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European ALARA Newsletter

Editorial

The new scope of the European ALARA Network: to favour the improvement of workers, public and patient protection within an enlarged Europe.

The European ALARA Network was set up in January 1996 by the European Commission through its 4th Common Program of Research and Development and has been supported by the Commission during its fifth Program that ended in October 2004.

From 2005, the Network has entered a new phase in its life. Its steering Group, comprising representatives of 18 states, has unanimously adopted (in December 2004) a co-operation charter in order to keep it alive and ensure its self-sustainability. Ten countries have decided to financially support its coordination while others will support specific EAN actions such as workshops.

A close link with the European Commission will be pursued, e.g. with the Directorate General Energy and Transport through the support of sub-networks in several domains of concern (Non Destructive Testing, NORM, medical…). In addition, agreements will be set up with the International Atomic Energy Agency to co-operate, and ultimately merge with another network including most eastern and central European countries.

This process has provided an opportunity to modify the role of the EAN, which has focussed for 9 years on the occupational exposure improvement in Europe. Its aim is now to favour the improvement of worker, public and patient protection within an enlarged Europe. The draft of the cooperation charter is available on the EAN website.

EAN continues its actions particularly through its sub-networks (see the article on research reactors) and the annual workshops. Some 70 participants from 19 European countries attended the 8th EAN Workshop on "control of occupational exposure through inspection and self assessment" in Uppsala, Sweden, last September. Most papers and PowerPoint presentations are available on our website. As during the previous workshops the work in small groups was considered of utmost importance and has been very fruitful. It has led to 10 recommendations dealing either with inspectors' training, self-assessment, and the need for workers' representatives and workers themselves to become "stakeholders" within these processes. A summary of the discussions as well as all recommendations are presented in this issue of the Newsletter.

The next Workshop will take place in Augsburg, Germany, 18-21 October 2005. It will be devoted to the "Exposures from NORM and Radon in Workplaces".

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The 8th EAN Workshop on "Occupational Radiological Protection Control through Inspection and Self-assessment": Summary and Recommendations

P. Shaw (NRPB, England), C. Lefaure (CEPN, France)

WORKSHOP OBJECTIVES AND PROGRAMME

A total of 70 participants from 19 European countries attended the 8th EAN Workshop on "Occupational Radiation Protection through Inspection and Self-assessment". Respectively, half and one third of the audience were from the regulatory bodies and utilities from medical and industry sectors. The objective of the Workshop was "to assess how regulatory authorisation and inspection, and internal controls (peer reviews, self assessment, etc.) contribute to achieving ALARA for occupational exposure".

Previous workshops have increasingly focused on participants working in groups to discuss issues and develop recommendations. This trend continued in this workshop, in which half the programme time was devoted to group discussions and report backs.

In total, there were 14 oral presentations, and 10 poster presentations, organised under the following titles:

- setting the scene;
- Regulatory Bodies and Control Organisations;
- licensees; and
- workers.

The opening session included a presentation of the results of an EAN questionnaire on the size and structure of national regulatory authorities. It also identified a series of issues and questions for later consideration by the Working Groups. There were two such sessions where the participants were split into 6 Working Groups tasked with addressing specific issues. The four main topic areas were:

- inspection;
- self assessment;
- workers' involvement; and
- communication between stakeholders.

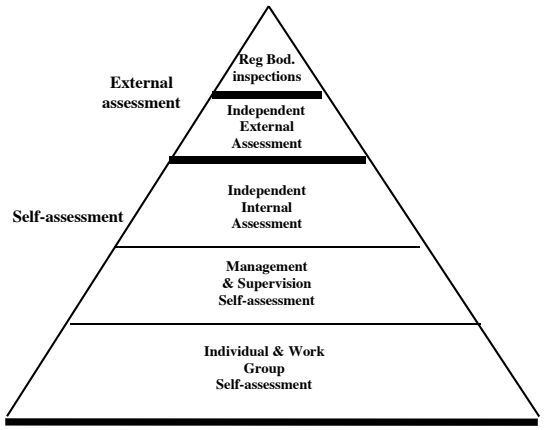
The reports from these groups were presented and discussed on the final day, from which the key findings and recommendations from the workshop were derived.

ISSUES ARISING

One of the main objectives of the EAN is to encourage optimisation through the sharing of information and experience. About half the participants were from national regulatory bodies, and the Workshop provided a valuable opportunity for exchanging information and ideas between these bodies. In addition, there was a general willingness from regulators and other stakeholders to openly discuss problem issues. In this respect alone, the Workshop was considered to be of significant benefit. In addition to this, many issues were raised, from both the presentations and the working groups, and from these a number of common themes emerged.

The full scope of the assessment is illustrated in Figure 1. It comprises five layers, of which two correspond to external assessment, and three to self-assessment.

