiation protection regulation should cover category A as well as category B workers[1].

[1] According to Council Directive 96/29/EURATOM: "*For the purpose of monitoring and surveillance, a distinction must be made between two categories of exposed workers: (a)* category A*: those exposed workers who are liable to receive an effective dose greater than 6 mSv per year or an equivalent dose greater than 3/10 of the dose limits for the lens of the eye, skin and extremities laid down in Article 9 (2) (b)* category B*: those exposed who are not classified as exposed category A workers*".

In fact, all exposed workers, whatever the level of dose they are to receive, should benefit from the same system of protection. A few countries (Spain for example) have reserves about this extension as category B workers are not expected to work in controlled area. In addition, provisions for outside workers should be explicitly extended to non-nuclear fields. The medical and the non-destructive testing fields were the most quoted sectors.

It was also proposed to clearly define the terms "outside workers", "operator" and "outside undertaking" within the future BSS, as well as "self-employed worker". Those definitions should also be harmonised with the IAEA ones. The problem of self-employed workers has been pointed out. While they are not numerous, their number is increasing. Some participants have expressed some fears concerning their monitoring and follow-up. Therefore they should be explicitly covered in the outside worker radiation protection regulation.

<u>European radiological passport and European dose recording system</u>

Discussions and presentations dealing with the radiological passport content and format have been numerous. This topic appears of first importance for all participants to the Seminar. Most of the EU countries are now providing documents corresponding to national radiological passports (issued either by regulatory bodies or other national organizations). Additionally, as reported in the CEPN survey, fourteen countries have set up national dose recording systems. Those recording systems can be implicitly devoted to outside workers (in Spain for example) or it can deal with all exposed workers (in France for example).

The setting-up of an European homogenous outside workers exposure recording system, which was expected some years ago, does not any more appear as a relevant issue for the participants. It raises several problems dealing with costs and management. In addition, its efficiency and interest are not easy to foresee, and it could raise conflicting issues with regards to national data protection agencies' requirements.

On the contrary, the EC should continue in the future to support the ESOREX (European Study on Occupational Radiation Exposures) network (www.esorex.cz). In fact, it appears as a key tool of information and feedback related to workers exposure within the EU, and as a potential provider of recommendations to enhance some "harmonisation" of the national reporting and recording systems.

Regarding the radiological passport, all participants expect to make use of a more harmonized document, which should not be interpreted as a uniform and not flexible document for all EU countries. The question of language is of first importance and a radiological passport should be at least issued in two languages: the national language of the issuing country and English.

Regulation should be flexible enough, but the EC should define the minimal requirements for the content of the passport, allowing countries to ask for more data for workers of their nationality if they wish to. For example, the EC should elaborate guidance on what type of exposure data should be provided for workers travelling in different countries with, sometimes, different dose limits (20 mSv as annual calendar dose limit, 20 mSv for a 12 month rolling period, 100 mSv for a five year period…). It was reminded during the Seminar that about half of the EU countries have an annual dose limit of 20 mSv (only within old Member States), while the others have a dose limit of 100 mSv for 5 years. Additionally to regulatory requirements, some companies might request for their workers the respect of dose constraints lower than 20 mSv. However, the passports are used only as a tool to enable travelling of workers between the sites (not to wait for official dose reports). Member Countries suggest a flexible way of regulation of personal dose data information exchange.

Regarding medical data, the passport should indicate if its owner is fit or unfit, the date of last medical examination, the task that he/she cannot manage and the coordinates of the medical doctor(s) in charge of the worker follow-up. It would help to ensure medical secrecy while providing the medical service of the operator with a person to contact if need be. Following the presentation by the European occupational medical physicians working group, even while more detailed medical data should not be requested in the passport, it is recommended to the Commission to take care of the conclusions that will be soon made available by that working group.

EC should define guidance on ways to provide information to national authorities about doses undertaken abroad. In that sense the Finland / Sweden system is considered as an example. Another EC guidance is expected concerning non-EU workers and the minimum set of data they should provide to the operators in EU countries.

Some participants also suggested that the EC should support the development of a reasonably inexpensive electronic form of the passport to be developed and made available on the market.

Finally, it is recommended to all countries to envisage "mutual recognition" of their national radiological passports since minimum European requirements will be fulfilled.

Ability of outside undertakings

Procedures that guarantee the competence of a company to perform specific jobs in controlled area are considered as important. In that domain two main situations are encountered:

- In some new Member States, such as Czech Republic or Lithuania, the outside undertakings, being considered as undertakings in the sense of the BSS, are submitted to authorisation before being allowed to work in controlled areas. The outside undertaking became then a licensee, which may be inspected by the regulatory bodies' inspectors[2].

- In most old Member States, referring to the Directive 90/641/Euratom, there is no requirement for an authorisation to be delivered to the outside undertakings. In some cases, the regulatory body registers outside undertakings in a specific registry. In other ones, an accredited organism (private or public) certifies outside undertakings following an audit, the certification being "checked" every two or three years. The French certification system is an example of such a system and has been considered very interesting to participants, in particular nuclear operators.

Between the two mentioned situations, in Spain, the regulatory body created a national registry for outside undertaking. The Spanish regulation indicates that outside undertaking must be registered before starting any activity. The regulatory body is in charge of inspecting regularly outside undertakings to ensure they comply with regulatory requirements.

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[2] It is true in Czech Republic when outside undertaking is handling the source. But if the outside undertaking provides services such as painting or cleaning, it should be covered from a radiation protection point of view by the license of the operator.

The procedure and contents of administrative authorisation, administrative registration and certification by an accredited public or private organism are quite different, the inspections and auditing frequencies and contents are also quite different. The question of the ability of outside undertakings should therefore be further debated, under the auspices of the Commission, in order to evaluate the different procedures and to check whether they shall complement each other. Some operators expect that a distinction is provided in a case when the operator takes all relevant responsibility for outside workers based on a contract. The question of the need for an authorisation is directly linked with the clarity of the definitions to be kept in the new BSS for the outside undertakings.

Sharing of responsibilities and cooperation

Regarding cooperation between employers, the Council Directive 89/391/EEC of 12 June 1989 (Framework Directive), which has been presented during the Seminar by the DG EMPL, on the introduction of measures to encourage improvements in the safety and health of workers at work proposes an interesting framework, which objective is to set up the minimal requirements to ensure that workers are well protected at work. In particular, the Article 6 (General obligations of employers), indicate that "[…] *when several undertakings share a work place, the employers shall cooperate in implementing the safety, health and occupational hygiene provisions and, taking into account the nature of the activities, shall coordinate their actions in matters of the protection and prevention of occupational risks, and shall inform one another* […]".

In the case of radiological protection of outside workers, cooperation between employers and operators, sharing of responsibilities, mutual feedback and information were deeply discussed within the Seminar. Regarding the implementation of basic principles of radiation protection, it was reminded that the employer should legally remain responsible for the respect of the dose limit, while the optimization of radiation protection should be managed in cooperation of both the operator (responsible of the source) and the outside undertakings. This is clearly an acceptable transposition of the Framework Directive into the radiological protection context.

As far as the practical sharing of responsibilities is concerned, the participants of the Seminar recommend the establishment of a European list of operational duties to be coped with. The regulatory management of the sharing of responsibilities between the operator and the outside undertaking is not expected, as from an operational point of

view it clearly depends on the context: nature of the job, size of the outside undertakings, sector… The sharing of practical responsibilities should be laid down on a contractual basis between the operator and the outside undertaking; this should cover the sharing of responsibilities between the first row outside undertaking and its sub-contractors.

Miscellaneous

Regarding transboundary issues, the problem of language was further mentioned: how to train efficiently workers who do not speak the same language? Is it acceptable for safety and radiological protection reasons to let workers, not speaking (and reading) the language of the operator, to work in its controlled area? If no, how to forbid it? If yes, under which conditions? In addition, the issue of experience feedback was mentioned as the outside workers may miss the opportunity to inform the operator on good practices, near misses and incidents - and vice versa.

Generally speaking, a system of "mutual acceptance" of differences in interpreting European regulations should be developed.

Follow up of the Seminar

Many questions have been raised within the answers to the questionnaire as well as during the Seminar. The discussion lead to a few clear answers, but much remain to be elaborated, which is not surprising regarding the numerous issues, the "short" time available and the fact that it is the start of a discussion process.

It is thus recommended to the EC to establish a follow up of the Seminar through appropriate ways, for example the setting up of a working group. Existing European networks and projects should be involved in that process as appropriate.

1. BACKGROUND AND OBJECTIVES

1.1. Council Directive 90/641/Euratom

The Council Directive 90/641/Euratom, on the operational protection of the outside workers exposed to ionising radiation during their activities in controlled areas provides for a binding set of rules aimed at supplementing the Basic Safety Standards (BSS). The purpose of this directive is to ensure at EU level that the radiological protection situation for workers belonging to contracted firms (outside workers) is equivalent to that offered to those workers permanently employed by the operators of the controlled areas.

1.1.1. Definitions

The term operator was not defined in the previous 1980 BSS Directive (Council Directive 80/836/Euratom). A definition is provided in the Council Directive 90/641/Euratom: operator means any natural or legal person who under national law, is responsible for a controlled area in which an activity required to be reported under Article 3 of Directive 80/836/Euratom is carried on.

The term "outside undertaking" was defined in both the Council Directive 90/641/Euratom and the 1996 BSS Directive. Those definitions are different:

- Directive 90/641: outside undertaking means any legal or natural person, other than the operator, including members of his staff, performing an activity of any sort in a controlled area,
- 1996 BSS Directive: an outside undertaking is any natural or legal person who carries out the practices or work activities referred to in Article 2 and who has the legal responsibility under national law for such practices or work activities.

