34TH ISSUE – FEBRUARY 2014

European ALARA Network

Newsletter

CONTENTS

6th EANNORM Worskshop on "*Alternatives in NORM Wastes Management*" with EANNORM topical day '*NORM in New BSS and Radon in NORM*'

Juan C. MORA, CIEMAT
Beatriz ROBLES, CIEMAT
Hartmut SCHULZ, IAF-Radioökologie
Astrid SCHELLENBERGER, IAF – Radioökologie
Rafael GARCIA-TENORIO, University of Seville
Nuria CASACUBERTA, ETH-Zurich
Juan P. BOLIVAR, University of Huelva

From 2nd to 4th of December 2013, the 6th EANNORM workshop was held in the Ciemat's headquarter in Madrid (Spain). It was devoted to the "Alternatives in NORM Wastes Management" and followed on December 5th by a topical day: "NORM in new BSS and Radon in NORM".

Around 90 participants attended these EANNORM events from European countries (Austria, Belgium, Croatia, Czech Republic France, Germany, Greece, Italy, Hungary, Netherlands, Norway, Poland, Spain, Sweden and United Kingdom) and non-European countries as well (Angola, Israel, Japan, Mexico and South Korea).

The scientific program reflected the issues of interest within the NORM community in respect of the topics of the events. More than 40 presentations were performed together with 4 round table discussions. Although the following aspects can be highlighted:

- the reutilization of NORM in building materials or in agricultural practices including both, the discussion on the different management options applied in each country as well as the respective exemption and clearance criteria,
- the management of NORM waste and existing disposal options for NORM waste in conventional landfills,
- the discussion of the results of monitoring programs in different industries, emphasising on improvements of the models applied in the studied cases,
- the application of the Spanish protocol for the radiological monitoring of scraps with special focus on NORM.

The Basic Safety Standards (BSS), recently published by both the EU and the IAEA, were presented by the respective representatives at the topical day. Since especially the European BSS will be implemented in the national legislations, the main focus of the discussion was on the challenges arising from the BSS, e.g. on aspects related to the protection against radon when reusing NORM residues and the various difficulties connected with the execution of authoritative measurements.

Some discussions addressed the problem of establishing adequate and not overregulated radiation protection of workers in the NORM industry to retain Europe as a location for these industries.

Two closely related networks were presented during the workshop: First, the European Joint Research Project MetroNORM, pursuing the standardization of measurement techniques regarding NORM, designing measurement protocols and discussing the composition of standard materials. Second, the COST Action NORM4BUILDING, intends to be a platform for the exchange of multidisciplinary knowledge and

COORDINATED BY CEPN AND HPA
EUROPEAN ALARA NEWSLETTER
ISSN 1270-9441
C/O CEPN - 28, RUE DE LA REDOUTE - F-92260 FONTENAY-AUX-ROSES
WEB: HTTP://WWW.EU-ALARA.NET

experiences to stimulate the re-use of NORM residues in new tailor-made sustainable building materials in the construction sector while considering the impact on both external gamma exposure of building occupants and indoor air quality.

Within EAN_{NORM} the nature of networking now is internalized: For the second time the EAN_{NORM} workshop was organised and hosted by members of the network and not by the managing company. Continuing this, the seventh Workshop will be held in the Netherlands (hosted by COVRA) at the end of 2014 while the eighth is already programmed to be in Dresden, organized by the IAF in 2015. Further information's are available at www.ean-norm.net.
But, despite the enormous success made within the last years the fate of the EAN_{NORM} network depends heavily on whether financial support is achieved or not. ❑

PICTURE 1. – 6th EAN_{NORM} Workshop from 2nd to 4th December 2013, CIEMAT Headquarter, Madrid

ICRP 2013: 2nd International Symposium on Radiological Protection, Abu Dhabi

Fernand VERMEERSCH, SCK•CEN
Peter SHAW, Public Health England

Introduction

The European ALARA Network (EAN) participated with two representatives (chairman and secretary) to the ICRP 2nd International Symposium on Radiological Protection. The EAN as a special liaison organisation was also invited together with other organisations to participate in the Main Commission session prior to the symposium as a starting point for the new and improved ICRP scheme for formal relations.