FIG. 1.Triangle of the assessment process



The role of the different stakeholders in these different types of assessment, as well as the frequency of assessment were discussed during the workshop. The main points arising are summarised below.

Regulatory bodies and regulatory inspections:

- All the participating countries have one or more national bodies that are responsible for inspecting practices with a view to enforcing regulatory requirements. The resources devoted to inspection/enforcement vary, but are generally quite limited when compared against the number of practices. Consequently, priorities need to be set, and resources need to be appropriately targeted, to ensure effective regulatory control.
- Inspection and enforcement regimes vary between countries, but in all cases are regarded as an essential component of the control system. Such activities are not, however, sufficient by themselves, and Regulatory Body advice and guidance for users can reach a larger audience, and thus lead to a better level of compliance overall. Having said this, the Workshop acknowledged that a balance was necessary to ensure that Regulatory Bodies do not encroach onto the responsibilities of (radiation) employers and Qualified Experts.
- The training of inspectors (from Regulatory Bodies or other external organisations) was raised several times. The view was that, as well as knowledge-based training in radiation protection, inspectors needed interpersonal skills to effectively undertake

their work. In addition, training should include familiarisation with the approach to radiation protection within the different types of practice under their control. For example, it was suggested that inspectors in the medical sector should have received "on the job" training and experience in hospitals and other medical establishments.

Licensees/Employers:

- It was agreed that self-assessment was central to maintaining regulatory compliance, and would usually aim to exceed regulatory requirements. Quality Management Systems are now an integral part of most businesses, and (radiation protection) self-assessment readily forms a component of such systems, as demonstrated in a number of presentations.

- The amount of communication between regulatory bodies and employers varies considerably between countries. It was agreed that such communication should be encouraged, for example through consultation on draft regulatory changes, and through on-going liaison between the regulators and the regulated on issues/problems of common interest.

Workers:

- The overriding impression was that more could be done to involve workers in both the drafting and enforcement of regulations. It seems that special initiatives, such as the creation of national bodies with formal liaison functions, or establishing stakeholder panels or workshops, are needed to make real progress in this respect.

- It was agreed that Trade Unions, Professional Bodies and other worker/safety representatives have a key role to play, and their involvement should be encouraged. They should be consulted on the drafting of regulations, and also be regarded as one of the main stakeholders in terms of regulatory inspections. As such, they should be notified of inspections, be consulted during inspections, and directly notified of the findings of the inspection.

- Worker training is required to encourage their involvement. This should provide them with the required knowledge base to understand and critically review the precautions provided by employers for their own protection and to participate actively into the self assessment processes. It should also be confidence-building, and help develop a "no fault" culture where workers are encouraged to question the status quo.

RECOMMENDATIONS

Each working group produced conclusions and recommendations, and gave a report-back on the final day of the workshop. The output of the Working Groups was collated by the EAN co-ordinators, to produce the formal recommendations of the Workshop, as listed below.

Recommendation 1: Inspector training

Regulatory Authorities should develop and implement training programmes for regulatory inspectors. The aim is to ensure that inspectors have the necessary competence and experience to effectively undertake their duties. Training programmes should include:
- an initial training programme, including a scientific core of knowledge, and a code of conduct for undertaking inspections;
- familiarisation with how work is undertaken in the different work sectors they will inspect; and
- a system for continuous professional development.

Regulatory Authorities are encouraged to make use of standardised training material for inspections, such as provided by the IAEA.
International Organisations should be encouraged to provide guidance to Regulatory Authorities on training programmes and their provision.
The European Commission should be encouraged to develop competence criteria for inspectors for mutual recognition within the European Union.

Recommendation 2: Self-assessment

Regulatory Authorities should ensure that self-assessment is an explicit requirement of the regulatory system, particularly through authorisations. Regulatory inspections should pay attention to how employers implement this requirement in practice.
Regulatory Authorities and International Organisations should develop guidance on the self-assessment principles, methods and tools appropriate for different practices. It is recognised that IAEA has already produced a number of documents that refer to the self-assessment procedures, and a review of these should be undertaken before any new guidance documents are produced.
Employers and training providers should ensure that self-assessment tools and methods are included in education and training programs for Qualified Experts, managers and supervisors, and workers.

Recommendation 3: Internal regulation (large utilities)

The concept of an internal regulatory, or quality assurance, department is considered to be a helpful bridge between external regulatory inspections and self-assessment. This concept should be encouraged across

the EU, especially for larger organizations, and with a special emphasis on new member states and applicant countries. The aim of this "internal regulator" is:

- to play an active role in ensuring that a satisfactory radiation protection system is in place;
- to critically review the system with a degree of impartiality; and
- to assist and complement the existing external regulatory inspection regime.