The second definition, provided by the new BBS, raises a problem of responsibility between the operator, who "is responsible for a controlled area […]" and the outside undertaking, "who has the legal responsibility under national law […]". In case of a revision of the Council Directive 90/641/Euratom, this contradiction should be clarified.

The term “outside worker”, as defined in the Council Directive 90/641/Euratom, means any worker of category A, as defined in Article 23 of Directive 80/836/Euratom, performing activities of any sort in a controlled area, whether employed temporarily or permanently by an outside undertaking, including trainees, apprentices and students […] or whether he provides services as a self-employed worker.

1.1.2. Obligations of the different actors

The Council Directive 90/641/Euratom details the obligations of Member States’ competent authorities, operators and outside undertakings (Title II) as follows.

Member State Competent Authority:

- Shall ensure that radiation protection for Outside Workers is equivalent to that for permanently employed workers,
- A uniform reporting and recording system shall be established in a form of a computer network, meanwhile an individual radiological monitoring document shall be issued.

Operator:

The operator shall be responsible directly or by contract for the operational aspects of radiation protection, which are directly related to the nature of the activity and the controlled area. In particular, for each outside worker, the operator:

- Must check medical surveillance and fitness,
- Must provide specific training in connection with the characteristics of the work and the working area, additionally to basic training,
- Ensure that protective equipment is issued,
- Ensure that exposure monitoring and assessment of doses is done,
- Ensure that dose limits and other general principles are applied,
- Ensure that after every intervention the radiological data of each worker are recorded also in the Passbook.

Outside Undertakings:

The Outside Undertakings shall ensure either directly or by contracts with operators that radiation protection is in accordance with the provisions of the BSS, and in particular:

- Compliance with general radiation protection principles and the dose limits,
- Provide information and training,
- Guarantee assessment of exposure and medical surveillance,
- Ensure that results of individual monitoring are recorded and kept up to date in the network and the Radiation Passbook.

1.1.3. National reporting and recording system

The Council Directive 90/641/Euratom (Title II) precises that Member States shall ensure that a uniform reporting and recording system is established through a national network or the issuing of an individual radiological monitoring document to every outside worker. Member States' competent authority shall ensure that the adopted monitoring system comprises the following three sections (Annex I and Annex II):

- Particulars concerning the identity of the outside worker,
- Particulars to be supplied before the start of any activity,
- Particulars to be supplied after the end of the activity.

The individual radiological monitoring document issued by the Member States' competent authority shall be a document non-transferable to another individual and shall give an individual identification number.

Information from the radiological monitoring system to be supplied before by the outside undertaking to the operator or the medical service via the individual radiological monitoring document must contain:

- Name and address of the outside undertaking,
- Medical classification of the outside worker,
- Date of the last periodic health review,
- The result of the individual exposure monitoring (the accumulated individual dose).

Data to be recorded by the operator after the end of any activity must be as follows:

- Date of beginning and end of activity,
- Estimation of effective dose,
- As of necessity: estimations of equivalent doses in parts of the body,
- In the event of internal exposure: estimation of the incorporated activity and the committed dose.

1.2. Outside workers population in European countries

Table 1 here after outlines the non-negligible number (between, at least, 90000 and 94000) of workers classified as "outside workers" in some 17 EU countries and 4 non-EU countries. It must be kept in mind that the data provided in Table 1 do not include several countries, and, as a consequence, the overall number of outside workers in the EU countries may be higher.

Those data were recovered though the answers to the questionnaire and the ESOREX network (European Study on Occupational Radiation Exposure, www.esorex.cz).

It should be noted that most (nearly all) recorded outside workers work for the nuclear field in those countries with nuclear installations. The only exception seems to be Germany where most outside workers are recorded in the non-nuclear industry. One may then question if definition of working sector in Germany is similar with the ones in other countries. It has also to be pointed out that an informal information was provided by a General Electric's representative who estimates that there are few thousands of outside workers in the field of medical device supplier companies[3] who perform maintenance in medical facilities within Europe. Table 1 does not reflect that situation. Most European countries do not consider them as outside workers in their statistics.

Regarding the situation of self-employed workers within the EU, some information has been recovered though the ISOE network (Table 2, www.isoe.cepn.asso.fr), which outlines that the number of self-employed workers within EU may be small, no more than a few hundreds, even if it seems to increase. This evolution should be attentively followed-up to ensure that this category of workers is, as well as the others, covered by appropriate radiation protection systems.

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[3] Those data should be officially confirmed.

Table 1. Estimation of the number of outside workers in the European countries

Country	Nuclear industry	Medical sector	Non destructive controls	Other non nuclear industries	Research	Sub-total
Lithuania	1239 (year 2003)	8 (year 2003)				1247
Spain	7300	300 for non nuclear sectors				7600
Czech Republic	No detailed statistics available before 2005, but 2600 passports have been issued so far					≈ 2600
Slovakia	2169 (year 2003)	14	20	40		2243
Estonia				62 (year 2003)		62
Sweden	About 3000	50 to 100	50 to 100	50 to 100	50 to 100	≈ 3200 - 3400
Finland	Less than 2000	No exact information	No exact information	No exact information	No exact information	Up to 2400
Denmark			276			276
Switzerland	About 2300		About 30			≈ 2330
Germany	Monitored 2157 Exposed 652	Monitored 540 Exposed 150	Monitored 706 Exposed 150	Monitored 15528 Exposed 7904	Monitored 1572 Exposed 325	Monitored 20503 Exposed 9181
Italy	152	444	47	514		1157
Greece				Less than 120		≈ 120
Slovenia [a]	1200	2	1	37	16	1256
France	30280 (year 2003) [b]					30280
Norway	Norway does not have any system to estimate the number of outside workers.					

Latvia	About 100 (including Regulatory Authority's inspectors, installation and service technicians and engineers of medical device supplier companies).	≈ 100
Country	Nuclear industry / Medical sector / Non destructives control / Other non nuclear industry / Research	Sub-total
Romania	981 (23 foreigners)	981
Iceland	Iceland, as Norway, does not have a way in its system to distinguish outside workers from other employees.	
Hungary[c]	2504 (2004)	2200 - 2500
United Kingdom	Nuclear industry: 4784 class A contractors and 5575 class B contractors.	10000 - 15000
The Netherlands	670 (year 2003)	670
Ireland	0	0

a *For the nuclear sector, 1200 registered outside workers in CRPD (500 per year), regardless if they are still active or not. Workers exposed to radon are not included.*

b *The radiological follow-up of those workers is ensured by the IRSN and the LCIE (collective dose equal to 24.4 hSv in 2003). Data extracted from "La radioprotection des travailleurs, Bilan de la surveillance dosimétrique de l'exposition externe en 2003, IRSN/DRPH".*

c. *Detailed number of outside workers in Paks NPP between 2002 and 2004*

Year	Film-badge	TLD	Total
2002	2243	257	2500
2003	2309	408	2717
2004	2093	411	2504

Table 2. Self-employed workers within the EU

Country	Facility	Self employed workers	Trend	Additional comments
France	All sites	0 to 10		Source: CEFRI
Slovakia	Bohunice NPP		Increasing number (regulator point of view)	The number of the licensed firms / self - employed workers cannot be specified as the licencies do not contain the number of employees
	Mochovce NPP	5 to 10	Increasing since 10 years	
Switzerland	Gosgen NPP	0	Stable	
	Leibstad NPP	30	Increasing	
Germany	Philippsburg NPP	15 to 20	Stable	
	Biblis NPP	More than 10	Increasing since 10 years	
Czech Republic	Dukovany NPP	19	Stable	
	Temelin NPP	5	Stable	
Finland	Loviisa NPP	5 to 10	Decreasing	The amount of "self-employing companies" seems to be increasing, but the amount of self-employed people at the plant tends to decrease due to the high standards that the plant requires from outside companies, apparently it is easier for a big company to comply with.

Country	Facility	Self employed workers	Trend	Additional comments
United Kingdom	BEG	100 (8 sites)	Slowly increasing	British Energy Generation (BEG) workers classified as contractors in respect to the Company specification documentation are registered as Safety Approved Contractors and usually are listed as "Sole Traders". There is no policy that prohibits employing such contractors - the attached list only identifies 5 sole traders as approved by BEG. This is not a true reflection of the actual number of self-employed workers. Many nuclear power sites themselves will employ staff not on the approved lists. Additionally the main contractor will sub-contract out work to self-employed workers, this situation predominates during an outage period. BEG had undertaken a number of 'downsizing' campaigns where BEG staff have left full time employment on severance. The Company does and continues to use the ex staff as contract staff and very often these people are self- employed. Across BEG the use of self-employed staff is increasing but that may not be the official statement from the company due to industrial relations implications. There is no easy way to extract precise information as the databases do not lend themselves to such interrogation - so the above is a best guess. One site has indicated that at least 20 self-employed workers are employed on the site with a slowly increasing trend. It is worthy to point out that many individuals who are self-employed are radiographers and often used as sub contractors.
Netherlands	Borssele NPP	0 to 5	Stable	
Spain	Asco NPP	0 to 5		

1.3. Objectives of the survey

The Council Directive 90/641/Euratom, on the operational protection of the outside workers exposed to ionising radiation during their activities in controlled areas provides for a binding set of rules aimed at supplementing the Basic Safety Standards (BSS). The purpose of this directive, as outlined in the previous paragraph, is to ensure at EU level that the radiological protection situation for workers belonging to contractor firms (outside workers) is equivalent to that offered to those workers permanently employed by the operators of the controlled areas.