Main Commission meeting, liaison organization session, October 20, Abu Dhabi

The ICRP Main Commission session with senior representatives of the liaison organisations was a success. The meeting provided a forum for discussing the work of ICRP in relation to other organisations and will be repeated together with the biennial symposia. The next symposium is planned October 2015 in Seoul. Depending on the work plan of ICRP, meetings between the organisations could be planned in the intervening years. Bilateral and other discussions or interactions on the working level can further complement these meetings when opportunities arise.
The organisations participating to the Main Commission meeting were:

- EAN European ALARA Network
- ENISS European Nuclear Installation Safety Standards
- NERIS European Platform on Emergency and Recovery Preparedness and Response
- HERCA Heads of European Radiological protection Competent Authorities Association
- ILO International Labour Organisation
- IRPA International Radiation Protection Association
- NEA CRPPH Committee on Radiation Protection and Public Health
- WHO World Health Organisation
- WNA World Nuclear Association

Representatives of the European Commission and International Atomic Energy Agency, also invited, send their apologies.

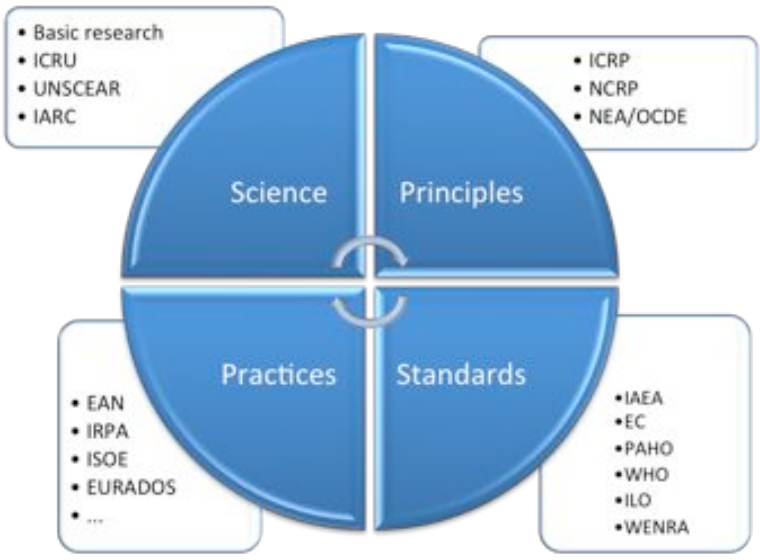
Each of the organization presented their activities and outlined topics of mutual interest and proposals for collaborative efforts.

The presentation of the European ALARA Network highlighted the position of EAN in the radiation protection system i.e. as a promoter of the practical application of optimisation. It elaborated on the way experiences are gathered, processed and disseminated by our network through workshops, questionnaires, the web site, etc. The topics of further interest identified by our network were industrial radiography, optimisation in the medical field, optimising public exposure, existing exposure and post accidental exposure situations.

ICRP took note of the presentations and proposals of the different liaison organisations and will examine possible ways of collaboration on specific topics. During the session a clear interest was shown by the main commission in the topic concerning optimisation in industrial radiography.

In general another theme closely linked with the aspect of optimisation is the tolerability of risk, a subject that is being explored by a task group of Committee 4. We as a network, looking at the optimisation of exposures, are also interested in the further discussions within this task group.

During the discussions with the other organisations it also became clear that there is a need to examine the mechanism to go from ICRP recommendations to practical implementation of the radiation protection system. The mechanism should also examine implementation issues prior to making the recommendations. A proposal to jointly develop a broad but brief explanation of the entire system of protection and the rationale behind it was discussed and could be a basis for further collaboration of the liaison organisations with the ICRP.