Recommendation 4: Involvement of Trade Unions and other social partners

Regulatory Authorities should ensure that Trade Union and other worker/safety representatives are consulted on the drafting of requirements for inspection and self-assessment. They should also be informed of planned regulatory inspections, involved in the inspection process, and directly informed of the results.
In turn, Employers should ensure that such representatives are consulted on self-assessment procedures and are involved in the implementation and review of such procedures in practice.

Recommendation 5: Communication between Regulators and other Stakeholders

In order to make efficient use of resources, Regulatory Authorities should develop systems for two-way communication with:

- (groups of) workers in different sectors;
- Qualified Experts; and
- employers' representatives such as professional bodies/associations, from different work sectors; and
- Institutions providing radiological protection training

Topics should include consultation on new regulations, expectations of the different stakeholders, examples of good practice, and the emergence of new applications and protection methods. Formalised systems of communication could be an effective means for increasing the role of inspectorates and should, where practicable, be open and transparent.

Recommendation 6: Worker involvement

Employers should encourage and facilitate worker involvement in both external and internal assessments by:

- ensuring a management commitment to worker involvement;
- providing appropriate training to empower workers and encourage questions; and by
- clearly communicating results of inspections and self-assessments to workers.

Recommendation 7: Communication between Regulatory Authorities

National Authorities should promote communication between different National Regulatory Authorities. This should include the exchange of information on the licensing and inspection methods employed in different countries. Joint inspections, i.e. involving two or more Regulatory Bodies from different countries, should also be encouraged as a means of sharing information and experience. The creation of a network of contacts, through which such information can be exchanged, is also recommended.

Recommendation 8: Self-assessment and accident prevention

The investigation of accidents often reveals a number of contributing factors that place workers under additional stress, and hence make accidents more likely.

Employers are encouraged to consider such factors when developing self-assessment procedures, so as to help minimise the probability of accidents occurring in future.

Directive 2003/122/EURATOM of 22 December 2003 on the Control of high Activity sealed Radioactive Sources and orphan Sources

Carmen Alvarez, (CSN, Spain)

The Council Directive 2003/122/EURATOM of 22 December 2003 on the control of high activity sealed radioactive sources and orphan sources was published in the Official Journal of the European Union on 31 December 2003

The purpose of this Directive is to comply with the article 30 of EURATOM Treaty that requires from the Community basic standards to protect workers and the general public against the danger arising from ionising radiation. It is intended to supplement the basic safety standards laid down in the Directive 96/29/EURATOM, and harmonise the control of high activity sealed sources (HASS) in all the Member States.

Prevention of radiological accidents and injuries requires the location of each HASS to be known, recorded and verified from the time the source is manufactured or imported into the Community to the time it is placed in a recognised installation for its long term storage or disposal or it is exported from the Community. Changes in the situation of HASS, e.g. its location or use, must be recorded and notified.

In addition the Directive considers the control and safe management orphan sources. These sources can become dangerous as a result of lack of knowledge of their existence and therefore measures cannot be taken to prevent accidents. Furthermore, the existence of orphan sources resulting from past activities requires specific initiatives to be taken.

Accordingly, it is necessary to make provisions for the identification, marking and recording of each HASS as well as for the specific training and informing of all those involved in activities relating to the use of sources.
Member States must transpose the Directive to national Law within two years.
The Directive provides definitions for specific terms used in the text.

For the purpose of the Directive a "HIGH ACTIVITY SEALED SOURCE" is defined as a sealed source containing a radionuclide whose activity at the time of manufacture or, if this is not known, at the time of the first placing on the market is equal to or exceeds the activity level specified in Annex I of the Directive. This Annex contains 17 radio-nuclides. For radio-nuclides not listed in the table, the activity level is one hundredth of the corresponding A1 value in the IAEA Regulations for the safe transport of radioactive materials.

Holders are required to get prior authorisation for any practice involving a HASS. Before issuing authorisation, authorities shall ensure that adequate arrangements for the safe management of sources have been taken, including provisions for the time they become disused sources. Financial provisions of a financial security for the safe management of sources are required, including the case when the holder becomes insolvent or goes out of business.

Authorisations should cover responsibilities, minimum staff competencies, requirements for emergency procedures and communication links, work procedures, maintenance and management of disused sources including the transfer to a supplier, another holder or a recognised facility.

Each holder is required to keep records of all sources under his responsibility, their location and their transfer. The records shall include specific information set out in the Annex II of the Directive and they must be sent to the competent authority.

The holder is obliged to arrange suitable tests to maintain and verify the integrity of each source, to establish procedures to prevent unauthorised access to the sources and preventing loss, theft or its damage by fire.

Disused sources must be returned to the supplier, to a recognised facility or to another authorised holder.