The Outside Workers Directive supplements former BSS Directive 80/836/Euratom, in particular those articles dealing with prior reporting and authorisation and those providing for the fundamental principles for the operational radiological protection of workers. It is important to underline that the Directive is not only applicable to the nuclear industry, but covers work sectors where controlled areas are operated in the sense of the BSS Directive. The fact that the Outside Workers Directive is based on the old BSS Directive (80/836/Euratom) makes it necessary to review the impact of the new BSS (96/29/Euratom) on its operational implementation.

Furthermore, during the past ten years, the working arrangements for workers in all sectors have considerably changed. As a consequence of the completion of the internal market an always-increasing number of workers perform their activity consecutively in Member States other than the one where their employer is legally registered. Self-employment is another form of employment situation, which allows for more flexibility and is therefore an appropriate and increasing alternative for specialists and experts in specific working sectors. For all those persons, it is necessary that Member States' regulations guarantee an equal level of radiological protection for all workers.

Regarding this situation, the main objectives of this survey are to:

- Identify problems with the implementation in connection with the new BSS Directive,
- Identify necessary changes and adaptations in the context of a possible revision of the Outside Workers Directive.

The first part of this document aims at reviewing the measures taken by EC Members States, Candidate Countries, Switzerland and Norway for the operational

implementation of the Outside Workers Directive. As far as possible, a particular attention has been paid to the situation in New Members States.

The second part of this document exposes key issues and recommendations for outside workers' radiation protection that were discussed during a Seminar held at the EC facilities in Luxembourg on 29th and 30th November 2005.

2. SURVEY ON THE IMPLEMENTATION OF THE EUROPEAN COMMISSION DIRECTIVE 90/641/EURATOM

2.1. Methodology

Having in mind the objectives of the survey, questionnaires were prepared by the contractor and EC representatives. Three questionnaires were built in order to analyse the positions of National Regulatory Bodies, Operators and Outside Undertakings.

Table 3 here after provides an overview of the 26 countries that answered the questionnaire, both for competent authority (27 answers from 25 different countries), operators (19 answers from 9 different countries) and outside undertakings (5 answers from 5 different countries). Information (when available) on the experience gained by national radiation protection competent authorities, operators, outside undertakings and workers - in particular indicating the problems with the complementary implementation of both the new BSS and the Outside Workers Directive - has also been reviewed.

Table 3. List of answering institutions

Country	Institution	Nature
Austria	Austrian Society for Non Destructive Testing	Outside undertaking
Belgium	Service public fédéral de l'Emploi, du Travail et de la Concertation Sociale	Authority
	Federal Agency for Nuclear Control	Authority
	Electrabel	Operator
Cyprus	Cyprus Association of Medical Physics & BioMedical Engineering	Authority
Czech Republic	State Office For Nuclear Safety	Authority
	Czech Energetic Company	Operator
Denmark	National Institute of Radiation Hygiene	Authority
Estonia	Estonian Radiation Protection Centre	Authority
Finland	STUK (Radiation & Nuclear Safety Authority)	Authority
	Teollisuuden Voima Oy	Operator
	Fortum Power and Heat, Loviisa NPP	Operator

Country	Institution	Nature
France	Ministère du Travail (DRT)	Authority
	Direction Générale de la Sûreté Nucléaire et de la Radioprotection (DGSNR)	Authority
	AREVA	Operator
	Electricité De France (EDF)	Operator
	Commissariat à l'Energie Atomique (CEA)	Operator
	Framatome ANP	Outside undertaking
Germany	Bundesamt für Strahlenschutz (BfS)	Authority
	Klinikum Augsburg. Medizinizche Physik	Operator
	EnBW Kraftwerke AG	Operator
	German Society for Non-Destructive Testing	Outside undertaking
Greece	Greek Atomic Energy Commission	Authority
Hungary	Paks Nuclear Power Plant Ltd	Operator
	National Research Institute for Radiobiology and Radiohygiene	Authority
Italy	Ministero del Lavoro e delle Politiche Sociali	Authority
Ireland	Radiological Protection Institute of Ireland	Authority
Latvia	Radiation Safety Centre	Authority
Lithuania	Radiation Protection Centre	Authority
Malta	Occupational Health & Safety Authority	Authority
Netherlands	Ministry of Social Affairs and Employment Directorate for Safety and Health at work	Authority
	Borssele Nuclear Power Plant	Operator
	RTD (radiography company)	Operator
Norway	Norwegian Radiation Protection Authority	Authority
Poland	National Atomic Energy Agency	Authority
Slovakia	Public Health Authority of the Slovak Republic	Authority
Slovenia	Slovenian Radiation Protection Administration	Authority

Country	Institution	Nature
Spain	Consejo de Seguridad Nuclear (CSN)	Authority
	Central Nuclear de Almaraz	Operator
	Tecnatom	Outside undertaking
Sweden	Swedish Radiation Protection Authority	Authority
Switzerland	Swiss National Accident Insurrance Fund Physics Section Suva	Authority
Turkey	Radiological Health and Safety Division	Authority
United Kingdom	Health and Safety Executive (HSE)	Authority
	National Radiological Protection Board (HPA)	Authority
	Nuclear Industry Radiological Protection Co-ordination Group (AWE, British Energy Generation, BNFL, Devonport, Rolls Royce, UKAEA)	Operators
	Mitsui Babcock Energy Limited	Outside undertaking

In addition to this list, it must be outlined that information from Iceland and Romania were recovered though the ESOREX network (see Table 1). But no information was provided by Luxembourg and Portugal (EC Countries), Croatia and Bulgaria (Candidate Countries).

Despite the fact that the International Labour Office (ILO), the Brussels Trade Union bureau or some national Trade Union representatives have been contacted, no answer has been provided by those stakeholders.

It is also noticeable that very few answers came from the medical sector, and that only 5 Outside Undertakings have fulfilled and returned the questionnaire.

2.2. Implementation of the Council Directive Euratom 90/641 in the EC countries regulation: current situation

The first part of the review was devoted to the legal and administrative aspects of the implementation of the Council Directive 90/641/Euratom (see Annex). This chapter detail the main features recovered through the study[34].

2.2.1. Implementation of the Council Directive Euratom 90/641

According to most of the regulatory bodies that answered the questionnaire, the Directive 90/641/Euratom has been completely implemented (20[5] ones out of 24 answers), excepted in France, Norway, Slovakia and Turkey. Furthermore, according to Paks NPP's representative and the Austrian Society for Non-Destructive Testing, the Directive has been totally implemented in Hungary[6] and Austria.

In France, the DGSNR stipulated that there is no operational network for the recording of outside workers exposure information and that there is no regulatory definition for the term "outside worker". Two French operators (CEA and COGEMA) also consider that the Directive 90/641/Euratom has not been completely implemented. Nevertheless, COGEMA mentioned that the SISERI - Ionizing Radiation Exposure Monitoring Information System - database will soon be operational (beginning of 2005). Furthermore, French majors nuclear operators created a few years ago an "access passport" in order to follow, among others, outside workers' exposure. But "*only operational dosimetry is registered in this passport and it is difficult to access to the last 12 months' dosimetry*" and this document has no regulatory status.

In Norway, the directive is not considered implemented, but the general radiation protection regulations clearly cover outside workers. In fact, Norway, like Sweden in the past, consider that there is no difference between "outside" or "inside" workers - basically, there are just the exposed workers - and thus have not estimated that a

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4 June 2004 – January 2005.

5 Cyprus, Netherlands, Czech Republic, Sweden, Poland, Finland, Latvia, United Kingdom, Denmark, Switzerland, Germany, Greece, Slovenia, Lithuania, Spain, Estonia, Italia, Malta, Ireland, Belgium.

6 This information was confirmed by a representative of the Hungarian National Research Institute for Radiobiology and Radiohygiene who attended the Seminar held at Luxembourg (Decree No. 30/2001 of Minister of Health).

specific text in their national regulation devoted to radiation protection of outside workers was needed.

"*The directive is not implemented in the Norwegian radiation protection regulations. There is no current concrete plan for implementation. The general radiation protection regulations also cover outside companies working in Norway*".

"*The Swedish legislation does not segregate between different sections of workers (e.g. external - own staff). The SSI regulations regarding nuclear facilities have included outside workers in the protection of workers since start in general SSI regulations. The status of the implementation has been reported earlier in accordance to the Directive. In 1996, new general regulations regarding outside workers category A have been introduced by the Swedish authority (SSI FS 1996:3). A change in responsibility for entrepreneurs has been implemented In the Radiation Protection Law (1988:220 §7)"*.

In Slovakia, the implementation of the Directive 90/641/Euratom is expected for the beginning of the year 2005 (not after April 2005).

The Turkish Authority's representative explains that "*the current legislation does not cover the requirements for the operational protection of outside workers exposed to the risk of ionizing radiation, but the 90/641/Euratom Directive requirements are planned to be added into our Radiation Safety Regulation. After the transposition of the directive into the Radiation Safety Regulation, some arrangements for the implementation will be necessary*".

2.2.2. Influence of the Council Directive 96/29/Euratom on the outside workers' regulation

11 national Regulatory Authorities[7] out of 24 recognized that the implementation of the EC Directive 96/29/Euratom has had an influence on the outside workers' regulation.

In Spain, if the national regulations for the radiation protection of outside workers have not been modified, the Spanish Regulatory Authority (CSN) has issued some specific

[7] France, Lithuania, Czech Republic, Spain, Sweden, Ireland, United Kingdom, Denmark, Germany, Itally, Slovenia.

standards in order to adapt the requirements of Royal Decree 413/97 to the provisions of the new European BSS:

"*The CSN Instruction IS-01, of 31 May 2001*[8]*, establishes the new format and contents of the radiation passport for outside workers. In order to verify compliance with the European BSS five-year dose limit, the new radiation passbook includes dose entries for:*

- *Monthly doses,*
- *Calendar year doses,*
- *Five consecutive calendar years doses.*

The CSN Instruction IS-06, of 9 April 2003, establishes the basic and specific training programmes in radiation protection for outside workers in nuclear power plants and fuel cycle facilities. The scope and contents of these programmes are consistent with the general provisions of the European BSS".

In Slovenia and United Kingdom, outside workers were not explicitly mentioned in the "general" radiation protection regulation before the implementation of the new BSS. If, fundamentally, the outside workers' regulation did not change, it was integrated into the "general" radiation protection regulation, which now applies to workers employed by operator and outside workers.

In 10 countries out of 24[9], the implementation of the new BSS did not change the regulation on outside workers' radiation protection. In Estonia, Poland, Malta and Latvia, the EC Directive 90/641/Euratom was implemented after or in the same time than the EC Directive 96/29/Euratom. In Slovenia, the Directive 90/641/Euratom was also transposed into the legislation together with the Directive 96/29/Euratom by the Radiation Protection and Nuclear Safety Act in 2002, which underlies Rules on the obligations of the person carrying out a radiation practice and person possessing an ionising radiation source in 2004. In prior legislation, outside workers were not explicitly mentioned.

The new BSS refer to a larger scope of activities than the old ones, for example work activities within which the presence of natural radiation sources leads to a significant

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[8] CSN Instructions are specific standards (mandatory) issued to regulate particular matters in radiation protection and nuclear safety.

[9] Cyprus, Estonia, Poland, Finland, Malta, Latvia, Norway, Switzerland, Belgium, Greece.

increase in the level of exposure of workers. 15 Regulatory Authorities out of 24 admitted that this is taken into account in the current regulation on outside workers[10].

In Finland, "*since 1992, the Radiation Act has recognised that a worker who is continuously exposed to natural radiation sources at levels exceeding specific action levels (radon in workplace: 400 Bq/m^3 in regular work, other sources 1 mSv per year above background) shall be considered as a worker engaged in radiation work. In this case, all the provisions of the Act related to radiation work are applicable, including all provisions implementing the Outside Workers Directive*".

2.2.3. Further elements influencing the outside workers' radiation protection

A few Regulatory Authorities indicate that outside workers' health and safety can also be influenced by other texts (even if those texts are not directly devoted to this topic).

In France, fixed term contract workers as well as temporary workers[11] are submitted to:

- Article L 122-3-17 and article L 124-22 of 'Code du Travail': the exposure of fixed term contract workers as well as temporary workers cannot exceed the annual dose limit value fold by the time spent in the operator's facility. If not, the contract is extended to a larger period in order to comply with this requirement. For example, if a temporary worker is to perform his job during 6 months, his exposure cannot exceed 10 mSv. After six months, if the exposure of the worker is 15 mSv, his contract has to be extended by three months.
- Decree of 12 May 1998[12]: fixed term contract workers as well as temporary workers cannot enter places with a dose rate possibly higher than 2 mSv per hour.

In Spain, the temporary employment agencies are not allowed to supply workers to cover jobs involving the exposure to ionising radiation in controlled areas (Royal Decree 216/1999 of 5 February 1999).

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[10] France, Lithuania, Netherlands, Slovakia, Sweden, Poland, Finland, Malta, Ireland, United Kingdom, Denmark, Germany, Belgium, Italia, Slovenia.

[11] Those requirements thus apply to outside workers only if they have a fixed term contract or if they are temporary workers.

[12] Arrêté 12 mai 1998.

The Czech Authority adds that "*there is a requirement in the general Law on Working Conditions for the case when one employer is sending workers to perform work on the workplace of another employer: they have to manage the arrangements for ensuring safe working conditions with clear declaration of responsibilities of each involved party (law No. 85/2001 Coll)*".

The Finnish and Swedish Regulatory Authorities explain that "*in order to simplify the reporting process of dose registrations a bilateral arrangement have been signed between Finland and Sweden on exchange of dose data within NP facilities in Finland and Sweden*".

The Polish Authority also quotes the International BSS for Protection against Ionizing Radiation and for the Safety of Radiation Sources (IAEA), which specifies that it must be ensured that "*the radiological monitoring system affords workers working in the controlled area temporarily equivalent protection to that for workers employed on a permanent basis*".

The Dutch Regulatory Authority precises that "*because of the system of individual monitoring and registration of the results of that monitoring we employ in the Netherlands, there is no use to regard outside workers from a Dutch "outside" company who work in another Dutch organisation as different from the inside workers. They all have their own personal monitoring device. The monitoring results are all registered in a central database, both for "national-outside" workers as for inside workers. That is why we have a different definition for outside workers than EC Directive 90/641/EURATOM*". In fact, the Dutch regulation defines an outside worker as "*a worker, who works in Dutch territory in a controlled area, under responsibility of an operator, who is seated in another Member State in the EU*".

2.3. National reporting and recording systems

2.3.1. Existence of a reporting system

According to the Regulatory Authorities that answered the questionnaire (see details in Table 4), 14 countries have set up a reporting and recording system and 19 countries have issued an individual radiological monitoring document. The following data are reported on the support - reporting system or individual document - (by the regulatory bodies):

- Personal data (20 out of 24 countries), among which:
    - Name, surname, gender, date of birth, "personal code" (national identity card number, passport number, social security number…) are required most of the time,
    - Nationality, address, outside undertaking where the outside worker works, type of job, radiological classification (A or B), photograph are often required.
- Medical data (17 out of 24 countries): date of last medical examination, type of every medical examination (periodic, special), medical classification (fit, unfit, fit subject to conditions), medical restrictions for working and authorisation of the approved medical practitioner are the most requested data,
- Exposure data (19 out 24 countries): all measured personal doses (effective, equivalent, external and internal), annual effective and equivalent doses, scrolling years doses, lifetime effective dose, data on emergency exposure, accidental exposure and specially authorized exposure are the most requested information.

Operators provide the same answers than Regulatory Bodies on these points.

Furthermore, in Hungary, according to the Paks NPP's representative, a passport has been issued for outside workers. Personal, medical and exposure data are reported on this document. The Austrian Society for Non-Destructive Testing also confirms the existence of such a passport in Austria, with personal and exposure data[13].

2.3.2. Transboundaries issues

Most of the countries - 20 out of 26[14] - indicate they ensure the non-transferability (from a worker to another) and non-plurality (no worker with several passports) of the individual radiological monitoring document (support). This is carried out though one of the following method:

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[13] For both Hungary and Austria, no answer has been obtained from the Regulatory Bodies.

[14] Cyprus, Slovakia, Netherlands, Lithuania, Spain, Czech Republic, Sweden, Estonia, Poland, Finland, Ireland, Latvia, Denmark, Germany, Italy, Greece, Slovenia, Hungary, Austria.

- The support is managed by the competent Authority and fulfilled by its personnel when requested by the operator that "employs" an outside worker or by the worker himself,
- A central registry issues the support, which has an identification number for each worker and the number of his personal passport or of another identification card,
- The social security number is reported on the support, which is requested back to the national network organisation to register any exposure data (among others) together with the former dose data of the worker,
- When a radiation passport is issued to an outside worker, the outside undertaking must notify to the Authority the passport identification number and the personal data of the worker, which are entered into a data base management system. This system incorporates a software program designed to detect if an outside worker has received more than one passport.

According to the Regulatory Bodies, national individual supports can also be issued to follow:

- Foreign outside workers (12 countries out of 24 answers[15]),
- Native outside workers performing their job in a foreign country (14 countries out of 24 answers[16]).

This means that some outside workers performing their jobs in different EC countries could be provided with different supports.

The existence of a mutual reporting between Finnish and Swedish dose registers for nuclear power plant employees must be mentioned once more.

The Spanish authority mentions that foreign operators can be reluctant to register exposure data into a Spanish written passport. It is unanimously expressed that a uniform passport for all the EC countries, written in national language and English would be undoubtedly a step forward.

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[15] Slovakia, Lithuania, Spain, Czech Republic, Sweden, Estonia, Poland, Latvia, Denmark, Switzerland, Germany, Greece.

[16] Netherlands, Lithuania, Spain, Czech Republic, Sweden, Estonia, Poland, Finland, Latvia, Denmark, Switzerland, Germany, Italy, Greece.

Table 4. National reporting and recording system: position of regulatory authorities

	Existence of a uniform reporting and recording system in a form of a computer network	Existence of an individual radiological monitoring document	Self-employed workers addressed in the national regulations
Yes	14 Slovakia, Cyprus, Netherlands, Czech Republic, Sweden, Poland, Finland, Latvia, United Kingdom, Denmark, Switzerland, Germany, Greece, Slovenia	19 Cyprus, Netherlands, Czech Republic, Sweden, Poland, Finland, Latvia, United Kingdom, Denmark, Switzerland, Germany, Greece, Slovenia [b], France, Lithuania, Spain, Estonia, Norway, Italy	17 Cyprus, Netherlands, Czech Republic, Sweden, Poland, Finland, United Kingdom, Denmark, Switzerland, France, Spain, Estonia, Italy, Malta, Ireland, Slovakia, Belgium.
No	9 France, Lithuania, Spain [a], Estonia, Malta, Ireland, Norway, Italia, Belgium [e]	4 Slovakia, Malta, Ireland [c], Belgium	6 Lithuania, Latvia, Norway [d], Germany, Greece, Slovenia
No answer	1 Turkey	1 Turkey	1 Turkey

a *Since 1995, the CSN has operated a National Dose Registry (BDN) that contains personal, employment and dosimetric data for all exposed workers in Spain. Radiation doses recorded in the BDN are subject to strict requirements of confidentiality as required in the Spanish Data Protection Law. The BDN only includes "legal doses" (doses resulting from TL dosimeters whose readings are carried out by approved dosimetry services). In this context, the BDN is not appropriate for the day-to-day surveillance of the doses received by outside workers carrying out jobs of sort duration in controlled areas.*

b *SRPA administrates the Central Records of Personal Doses (CRPD). It is an Access ® based database developed by SRPA. A Slovenian worker who performs his job in a foreign country as an outside worker can "prove" his exposure with a document issued by SRPA on the basis of CRPD data. The document is issued on request. When he finished his job, the worker must report the dose received to CRPD. It should also be outlined that nuclear operator generally uses its own monitoring system and provides individual reports to outside workers.*

c *S.I. No 125 of 2000 implements the requirements of the Basic Safety Standards Directive. The Institute has prepared a radiation passbook, but it has not yet had to issue this document to any individuals. Therefore, there have been no resources assigned to developing a computer network for the purposes of uniform reporting and recording.*

d *An individual radiological monitoring document is issued when requested. It contains the personal identification information and dose information. Neither self-employed workers nor outside workers are particularly addressed in the Norwegian regulation.*

e *Although the dispositions of Council Directive 90/641/Euratom have been transposed into national law by the publication of the Royal Decree of April 2, 2002 (Official Journal of June 20, 2002, modifying the R.D. of April 25, 1997) regarding the protection of workers against the hazards resulting from ionizing radiation, till now no implementation has been made.*