Manufacturers are required to identify each source with a unique number. This number will be engraved on the source and on the source container. The container will have information on the nature of the source and will include a radiation hazard warming with the appropriate sign.

The manufacturer shall provide a photograph of each manufactured source design type and of the typical source container, transport packaging, device and equipment when the source is kept inside.

The holder, besides training and informing workers in the field of radiation protection in compliance with the article 22 of Directive 96/29/EURATOM, shall ensure that such training includes specific requirement for the safe management of HASS.

On the other hand, authorities shall ensure that the management and workers in facilities where orphan sources are most likely to be found or processed (e.g. large metal scrap yards and major metal scrap recycling plants) and the management and workers in significant nodal transit points (e.g. customs posts), are informed about the possibility of orphan sources, and the subsequent actions to be taken.

In connection with orphan sources national authorities are required to:

- take measures to recover orphan sources and to deal with radiological emergencies due to orphan sources;
- ensure that specialised technical advice and assistance is made available to persons that are not normally involved in operations subject to radiation protection requirements, who suspect the presence of an orphan source;
- encourage the establishment of systems aimed at detecting orphan sources in places such as large metal scrap yards and major metal scrap recycling installations where orphan sources may be encountered, or at nodal transit points, such as customs posts ; and to
- ensure that campaigns are organised to recover orphan sources left behind from past activities.

Exchange of information and co-operation with the other Member States or third-party countries and with international organisations is required as regards loss, removal, theft or discovery of sources.

Member States shall ensure a system of financial security to cover intervention cost relating to the recovery of orphan sources and they shall establish or maintain a system of inspections to verify compliance with Directive requirements. Besides, they will determine the applicable penalties, which must be effective, proportionate and dissuasive.

Each Member State will designate the competent authority to carry out tasks in accordance with the Directive. The name and the address of the competent authority must be sent to the Commission.

Seven years after the date of publication of the Directive, each Member State must report to the Commission on the experience gained in its implementation.

Feedback from the European ALARA Research Reactors Sub-Network (EASN)

P. Deboodt (CEN/SCK Mol, Belgium)

INTRODUCTION

From the 4th EAN Workshop on "Management of occupational radiological and non-radiological risks: lessons to be learned", the EAN Steering Committee decided to set up a specific sub-network dealing with research reactors (EASN).

Most of the member states and applicant countries within the EAN have institutions with research reactors, either in operation, or undergoing refurbishment or decommissioning. In some cases, individual doses are not trivial (often higher than 5 or 10 mSv/year). Unlike Nuclear Power Plants, which have already their own network, these institutions do not yet have any formalised network to regularly exchange information concerning safety factors and particularly, radiological protection issues. A first comment deals with the characteristics of the nuclear research centres. Indeed, these institutions show very specific properties such as:

- diversity of reactors and installations;
- large variety of people working in such centres (workers, students, visitors,…) and large variety of operational activities (research, production of radioisotopes, analyses,…);
- quite large difference in the actual status of the reactors (in operation, shutdown or under decommissioning); and
- involvement of such centres as support to the regulatory body.

They are facing new and specific challenges in terms of radiological protection, not only during the decommissioning phase (with a loss of knowledge of the performed operations) but every time they start a new experiment (many kinds of involved personnel: researchers, ph.D, students, trainees,...).

The EASN hopes to facilitate exchanges to promote the improvement of safety at these institutions by comparison with best practices. The management of the EASN has been delegated to the Belgian Nuclear Research Centre and to the RIS∅ Centre of Denmark. The program has been developed during the last three years.
The main objectives of this network may be described as follows.

OBJECTIVES

The overall objective: "facilitate exchanges to promote the improvement of safety…" was "translated" in more practical actions by the participants of the kick-off meeting in Paris. The main expectations, as expressed by the EASN members were:

- the need for input related to the decommissioning of research reactors;
- the status and application of local regulations;
- the dissemination of data related to the doses received by people working in research centres;
- the way to implement training;
- the need for practical examples of the implementation of the optimisation principle; and
- the need for an integrated approach of Safety / Environment / Quality Control.

More technical topics were also proposed for further actions such as:

- the description and use of clearance levels;
- the handling of liquid wastes;
- the status of all research reactors in Europe; and
- emergency preparedness.

Last but not least, the majority of the members expressed their willingness to meet colleagues faced with very similar situations. In order to reach some of these expectations and to do so in an efficient way, the members of the EASN Steering Committee quite soon decided:

- to organise frequent meetings;
- to hold the meeting in different countries/centres;
- to devote each meeting to one specific topic;
- to arrange visits to installations;
- to allow time for open discussions dealing with "actual/urgent" questions.