2.4. Operational implementation of the Council Directive Euratom 90/641

This section of the report is devoted to the description of operational aspect of the radiation protection of outside workers. Operators and Outside Undertakings were particularly solicited on this topic.

2.4.1. Operators' position

According to Table 5, when they appeal to outside undertakings, almost all the operators, mainly nuclear operators, who fulfilled the questionnaire:

- Check the medical surveillance and fitness,
- Provide specific training in connection with the work and working area's characteristics,
- Ensure that protective equipment is provided to each outside worker,
- Ensure that exposure monitoring and assessment doses are carried out.

But only 14 operators out of 19 ensure that the radiological data of each worker are recorded into a radiation passport or a network.

Table 5. Operational implementation of EC Directive 90/641/EURATOM: operators' position

Answer	Checking of medical surveillance and fitness of outside workers	Specific training in connection with the characteristics of the work and the working area	Ensure that protective equipment is issued	Ensure that exposure monitoring and assessment of doses are implemented
Yes	18	16	18	19
No	1	3	1	-
No answer	-	-	-	-

The variety of information to be provided to the operators by outside undertakings is large: name and address of the outside employer, medical fitness of the outside worker, identifier, licence in accordance with the legislation are the most required data.

Furthermore, 10 (resp. 12) operators out of 19 set up dose constraints (resp. intervention level) for outside workers.

Most of the time, the operator requires the collaboration of outside undertakings to favour the optimisation of radiation protection. 80% of the operators who answered the questionnaire stipulated within their contract with the outside undertakings that radiation protection has to be taken into account for all operations, and only 10% of the former ones admit they never require the collaboration of the latter ones for optimising individual and collective exposure.

A Finnish operator explains: "*the dose constraints and limits, as well as all other matters concerning radiation protection support, apply the same way to own personnel and to outside workers*". Another Finnish operator adds: "*the NPP is in charge of all radiation protection aspects*".

2.4.2. Outside undertakings' position

All the interviewed outside undertakings affirm they provide their workers with an adapted information and training on radiation protection and ensure the assessment of exposure and the medical surveillance of their workers are implemented. Furthermore, 4

out of 5 outside undertakings make sure the individual monitoring results are recorded and 3 out of 5 make use of their own individual dose constraints.

Table 6. Operational implementation of EC Directive 90/641/EURATOM: outside undertakings' position

	General information and training on radiation protection	Assessment of exposure and medical surveillance	Recording of individual monitoring results	Use of individual dose constraint
Framatome ANP (France)	Yes	Yes	Yes	Yes
Tecnatom (Spain)	Yes	Yes	Yes	Yes
MBE Ltd (UK)	Yes	Yes	Yes	Yes
Austrian NDT Society (Austria)	Yes	Yes	No	No
German NDT Society (Germany)	Yes	Yes	Yes	No

The Framatome ANP's representative stipulates that in France, as well as in Spain, Sweden, Germany, Switzerland and UK, the contract signed between Operators and Outside Undertakings always mentioned that radiation protection of workers has to be taken into account. It has also pointed out that the collaboration of Outside Undertakings for the optimisation of radiation protection is only sometimes required.

The Tecnatom's representative mentioned that the radiation protection is also contractually mentioned for all operation in European countries, USA, Japan, Mexico, Brazil and Eastern countries; but that the assistance of Outside Undertakings for the optimisation of radiation protection is only required for some specific tasks.

The Framatome ANP's representative mentions they make use of "prorata temporis" to set individual dose constraints (which is a legal requirement in France only for temporary workers and fixed term contract workers as previously mentioned): considering a dose limit of 20 mSv on a 12 consecutive months period, if a worker is to work six months on a specific job, the individual exposure will not exceed 10 mSv during those 6 months. The MBE Ltd's representative explains that "*job specific, rolling, six monthly and annual limits are set*".

Answers provided by outside undertakings clearly outline that there is a large variety of situations and, as a consequence, a real need in Europe for a harmonization of practices

("*need for a European standard*") for both exposure assessment and medical surveillance. According to the Framatome ANP's representatives, "*a European medical passport is needed for both category A and category B workers, with a common list of required medical examinations for all the EC countries* […] *as well as common practices and values for all the EC countries' operators in terms of external or internal contamination…*".

2.4.3. Outside workers' employment's conditions

Regulatory Bodies, as well as Operators and Outside Undertakings, were asked to provide information on the nature of the outside workers' contract: are they permanent contract, fixed-term contract or temporary workers? Unfortunately, definitions for those terms were not provided within the questionnaire, which may have led to some confusion. The following results must be very cautiously taken into account.

A permanent contract outside worker is employed by an outside undertaking company on a permanent basis, while a fixed term contract is employed by an outside undertaking company for a specific period, jointly agreed on by the company and the worker before the signature of the contract. A temporary worker is paid and employed by a temporary work agency. Outside undertaking Companies or operators appeal to and pay those agencies to get workers for a certain time period.

Answers of regulatory bodies to questions regarding general points dealing with working conditions of outside workers are reported in Table 7 hereafter; it should be noted that less of half regulatory bodies have answered partially or totally these questions. Taking into account the answers, it appears that outside workers are, most of the time, fixed-term or permanent contract workers, and rarely temporary workers. Furthermore, according to regulatory bodies, outside workers benefit from the same social security cover than permanent contract workers (10 positive answers, 2 negative ones).

As far as self employed workers are concerned, 19 regulatory bodies out of 24[17] consider that there is no difference from a regulatory point of view between self

[17] Cyprus, Netherlands, Czech Republic, Sweden, Finland, United Kingdom, Denmark, Switzerland, France, Spain, Estonia, Italy, Malta, Ireland, Slovakia, Norway, Germany, Slovenia, Belgium.

employed and outside workers and (for 20 regulatory bodies out of 24[18]) between self employed workers and outside undertaking. In Lithuania, an individual person cannot get a license to work in the controlled area.

Table 7. Working conditions of outside workers: position of regulatory authoritites

Country	Permanent contract worker	Fixed-term contract worker	Temporary workers	Do outside workers benefit from the same social security cover than permanent contract workers?
France				
Cyprus	Rarely	Mainly	Rarely	Yes
Slovakia	Mainly [a]	Mainly [a]	Mainly [a]	Yes
Spain				
Lithuania		Mainly		Yes
Netherlands				The social security legislation of the country of origin is relevant.
Spain	Mainly	Mainly [b]		Yes
Czech Republic		Mainly	Rarely	Yes
Estonia		Mainly		Yes
Sweden	Mainly?	Rarely?	Rarely	No [c]
Poland				
Finland	Mainly	Rarely	Rarely	No [d]
Malta	Only			Not known
Ireland				
Latvia				
United Kingdom				
Norway				
Denmark	Mainly	Mainly	Rarely	Yes
Switzerland				Yes
Germany				
Belgium				
Italy				Yes [e]
Greece				
Slovenia	Mainly	Mainly	Rarely	Yes

a *There are workers under permanent contract, fixed-term contract and temporary workers as well. The majority is working on a base of permanent (or long term) contract or fixed-term contract, which is renewed usually annually or per outage.*

b *For refuelling outages in NPPs.*

[18] Cyprus, Netherlands, Czech Republic, Sweden, Finland, United Kingdom, Denmark, Switzerland, France, Spain, Estonia, Italy, Malta, Ireland, Slovakia, Norway, Germany, Slovenia, Poland, Belgium.

c *The differences are in other aspects of social benefits, not radiological. The regulations regarding radiation protection for foreign external workers in Sweden are exactly the same as for Swedish workers in own staff as well as Swedish external workers.*

d *The differences do not cope with radiation protection issues but other aspects of social benefits (e.g. annual holidays etc).*

e *The answer holds for outside workers enrolled in an Italian undertaking; self employed workers and workers enrolled in a foreign undertaking are subject to their own social security regimes.*

Answers of operators to questions regarding general points dealing with working conditions of outside workers are reported in Table 8 hereafter. According to these data, outside workers are, most of the time, permanent contract's workers or temporary workers. They are rarely fixed term contract's workers. But outside workers do not systematically benefits from the same social security cover as the operator permanent workers. Differences such as payments during illness, sharing of company benefits or holidays' period accorded by the employer are outlined.

Table 8. Working conditions of outside workers: position of operators

Operator / Site	Permanent contract	Fixed-term contract	Temporary workers	Do outside workers benefit from the same social security cover than permanent workers? (Yes or No)
AWE			Mainly	No
British Energy	Rarely - Some	Rarely - Some	Mainly	No
BNFL	Mainly	Rarely	Mainly	[a]
Dukovany NPP				
Electrabel				
COGEMA	Mainly	Rarely	Rarely	Yes
Klinikum Aufsburg				
TVO	Mainly	Rarely	Rarely	No [b]
EnBW	Mainly	Rarely	Rarely	Yes
Almaraz NPP	Mainly [c]	Rarely	Mainly [d]	Yes
DRD Ltd	Mainly	Rarely (some)	Mainly (some)	No
Rolls Royce plc	Rarely	Rarely	Mainly	No
UKAEA	Mainly	Rarely	Mainly	Unknown [e]
Loviisa NPP	Mainly	Rarely	Rarely	No [f]
Borssele NPP			Mainly	No [g]
RTD	Rarely	Mainly	Rarely	No [h]
EDF	Mainly	Rarely	Rarely	Yes
CEA	Mainly	Mainly	Rarely	Yes
Paks NPP Ltd	Mainly	Rarely	Rarely	Yes

a *It depends on the employer of the outside worker on question.*

b *There are no differences regarding radiation protection issues but e.g. length of notice, age bonuses and holidays differs with respect to the character of contracts.*

c *During normal operation.*

d *During refuelling or special operations.*

e *Matter for outside employer contract conditions.*

f *The benefits are usually company specific.*

g *For instance, payment during illness might be different.*

h *Social security has to be covered by their employer or, if they work freelance, by themselves.*

Finally, answers provided by Outside Undertakings are outlined in Table 9 here below.

Table 9. Working conditions of outside workers: position of outside undertakings

Operator / Site	Permanent contract	Fixed-term contract	Temporary workers	Do outside workers benefit from the same social security cover than permanent workers? (Yes or No)
Framatome ANP (France)	Mainly	Mainly	Mainly	Yes
Tecnatom (Spain)	Mainly	Mainly		Yes
MBE Ltd (UK)	Mainly	Rarely	Rarely	No
Austrian NDT Society (Austria)	Mainly	Rarely	Rarely	No
German NDT Society (Germany)	Mainly	Rarely	Rarely	No

2.5. Further information and comments

In the United Kingdom, the Health and Safety Executive's Central Index of Dose Information, which has been operating since 1987, appears to be an interesting example of reporting system. In fact, its main functions are:

- *"To enable statistical analysis of employee radiation exposures in the UK,*
- *To provide an index that shows which Approved Dosimetry Service (ADS) is, or has been, responsible for the dose record keeping of a classified person and to act as a data back-up for dosimetric information held by the ADS for such a person,*
- *To enable annual verification of the number of classified persons designated in the UK so that new registrations and terminations can be checked for consistency with the previous year,*
- *To act as a link between the old and new ADS when a person changes their employer. This may, in exceptional cases, include relaying subsequently revised data to the current ADS."*

Among other comments, the following have proved to be particularly relevant. The necessity for a uniform European network or radiation passport is particularly outlined. There is not a clear consensus on what would have to be this European reporting system and several questions are raised:

- Would it just consist in a European radiation passport?
- Would it consist in a European outside workers' exposure database?
- Would it be just limited to outside workers or would it be extended to all the exposed workers?
- Would it concern all sectors or just the nuclear operators?

"*We would prefer a common electronic system; passbooks can be easily lost or forgotten. […] Some guidance on non-EU workers would also be welcome as technically any dose they receive in the EU has no legal standing. Also any dose received by our workers in a non-EU country has no legal status, even though we as a company add it separately to the individual's dose record*" (*United Kingdom, G. Sallit*).

"*The system shall be unique for the all EU Member States*" *(Lithuania, A. Mastauskas).*

"*It should be realized that the introduction of the common European passbook in national language and English should be supported by efficient computer network in order to assure non-plurality of passbooks. Since European legislation provides full mobility of workers among the Member States it would still be possible for an outside worker to obtain several passbooks in different countries. Since some countries (like Slovenia, Germany and maybe some other countries) are not allowed to keep the uniform identification number (social security number, tax number…) in their database due to personal data protection legislation, it is not trivial to follow workers identity in several different countries. This specially applies for women changing last name in case of marriage. Taking into account that a computer network is necessary anyway, a common European database seems to be better, although very demanding option*" *(Slovenia, N. Jug).*

"The CSN has been taken into consideration the possibility of establishing an electronic radiation passport, but finally this option has not been considered to be feasible, due to both economic and operative factors:

- *Many outside undertakings in the nuclear field employ a small number of workers. Typically these companies are only contracted by NPPs to carry out work activities during the refuelling outage (and not every year). Obviously these companies are not able to bear economically the costs of the equipment necessary to manage an electronic radiation passport.*
- *The implementation of an electronic passport system would require standard equipment for all the users of the system (operators and outside undertakings). This standard equipment seems to be feasible in NPPs (eight facilities), but not in non-nuclear facilities (thousands of facilities).*

The practical implementation of a radiation passport in paper seems not to be problematic at national level. However, as I have mentioned before, foreign operators could have difficulties to enter data into a radiation passport from a country with different language. In order to solve these difficulties it would be useful:

- *Or to establish a common format for the radiation passport in all European countries. In this way, any operator in any country would be able to locate the page where the data needs to be entered,*
- *Or to require a national radiation passport written in two languages (national language and English),*
- *Or both.*"

(Spain, I. Amor)

"*The recording of date of exposure due to internal contamination needs improvement, especially in the NORM industries. For example by having companies record the time (outside) workers work in contaminated environments, and calculate a number of the internal contamination per unit time, taking into account the protective equipment used. At present I think exposure due to internal contamination is hardly known*" *(Netherlands, R. Van Sonsbeek).*

"*This must be kept in Health Physics area and not with Medical staff - the whole point is for dose control and free transfer of information. Medical status and fitness is lower order of significance. Our evidence shows that passbooks do work - provided it is supported by a regulated and approved independent dosimetry service - not the employer*" *(United Kingdom, S. Morris).*

"To improve the radiological control of the outside workers it should be convenient to have a national computing database to record all the dosimetric data. The access to this database should be exclusive to the external company and the different facilities. This database would help in the management of the data. Initially this system should not exclude the use of the paper personal record used nowadays, but a complement of it, because currently not all the external companies fill it correctly either completely. We think advantages of this system should be analysed" (Spain, F. Gonzalez).

3. CONCLUSIONS AND RECOMMENDATIONS FROM THE SEMINAR ON THE IMPLEMENTATION OF THE DIRECTIVE 90/641 EURATOM ON THE RADIATION PROTECTION OF OUTSIDE WORKERS

The following part of this report provides the key outcomes from a Seminar held by the EC DG TREN at Luxembourg on 29th and 30th November 2005 on the implementation of the EC Directive 90/641/Euratom and, more generally speaking, the radiation protection of outside workers' issue. The survey detailed in Section 2 of this report was presented, as well as the practical organisation of outside workers' radiation protection in several EU countries (see program in Annex 3). Those elements were discussed within several Working Groups, which have allowed to issuing several recommendations.

3.1. General points

The survey carried out by the CEPN, as well as different presentations during the Seminar, have demonstrated the existence of differences in national approaches to the practical implementation of the Directive 90/641/Euratom, while aiming to the same fundamental objective: ensuring that outside workers benefit from the same level of protection as permanently employed workers.

It appears that the Directive 90/641/Euratom is, in most of the EU countries, totally implemented into national regulations in spite of what appears as inconsistencies between some definitions provided by the Directive 90/641/Euratom and the Basic Safety Standards[19]. Definitions as well as sharing of responsibilities are therefore not understood in the same way from one country to another.

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[19] As detailed within the survey, the term operator was not defined in the previous 1980 BSS Directive (Council Directive 80/836/Euratom). A definition is provided in the Council Directive 90/641/Euratom: operator means any natural or legal person who under national law, is responsible for a controlled area in which an activity required to be reported under Article 3 of Directive 80/836/Euratom is carried on. The term "outside undertaking" was defined in both the Council Directive 90/641/Euratom and the 1996 BSS Directive. Those definitions are different:

- Directive 90/641: outside undertaking means any legal or natural person, other than the operator, including members of his staff member, performing an activity of any sort in a controlled area,
- 1996 BSS Directive: an outside undertaking is any natural or legal person who carries out the practices or work activities referred to in Article 2 and who has the legal responsibility under national law for such practices or work activities.

The participants welcome the initiative of the Commission to integrate outside workers' radiation protection Directive into the future Basic Safety Standards, as well as its wish to consult end users. It is also expected to maintain, in the following years, the coherence between the new Basic Safety Standards and other European legislation (for example, directives related to risk at work or directive on free movement of services).

3.2. Recommendations from the Seminar

3.2.1. Scope and definitions of the Directive

It was proposed by several working groups that outside workers' radiation protection regulation should cover category A as well as category B workers. In fact, all exposed workers, whatever the level of dose they are to receive, should benefit from the same system of protection. A few countries have reserves about this extension as category B workers are not expected to work in controlled area. In addition, provisions for outside workers should be explicitly extended to non-nuclear fields. The medical and the non-destructive testing fields were the most quoted sectors.

It was also proposed to clearly define the terms "outside workers", "operator" and "outside undertaking" within the future BSS, as well as "self-employed worker". Those definitions should also be harmonised with the IAEA ones. The problem of self-employed workers has been pointed out. While they are not numerous, their number is increasing. Some participants have expressed some fears concerning their monitoring and follow-up. Therefore they should be explicitly covered in the outside worker radiation protection regulation.