RESULTS

Qualitative results:

- A first positive result lies in the number of meetings, which have been held: 5 in a 3 years period. This frequency of meetings corresponds to one expectation of the members. It has to be kept in mind that except for the coordinator, there was no financial support for their attendance.
- The second result is the approach applied for each meeting to comply with actions decided by the EASN Steering Committee. Meetings included discussions, oral presentations as well as visits to installations.
- For each topics covered by the meetings, some interesting information and good practices were exchanged, for instance:

    - Decommissioning: existing optimisation tools (such as VISIPLAN).
    - Status of the regulations: examples of collaboration between operators and the Regulatory Body concerning the implementation of new regulations.
    - Management of liquid waste: strategy for the treatment during decommissioning.
    - Practical implementation ALARA: experience gained from various workplaces such as reactor, hot cells, etc.
    - Integrated approach of risks: examples of a global management involving asbestos and ionising radiation.
    - Clearance Level: measurement strategy in decommissioning.

Quantitative results:

One of the outputs which was specifically pursued by the EASN participants is the dose distribution for workers. A form was proposed for the collection of the data, and 5 countries have provided information. The results are shown in table 1 to 4. Many remarks have to be brought about such data. The first one is related to the representativity of the values. Sometimes, special monitoring has been implemented for neutrons, sometimes the value is the sum of contribution of all radiation. Secondly, to the effectiveness of the comparison, more information should be made available about the work conditions related to these data.

Table 1: Individual doses distribution for research reactors *in Austria, Belgium, Denmark, France, Netherlands*

Dose ranges (in mSv)		1999 (number of workers)	2000 (number of workers)	2001 (number of workers)	2002 (number of workers)
up to 0.2	A	NC	NC	NC	NC
	B [1]	326	327	352	375
	DK	NC	NC	NC	NC
	F [2]	262-71-36-41	255-84-37-41	241-73-36-44	257-55-47-27
	NL [3]	NC-146	NC – 137	NC – 136	NC – NC
0.2 – 5	A	321	329	338	NC
	B	113	115	94	91
	DK	126	120	56	30
	F	72-22-12-11	51-22-18-0	53-13-22-0	27-21-16-6
	NL	52-16	57 – 8	52-3	NC-NC
5 – 10	A	7	7	10	NC
	B	5	2	1	0
	DK	7	3	2	1
	F	0-0-0-0	0-0-0-0	0-0-1-0	0-0-0-0
	NL	2-0	0-0	0-0	NC
10 – 20	A [4]	4	3	2	NC
	B	0	1	0	0
	DK	0	0	0	0
	F	0-0-0-0	0-0-0-0	0-0-0-0	0-0-0-0
	NL	0-0	0-0	0-0	NC-NC
> 20	A	NC	NC	NC	NC
	B	0	0	0	0
	DK	0	0	0	0
	F	0-0-0-0	0-0-0-0	0-0-0-0	0-0-0-0
	NL	0-0	0-0	0-0	NC-NC

(1) No dose registered
(2) Results for four categories of nuclear reactors:
- in operation for technological and physical research programmes
- in operation for safety research programmes
- used as critical mock-ups
- shutdown under dismantling
(3) two reactors NRG-HFR and IRI TU Delf
(4) > 0.9 mSv as transmitted by the Austrian colleague
NC means "not communicated"

Table 2: Maximum individual effective dose at 10 institutions from 1999 to 2002 (in mSv)

year	1999	2000	2001	2002
N° 1	11,6	15,4	11,2	-
N° 2	8,3	10,0	5,2	4,3
N° 3	7,4	8,0	8,0	8,6
N° 4	5,8	4,7	5,3	-
N° 5	-	-	2,4	-
N° 6	-	-	16,3	-
N° 7	2,4	2,6	4,5	2,9
N° 8	2,2	3,3	2,1	3,5
N° 9	3,1	4,0	5,4	3,9
N° 10	< 0,2	< 0,2	< 0,2	0,6

Table 3: Collective effective dose distribution for the different installations of the SCK•CEN (in m.mSv, year 2002)

Group	Dose (man mSv/year)	Number of people concerned
Adm	0,06	19
Waste	1,62	69
Reactor BR1	2,78	29
Reactor BR2	52,88	87
Reactor BR3	5,69	41
LHMA	10,11	43
CHI	2,92	21
Radioprotection	0,90	64
TCH	2,13	30
TecServ	0,29	41
Safety	8,93	44
NotSCKworkers	16,98	70

Table 4: Collective effective dose for the installations of Risø from 1999 to 2002 (in man mSv/y)

Year	1999	2000	2001	2002
Waste Treatment	6,0	4,7	7,0	2,6
Isotope laboratory**	7,4	6,8	8,0	8,6
Reactor DR1	0	0,2	0,3	0
Reactor DR3	5,9	8,0	*1,2	*1,0
Research Department Materials	0,4	3,4	0,8	1,7
Research Department Plants	< 1	0	0	0,2
Others	< 4	2	0,8	1,1

* The DR 3 has been taken out of operation in 2000. The doses have been low due to low working activity.