3.2.2. European radiological passport and European dose recording system

Discussions and presentations dealing with the radiological passport content and format have been numerous. This topic appears of first importance for all participants. Most of the EU countries are now providing documents corresponding to national radiological passports (issued either by regulatory bodies or other national organizations). Additionally, as reported in the CEPN survey, fourteen countries have set up national

dose recording systems. Those recording systems can be implicitly devoted to outside workers (in Spain for example) or it can deal with all exposed workers (in France for example).

The setting-up of an European homogenous outside workers exposure recording system, which was expected some years ago, does not any more appear as a relevant issue for most of the participants. It raises several problems dealing with costs and management. In addition, its efficiency and interest are not easy to foresee, and it could raise conflicting issues with regards to national data protection agencies' requirements.

On the contrary, the EC should continue in the future to support the ESOREX network (www.esorex.cz). In fact, it appears as a key tool of information and feedback related to workers exposure within the EU, and as a potential provider of recommendations to enhance some "harmonisation" of the national reporting and recording systems.

Regarding the radiological passport, all participants expect to make use of a more harmonized document, which should not be interpreted as a uniform and not flexible document for all EU countries. The question of language is of first importance and a radiological passport should be at least issued in two languages: the national language of the issuing country and English.

Regulation should be flexible enough, but the EC should define the minimal requirements for the content of the passport, allowing countries to ask for more data for workers of their nationality if they wish to. For example, the EC should elaborate guidance on what type of exposure data should be provided for workers travelling in different countries with sometimes different dose limits (20 mSv as annual calendar dose limit, 20 mSv for a 12 month rolling period, 100 mSv for a five year period…). It was reminded during the Seminar that about half of the EU countries have an annual dose limit of 20 mSv (only within old Member States), while the others have a dose limit of 100 mSv for 5 years not exceeding 50 mSv per year. Additionally to regulatory requirements, some companies might request for their workers the respect of dose constraints lower than 20 mSv. However, the passports are used only as a tool to enable

travelling of workers between the sites (not to wait for official dose reports). Member States suggest a flexible way of regulation of personal dose data information exchange.

Regarding medical data, the passport should indicate if its owner is fit or unfit, the date of last medical examination, the task that he/she cannot manage and the coordinates of the medical doctor(s) in charge of the worker follow-up. It would help to ensure medical secrecy while providing the medical service of the operator with a person to contact if need be. Following the presentation by the European occupational medical physicians working group, even while more detailed medical data should not be requested in the passport, it is recommended to the Commission to take care of the conclusions that will be soon made available by that working group.

EC should define guidance on ways to provide information to national authorities about doses undertaken abroad. In that sense the Finland / Sweden system is considered as an example. Another EC guidance is expected concerning non-EU workers and the minimum set of data they should provide to the operators in EU countries.

Some participants also suggested that the EC should support the development of a reasonably inexpensive electronic form of the passport to be developed and made available on the market.

Finally, it is recommended to all countries to envisage “mutual recognition” of their national radiological passports since minimum European requirements will be fulfilled.

3.2.3. Ability of outside undertakings

Procedures that guarantee the competence of a company to perform specific jobs in controlled area are considered as important. In that domain two main situations are encountered:

- In some new Member States, such as Czech Republic or Lithuania, the outside undertakings, being considered as undertakings in the sense of the BSS, are submitted to authorisation before being allowed to work in controlled areas. The

outside undertaking became then a licensee, which may be inspected by the regulatory bodies' inspectors[20].

- In most old Member States, referring to the Directive 90/641/Euratom, there is no requirement for an authorisation to be delivered to the outside undertakings. In some cases, the regulatory body registers outside undertakings in a specific registry. In other ones, an accredited organism (private or public) certifies outside undertakings following an audit, the certification being "checked" every two or three years. The French certification system is an example of such a system and has been considered very interesting to participants, in particular nuclear operators.

Between the two mentioned situations, in Spain, the regulatory body created a national registry for outside undertaking. The Spanish regulation indicates that outside undertaking must be registered before starting any activity. The regulatory body is in charge of inspecting regularly outside undertakings to ensure they comply with regulatory requirements.

The procedure and contents of administrative authorisation, administrative registration and certification by an accredited public or private organism are quite different, the inspections and auditing frequencies and contents are also quite different. The question of the ability of outside undertakings should therefore be further debated, under the auspices of the Commission, in order to evaluate the different procedures and to check whether they shall complement each other. Some operators expect that a distinction is provided in a case when the operator takes all relevant responsibility for outside workers based on a contract. The question of the need for an authorisation is directly linked with the clarity of the definitions to be kept in the new BSS for the outside undertakings.

3.2.4. Sharing of responsibilities and cooperation

[20] It is true in Czech Republic when outside undertaking is handling the source. But if the outside undertaking provides services such as painting or cleaning, it should be covered from a radiation protection point of view by the license of the operator.

Regarding cooperation between employers, the Council Directive 89/391/EEC of 12 June 1989 (Framework Directive), which has been presented during the Seminar by the DG EMPL, on the introduction of measures to encourage improvements in the safety and health of workers at work proposes an interesting framework, which objective is to set up the minimal requirements to ensure that workers are well protected at work. In particular, the Article 6 (General obligations of employers), indicate that "[…] *when several undertakings share a work place, the employers shall cooperate in implementing the safety, health and occupational hygiene provisions and, taking into account the nature of the activities, shall coordinate their actions in matters of the protection and prevention of occupational risks, and shall inform one another* […]".

In the case of radiological protection of outside workers, cooperation between employers and operators, sharing of responsibilities, mutual feedback and information were deeply discussed within the Seminar. Regarding the implementation of basic principles of radiation protection, it was reminded that the employer should legally remain responsible for the respect of the dose limit, while the optimization of radiation protection should be managed through the cooperation of both the operator (responsible of the source) and the outside undertakings. This is clearly an acceptable transposition of the Framework Directive into the radiological protection context.

As far as the practical sharing of responsibilities is concerned, the participants of the Seminar recommend the establishment of a European list of operational duties to be coped with. The regulatory management of the sharing of responsibilities between the operator and the outside undertaking is not expected, as from an operational point of view it clearly depends on the context: nature of the job, size of the outside undertakings, sector… The sharing of practical responsibilities should be laid down on a contractual basis between the operator and the outside undertaking; this should cover the sharing of responsibilities between the first row outside undertaking and its sub-contractors.

3.2.5. Miscellaneous

Regarding transboundary issues, the problem of language was further mentioned: how to train efficiently workers who do not speak the same language? Is it acceptable for

safety and radiological protection reasons to let workers, not speaking (and reading) the language of the operator, to work in its controlled area? In addition, the issue of experience feedback was mentioned as the outside workers may miss the opportunity to inform the operator on good practices, near misses and incidents - and vice versa.

Generally speaking, a system of “mutual acceptance” of differences in interpreting European regulations should be developed.

3.2.6. Follow-up of the Seminar

Many questions have been raised within the answers to the questionnaire as well as during the Seminar. The discussion lead to a few clear answers, but much remain to be elaborated, which is not surprising regarding the numerous issues, the “short” time available and the fact that it is the start of a discussion process.

It is thus recommended to the EC to establish a follow up of the Seminar through appropriate ways, for example the setting up of a working group. Existing European networks and projects should be involved in that process as appropriate.

ANNEX 1: EUROPEAN COUNTRIES NATIONAL OUTSIDE WORKERS REGULATION

When available, the references to outside workers' radiation protection into the European countries' national regulation are indicated in Table 10.

Table 10. EC countries national regulation for the outside workers radiation protection

Country	Level of implementation of the Council Directive 90/641/Euratom into national regulations
Belgium	1. The Royal Decree of 20 July 2001 setting forth the general regulation for the protection of the population, the workers and the environment against the danger of ionising radiations. The following articles of this regulation are relevant for the issue addressed in the questionnaire: art. 2 (definitions), art. 26 (obligations for the outside workers), art. 37ter (operational protection of the outside workers exposed to the danger of ionising radiations during their activities in a controlled area). 2. The Royal Decree of 25 April 1997 concerning the protection of the workers against the dangers resulting from ionising radiations (www.meta.fgov.be).
Cyprus	Free translations from Greek "The protection form ionising radiations Law", N. 115(2)/2002, E.E. Map 1 (1) Ap. 3621 12.7.2002.
Czech Republic	Atomic Act No.18/1997 in last version (2003), Decree on Radiation protection No. 307/2002 Coll, Decree No.419/2002 Coll. on personal radiation passport.
Denmark	National Board of Health order n° 663 of 12 July 1994 on outside workers who are exposed to ionizing radiation in a EC-country, with amendments in order n°824 of 31 October 1997.
Estonia	A basic document in national radiation protection legislation is Radiation Act (entered into force 1 May 2004). The Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation has been implemented into Radiation Act. §47. Guaranteeing safety of outside workers and individual monitoring of outside workers (1) The holder of radiation practice licenses guarantees radiation safety for outside workers on equal grounds with exposed workers employed thereby, and provide outside workers with training and instruction on radiation protection, taking into account of the specific nature of their work and the conditions on their workplace. (2) The requirements for the results of individual monitoring of outside workers, and for formalizing such results, and for the standard format for the dose chart of outside workers is established by a regulation of the Minister of the Environment. §48. Radiation Safety training of outside workers. The requirements for radiation safety training of outside workers is established by a regulation of the Minister of the Environment.
Finland	Finnish Legislation does not have a direct citation of the whole 90/641/Euratom but the implementation of different articles has been immersed into all relevant legal text. The important Finnish legal and regulatory texts are: Radiation Act, Radiation Degree; Guide ST 1.6. "Monitoring of Radiation Exposure and Registration of Doses"; Guide ST 7.4 "Registration of Radiation doses"; Guide YVL 7.9. "Radiation Protection of NPP workers"; Guide YVL 7.10 "Reporting of Individual Doses of NPP employees".