** The high doses are from packing isotopes. The doses have been higher (10 mSv), they have a goal of reducing the doses to 5 mSv, but they have not yet succeeded.

CONCLUSIONS AND PERSPECTIVES

The EASN has been created as a spin-off of the EAN. It was born due to the demand from the EAN Steering Committee and the strong support of some representatives of the research centres.

The first three years of the EASN should be considered as a testing period. All participants consider now that a network like the EASN is useful and necessary. Based on the lessons that have to be learnt, attempts in order to increase the efficiency as well as the participation, have to be made. The following actions will be undertaken:

- Publication of a questionnaire. This document will be sent to as many representatives of the nuclear research centres in Europe as possible. It will deal with the objectives, the organisation and the level of involvement of each centre.
- Examination of the opportunity to create a website dedicated to the research reactors. This website should provide information on the reactors, on the doses, on the available tools (simulation tools, training tools,…) as well as on identification and field of competences of the members of the EASN.
- Depending upon the responses gained from the questionnaire, the opportunity to organise a workshop for research reactors will be proposed.

During the five meetings, that have taken place, a lot of suggestions were made. For instance, from the dose distribution data (table 1 and table 2), there appears to be a need to focus on some categories of workers and on some quite similar technical operations. Tables 3 and 4 could be considered as a first attempt to fulfil such wish.

The world of nuclear research reactors is diverse and its approach requires some flexibility. The EASN constitutes a good tool for encouraging communication between these particular installations at the European level. The next years should demonstrate that the creation of the EASN was well-justified and with the support of international organisations, it will add its contribution to the improvement of the safety culture in these different but active centres for research.

For all these reasons and as our final conclusion, a more active participation of other countries is very desirable and we strongly invite all the interested colleagues to join the EASN.

An ECRRT Survey on Education of Radiographers within Europe

N. Kolmannskog, A. Hembise, A. Finch
(ISRRT-Europe-Africa)

The European Committee of Radiographers and Radiological Technologists (ECRRT) is the sub-regional association of the Europe-Africa region of the International Society of Radiographers and Radiological Technologists. ECRRT was organized as a new structure of the European sub-committee of ISRRT to meet the needs of European Radiographers. ECRRT represents over 31 European National Radiographers Societies with more than 100 000 workers in the medical field in Europe (see Table 1). In Europe the roles and responsibilities of radiographers tend to vary from country to country. The development of the radiographers' profession in the various European countries has taken different paths with the result that the quality, the level of and nature of performance of radiographers and educational level still is not same throughout Europe.

One of the aims of the ECRRT is to promote and encourage improved standards of radiography and to advise on radiographic professional matters eg. educational matters, Radioprotection, Health and Safety and Public relations. One of ECRRT goals is to strive towards harmonization in education, roles, responsibilities and practises of radiographers in Europe.

The ECRRT has performed for the fifth time a survey among all its national societies within European countries concerning the education and role of its members. Some excerpts of the report are presented below. The total report of the survey is available on ECRRT website: www.ecrrt.com

There has been an ever-increasing demand upon diagnostic and therapeutic radiography services which are themselves economically, time and personnel limited. In response, multiple skills, new and extended roles have been introduced and greater responsibilities for radiographers have been willingly accepted. Wherever this has happened, careful research has shown that radiographers if properly trained have provided a safe, effective and economic service. However, the role of radiography and radiographers varies from country to country depending on a wide variety of factors including the roles and numbers of other professionals as well as the culture of the country. Thus the profession and the education in the European countries tend to differ.

Table 1: number of radiographers per country and population of the country.

	Population	Number of radiographers (diagnostic; radiotherapy)
Belgium	10 million	95
Switzerland	7.25 million	3,000
Czech Republic	10 million	3165 (85% diagnostic)
Germany	80 million	25,000;4500
Denmark	5 million	1200;40
Estonia	1.3 million	312
Spain	41 million	8500;300
Finland	5.1 million	3,000
France	60 million	21,000
United Kingdom	57 million	17,000;1700
Greece	10 million	1,500;80
Ireland	4 million	800
Iceland	287,275	120; 0
Luxembourg	450,000	150
Latvia	2.4 million	315;123
Malta	370,000	57 ; 4
Netherlands	16.5 million	4,000 ; 954
Norway	4.5 million	2,000
Portugal	10 million	2,200; 200
Sweden	9 million	2,500 diag
Slovenia	2 million	400
TOTAL	352 million	~104 000

The previous editions of this survey have also helped the process of providing a source of information and comparison. Some of the few interesting elements of this survey regarding to Radiation Protection are presented below.