Country	Level of implementation of the Council Directive 90/641/Euratom into national regulations
France	The directive is partly taken into account into Décret 2003-296, 31 March 2003 dealing with occupational radiation protection. Several elements are missing: definitions linked to article 2 and the network mentioned in Article 4.
Germany	§ 15, § 40 and § 112 of the Radiation Protection Ordinance are relevant to the implementation of the Outside Workers Directive.
Greece	"Radiation Protection of External Workers", Ministerial Order No 9087, Official Gazette No 849/13-09-1996.
Hungary	Health Ministry Decree 30/2001 (X.3.) and Health Ministry Decree 16/2000 (VI.8.)
Ireland	European Communities (Protection of Outside Workers from Ionising Radiation) Regulations, 1994 (Statutory Instrument No. 144 of 1994). This Regulation was revoked in May 2000 when Council Directive 96/29/Euratom was enacted in Irish legislation by the Radiological Protection Act, 1991 (Ionising Radiation) Order 2000 (Statutory Instrument No. 125 of 2000).
Italy	Decreto Legislativo 17 marzo 1995, n. 230 (s.o. alla G.U. 13-6-1995, n.136). Further provisions were laid down in: Decreto Legislativo 26 maggio 2000, n. 241 (s.o n. 140/L alla G.U. 31-8-2000, n. 203) and Decreto Ministero del Lavoro e della Previdenza Sociale 4 gennaio 2001 (G.U. 3-4-2001, n. 78).
Latvia	The Cabinet regulations on the Procedure for Control and Accounting of exposure of Workers. The Cabinet Regulations on Protection against Ionising Radiation and the Law on Radiation Safety and Nuclear Safety.
Lithuania	Council Directive 90/641 Euratom was implemented into national radiation protection regulations by Lithuanian Hygiene Norm HN 83:2004 Radiation Protection of Outside Workers (Comment: the new Lithuanian Hygiene Norm 83:2004 was adopted by Ministry of Health Care in Dec 09, 2004)
Malta	Nuclear Safety and Radiation Protection Regulations 2003, issued as Legal notice 44 of 2003 under the National Interest (Enabling Powers) Act. Came into force May 2003.
Netherlands	Besluit Stralingsbescherming*, Staatsblad 2001, nr. 397. The Directive was implemented in legislation before 2001. It was integrated into the implementation of 96/97 in 2001. * Radiation Protection decree and in some related Regulation: Regeling voorzieningen stralingsbescherning werknemers, Staatscourant 2002, nr. 42 (Regulation Provisions Radiation Protection for Workers).
Norway	The directive is not implemented in Norwegian radiation protection regulations and there is no current concrete plans for implementation as the general radiation protection regulations also covers outside companies working in Norway.
Poland	Directive 90/641/Euratom has been totally implemented by: 1. The Act of Parliament- Atomic Law (O.J. of 2004, No 161, item 1689); 2. Regulation of The Council of Ministers of 27 April 2004 on protection against ionizing radiation for external workers exposed during work in controlled areas (O.J. No 102, item 1064).
Slovakia	The Directive will probably be implemented at the beginning of 2005, not after the beginning of April 2005. The term outside worker, the obligations (Article 5-7), individual radiation passports have not yet been defined.

Country	Level of implementation of the Council Directive 90/641/Euratom into national regulations
Slovenia	The outside workers directive was implemented by: - Ionising Radiation Protection and Nuclear Safety Act (OJ RS, N°67/2002, 24/2003, 50/2003, 46/2004, and 102/04) (Act in further text). The act was changed, but provisions regarding outside workers protection remained unchanged. - Rules on the obligations of the person carrying out a radiation practice and person possessing a ionising radiation source (OJ RS, N°13/2004) (Rules in further text). Translation is not available.
Spain	Royal Decree 413/1997, of 21 May 1997, on the operational protection of outside workers exposed to ionising radiation during their activities in controlled areas.
Switzerland	Swiss legislation on radiological protection, Ordinance of 22 June 1994, art. 125: "The licensing requirement shall also apply to anyone who employs people as occupationally exposed persons in other companies."
Sweden	The Swedish legislation does not segregate between different sections of workers (e.g. external - own staff). The SSI regulations regarding nuclear facilities have included outside workers in the protection of workers since start in general SSI regulations. The status of the implementation has been reported earlier in accordance to the Directive. In 1996, new general regulations regarding category A outside workers have been introduced by the Swedish authority (SSI FS 1996:3). A change in responsibility for entrepreneurs has been implemented into the Radiation Protection Law (1988:220 §7).
United Kingdom	Council Directive 90/641/Euratom was implemented by the Ionising Radiations Regulations (Outside Workers) Regulations 1993 (S.I. 1993 No.2379). The regulations supplemented the Ionising Radiations Regulations 1985 (S.I.1985 No.1333). Both sets of regulations were superseded by the Ionising Radiations Regulations 1999 (S.I.1999 No.3232). http://www.legislation.hmso.gov.uk/si/si1999/19993232.htm.

ANNEX 2: LIST OF ANSWERING INSTITUTIONS (PER CATEGORY) TO THE QUESTIONNAIRE

Table 11. List of answering regulatory bodies

Country	Institution
Belgium	Federal Agency for Nuclear Control
Cyprus	Cyprus Associations of Medical Physics & BioMedical Engineering
Czech Republic	State Office For Nuclear Safety
Denmark	National Institute of Radiation Hygiene
Finland	STUK (Radiation & Nuclear Safety Authority)
France	Ministère du Travail
France	Direction Générale de la Sûreté Nucléaire et de la Radioprotection
Germany	Bundesamt für Strahlenschutz (BfS)
Greece	Greek Atomic Energy Commission
Hungary	National Research Institute for Radiobiology and Radiohygiene
Italy	Ministero del Lavoro e delle Politiche Sociali
Ireland	Radiological Protection Institute of Ireland
Latvia	Radiation Safety Centre
Lithuania	Radiation Protection Centre
Malta	Occupational Health & Safety Authority
Netherlands	Ministry of Social Affairs and Employement-Directorate for Safety and Health at work
Norway	Norwegian Radiation Protection Authority
Poland	National Atomic Energy Agency
Slovakia	Public Health Authority of the Slovak Republic
Slovenia	Slovenian Radiation Protection Administration
Spain	Consejo de Securidad Nuclear (CSN)
Sweden	Swedish Radiation Protection Authority
Switzerland	Swiss National Accident Insurance Fund Physics Section Suva

Turkey	Radiological Health and Safety Division
Country	Institution
United Kingdom	Health and Safety Executive (HSE)
United Kingdom	National Radiological Protection Board (HPA)

Table 12. List of answering operators

Country	Institution
Belgium	Electrabel
Czech Republic	Czech Energetic Company
Finland	Teollisuuden Voima Oy
Finland	Fortum Power and Heat, Loviisa NPP
France	AREVA
France	Electricité de France (EDF)
France	Commissariat à l'Energie Atomique (CEA)
Germany	Klinikum Augsburg. Medizinizche Physik
Germany	EnBW Kraftwerke AG
Hungary	Paks Nuclear Power Plant Ltd.
Netherlands	Borssele Nuclear Power Plant
Netherlands	RTD (radiography compagnie)
Spain	Central Nuclear de Almaraz
United Kingdom	UKAEA
United Kingdom	AWE
United Kingdom	British Energy Generation
United Kingdom	BNFL
United Kingdom	Devonportcs
United Kingdom	Rolls Royce

Table 13. List of answering outside undertakings

Country	Institution
Austria	Austrian Society for Non Destructive Testing
France	Framatome ANP
Germany	German Society for Non-Destructive Testing
Spain	Tecnatom
United Kingdom	Mitsui Babcock Energy Limited

ANNEX 3: AGENDA OF THE EC DG TREN SEMINAR ON THE IMPLEMENTATION OF DIRECTIVE 90/641/EURATOM ON THE RADIATION PROTECTION OF OUTSIDE WORKERS

November the 29th:

Session 1 (Chairman: A. Janssens)

10:00 Introduction
A. Janssens, DG TREN

10:15 The EC Directive 90/641/Euratom and its articulation with the 96/29 BSS
K. Schnuer, DG TREN

10:45 General overview (non nuclear sectors) of the outside workers EC legislation
P. Moscatelli, DG Employment

11:15 Results of a survey on the implementation of EC Directive 90/641
L. Vaillant, CEPN

11:45 Lunch

Session 2 (Chairman: M. Gustafsson)

13:15 Introduction of the topics to be discussed during the working groups sessions

Radiological passport:

The situation in Spain and the questions to be solved
I. Amor, CSN

The Finish and Swedish bilateral arrangement
O. Vilkamo, STUK

Position of a European occupational medicine specialists' group on "the medical aspects of a European radiological Passport"
D. Depiesse, EC ISPRA

Responsibility and European accreditation of outside undertaking:

The situation in Czech Republic
K. Petrova, SUBJ

The situation in France
A. Bontemps, CEFRI

15:00 Coffee break

15:30 Working groups' session

WG 1: Radiological passport: monitoring, recording and reporting of ionising radiation exposure
WG 2: Outside workers' radiation protection in non-nuclear sector
WG 3: Responsibility of the outside workers' radiation protection
WG 4: Responsibility of the outside workers' radiation protection

17:45 End of working group session

18:00 Meeting between the DG TREN representatives, chairmen, rapporteurs and CEPN.

November the 30th

Session 3 (Chairman: A. Mastauskas)

9:00 Presentation of the results of the working group sessions, recommendations and discussion
Rapporteurs

11:00 Coffee break

11:30 Synthesis of the results
DG TREN

12:00 End of the Workshop