The first point concerns the fact that Radiological Protection is part of radiographer's basic education in all countries answering to the survey. It should be noted that in a few countries (Estonia, Finland, United Kingdom), Radiological protection is also part of post qualification courses; this is one of the consequence of implementing European Directives.

A second interesting point of this survey concerns the individuals who perform radiography. In about 60% of the countries who answered, those individuals are not only radiographers or radiologists (see Table 2):

Table 2: Individuals, other than radiographers or radiologists, who perform radiography

	Individuals other than radiographers/logists who perform radiography with an official permission.	Individuals who perform radiography without any official permission.
Austria	Medically skilled employees (MTF)	
Belgium-Francophone	Nurses &Technicians-under Grandfather legislation	
Switzerland	Doctor (not radiologist), with a brief training, supervises a medical assistant with a basic 150 hour course-extremities and thorax only	Medical assistants under Grandfather legislation +clinics with severe staff shortages do employ medical assistants with the 150 hour training.
Czech Republic	The law is changing. Old one 'anyone who is qualified' without defining 'qualified'.	Dentist and interventional cardiologists
Germany	Doctors receptionists, helpers, with no responsibility, and no self assessment. Limited range	
Denmark	Nurses under'Grandfather legislation', but it will continue whilst there is a shortage of radiographers	
Spain	Nurses with the speciality 'Electroradiology'	Stretcher bearers, personal auxiliaries, doctors, nurses, dentists, veterinary workers etc
Finland	Apprentice trained radiographers under Grandfather legislation, only to 2005	
Greece	x-ray machine users	
Croatia		Mostly 'grandfathers', + illegally
Iceland	Nurses under Grandfather legislation	Local nurses & other staff in small Primary Care Stations in remote areas. Only of extremities
Luxembourg		Nurses in outpatients and nuclear medicine
Netherlands	Government allows new training programmes as they see fit	
Portugal		Illegal in places with no assessment
Slovenia	Nurses under grandfather legislation, dental x-rays, oral hygienists	

In most countries, authorised persons other than radiographers and radiologist, perform radiography. They are often nurses, medical assistant; in some cases they have a good training, in some others they just have a very short training. In at least 7 countries, some individuals (medical assistant, dentist, nurses…) perform radiography without any official permission. This problem of "NON" radiographers is now gradually decreasing. One may ask if these situations have sometimes caused bad radiological protection for both patients and workers.

There are still on-going changes in the education programmes in Europe. This fifth edition of the "Conditions for the Education of radiographers within Europe" is most timely and will be an information source to European educational bodies, officials within government and at the European Union and all those responsible for ensuring that those exposing their populations to hazardous radiations are properly trained and competent.

Perhaps within the lifetime of this publication the Universities in our diverse continent will have been able to co-operate sufficiently to acknowledge each other's courses as meeting the requirements of the safe delivery of radiation to the public and the desire of professionals that their qualification allows them to develop their careers. This would certainly aid free movement.

Analysis of a radiological Incident

Case study (N° 16):

Incident in a textile treatment plant occurred in France

J. B. Rioual (CEPN, France)

Incident in a textile treatment plant:

CIRCUMSTANCES

In 1995, at 1.30 a.m. in the depollution department of a textile treatment plant, Mr A notices that the machine which measures the density of detergents to be released into the environment is dirty. He undertakes the cleaning of it. This machine is situated in a noisy, cramped location on an extremely hot pipe. It is located at a height of 3.5m and is not accessible except with a ladder. There is a warning sign making the risks due to the sealed Caesium source (activity 7,4 GBq the 06/30/1989) clearly visible at 2 m from the ground.

Indications relating to the source are written on an engraved plaque, fixed on the container housing this source. To clean the machine, Mr A takes the container completely apart and removes the source. He wedges a piece of paper in the collimator tube and then decides to take it off and to unplug it with compressed air. For this, he takes the tube in his right hand and brings it into another workshop. Suspecting then the presence of the source at the end of the tube, he searches for a dosimeter pen which confirms this presence. He then decides to replace the source in the « source carrier » with a pair of tweezers.

At the end of this operation, he feels a burning sensation in his right hand and is accompanied to the nearest hospital. A few days later he goes to the Institut Curie at the request of the labour physician.

Exposure duration of his hand was 30 to 45 minutes. During the whole operation, Mr A was not wearing any dosimeter.

RADIALOGICAL CONSEQUENCES:

Mr A was the only exposed person. An erythema appeared immediately at the end of his period of work, together with a burning sensation (first degree burn). This was followed by an oedema and the development over the course of 2-3 weeks of a large lesion, about 5 cm in diameter. The final result was local necrosis.
Taking into account clinical observations, the dose delivered to the patient's right hand was most likely above 30 Sv. Furthermore, Mr A had a biological "dosimetry" (searching chromosomal aberrations) revealing a whole body dose of 200 mSv.

LESSONS TO BE LEARNED:

- The installation of the source in noisy, cramped location, situated on a inaccessible very hot pipe, does not allow for normal surveillance and maintenance and led to the unfortunate initiative of Mr A.

- Mr A's behaviour denotes a poor knowledge of the risks linked to the presence of the source in the machine. The one-week training he received was too basic and it did not make clear the incurrent risks.

- Before undertaking the cleaning of a machine, one must make sure that the radioactive source is properly shielded using a dose-rate meter. In this example, Mr A failed to check the dose rate before cleaning the machine. All of this clearly demonstrates a lack of "radiation protection culture" on the part of the employee who was otherwise a "competent person".

- The wearing of an electronic dosimeter with alarm could have compensate for forgetting to use a dose rate meter and could have avoided the incident.

ALARA NEWS

❑ ALARA Training courses

These courses will be held in Saclay, from March 8th to March 10th 2005, at the Commissariat à l'Energie Atomique (Centre de Saclay - INSTN / UGL / BCSE - F-91191 Gif-sur-Yvette Cedex) and will be organised by "Institut National des Sciences et Techniques Nucléaires (INSTN)".

The subject will deal with the Implementation of the ALARA principle and how to manage occupational exposure.

❑ IRPA Europe 2006

The second European IRPA Congress will be held in Paris, from May 15th to May 19th 2006, and will be organised by the French Society for Radiation Protection (SFRP). This European Congress, a global forum on the Radiological Protection field, will be a unique opportunity to submit papers on and debate about all those subjects which will determine the future of this speciality, ranging from the scientific data and questions about biological radiation effects, to the regulation and practice of radiation protection.

The program will cover different aspects:

- Biological effects of ionizing and non-ionizing radiations
- Health effects of ionizing and non-ionizing radiations
- Radiological protection systems and regulation
- Dosimetry and instrumentation
- Education and training
- Radiation protection at workplaces
- Radiation protection of patients in medical practices
- Radiation protection and the public
- Radiation protection and the environment
- Waste management and treatment
- Decommissioning and site remediation
- Incidents, accidents and post accident
- Radiation protection against non-ionizing radiations
- Evaluation of radiation protection policies
- Radiation protection and society

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9th European ALARA Network Workshop on "Exposures from NORM and Radon in Workplaces"

Augsburg, Germany, 18 -21 October 2005
http://ean.cepn.asso.fr/

Objective

The aim of the 9th EAN workshop is to focus on exposures arising from natural radiation sources in the workplace, in particular from naturally occurring radioactive materials (NORM), from radon gas.
There are two main themes:

- increasing the commitment to radiation protection in respect of these sources; and
- the practical approach to exposure management.

As with previous Workshops, the workshop - will consist of presentations (oral and posters) and work in small groups - and will aim at providing all concerned stakeholders with recommendations.

Scope of the Workshop

The Workshop programme will include the following subjects:

- Introduction and scene setting:
  - An overview of the problem in terms of the number of exposed persons and the typical doses received from natural sources, including any new published data and whether the available data is sufficient.
  - The EC and the IAEA/ILO approach to natural sources, and current and future work in this area.
- Increasing the commitment to radiation protection
  - What types of regulation are appropriate, when and where should they be applied?
  - What is the potential impact on industry/employers
  - How should the radiation risk and the need for controls be communicated?
  - How can the involvement of stakeholders be encouraged?
- Managing exposures from radon (including thoron), NORM
  - Identification of exposure situations; evaluation and assessment of the risk.
  - Monitoring tools, methods and strategies for managing exposures.
  - Practical experience and examples of exposure management and optimisation
  - The relationship between radiation protection and industrial hygiene
  - The interface between radon and NORM,…

Working Group Topics

- Types of regulation and the optimisation of protection
- Communication and stakeholder involvement
- Practical management of radon exposures
- Practical management of NORM exposures

Target Audience

A mixture of different stakeholders is encouraged. Interested parties will include regulatory bodies in charge of radioprotection and other workplace risks; employers, employees and their representatives, from workplaces where NORM and/or radon exposures are an issue; research and other organisations with an interest in protection from natural sources of radiation.

9th EUROPEAN ALARA NETWORK WORKSHOP
"Exposures from NORM and Radon in Workplaces"

Augsburg, Germany
18 – 21 October 2005

APPLICATION FORM:

Surname: ……

First name: ……..

Institution: ……..…

Mailing address:……..

Postal code:……..…City:……...Country:……

Business phone:……..…Fax:……...E-mail:……

Area of expertise:……..……...

Date:……Signature:……..……

Please return this form to:

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