PICTURE 2. – The position of the European ALARA Network with respect to the four pillars of the radiation protection

The ICRP Symposium, October 22-24, 2013, Abu Dhabi

The symposium was opened by the Chair of ICRP, Dr Claire Cousins, who explained that it formed part of the strategic plan of ICRP: to collaborate more closely with persons involved in radiation protection; to develop openness; and to continue the evolution of ICRP.

The opening session was devoted to the work programme of the ICRP Main Commission and Committees 1 to 5. Following this, the remainder of the workshop consisted of five sessions, each on a topic relevant to the current ICRP work programme. Given below is just a flavour of these sessions.

"Tissue reactions: The road from science to protection"

Convincing evidence is now emerging about a range of non-cancer effects, such as circulatory disease, for which dose thresholds and risk factors are being established. There is not sufficient space in this short article to describe the detailed radiobiology and epidemiology presented. However, it is clear that this work will ultimately translate into a reconsideration of the overall risks of radiation exposure.

Specific attention was given to the lens of the eye, due to the significant reduction in the dose limit for workers. This has been driven by the recognition that cataract formation is a stochastic effect as well as a tissue reaction, and also direct evidence of eye damage in exposed workers, especially in the medical sector. There are, however, significant practical implications associated with the lower dose limit, as demonstrated by the review undertaken by IRPA.

"Advances in recovery preparedness and response following Fukushima"

Many lessons have been learned following the accident, not least the importance of ensuring that communications with the public are timely, transparent, coherent and understandable. It also needs to be recognised that the priorities assigned by the public may differ to those set by the authorities (with protection of children being a prime example). One outcome of this is the formation of an ICRP Task Group to review the terminology and definitions used in radiation protection, and produce an on-line glossary.

Monitoring programmes have focussed on assessing the actual exposure of individuals, through personal dosemeters and duplicate diet analyses. The results indicate that internal radiation exposures are generally very low. External gamma exposure is the main exposure pathway, and the dose distributions include a small percentage of individuals receiving exposures much higher than the average; remediation strategies need to take this into account.

There is a very substantial off-site remediation programme underway, which is producing practical information on the effectiveness of different environmental decontamination techniques, as well as very large volumes of waste that need to be managed. What remains unclear, however, is how much this programme can go towards meeting the needs and wishes of the affected populations.

"NORM issues in the real world"

This session highlighted the on-going confusion surrounding the application of the ICRP system of exposure situations to NORM industries. There probably is no perfect "fit" that covers all circumstances, and the important message was that the choice of exposure situation (i.e. planned or existing) does not automatically imply a specific means of control - this is a separate (and more important) issue. Optimisation should be applied in all exposure situations, with dose constraints or reference levels for NORM being set at the lower end of the 1 to 20 mSv/y range. A new ICRP Task Group on NORM has been established, to provide a report that will aim to clarify all these issues.

"What do we need from ICRP in medicine?"

The proliferation of diagnostic and therapeutic medical techniques involving radiation exposure presents a significant challenge to the radiation protection community. The magnitude of the doses produced by these techniques is sufficient to warrant epidemiological studies into the incidence of radiation-related effects. However, such studies need to be conducted with special care, to avoid bias from effects such as reverse causation, which occur where the study population consists of persons that have already been identified as requiring medical attention.

Ultimately, the main question is how to bring about the optimisation of medical exposures. Recent years have shown a significant world-wide increase in population doses, but there is now some evidence that this trend may be being reversed in certain countries. Common issues raised during the session were the lack of Medical Physicists, and the need to improve general RP awareness in the medical sector.

"The ICRP approach to environmental radiation protection: issues and applications"

The approach developed by Committee 5, based on a set of 12 Reference Animals and Plants (RAPs), was presented and discussed. For each RAP, the aim has been to establish dose rate thresholds below which no significant adverse effects should occur. These vary greatly across different species, and it was noted that laboratory studies do not always agree with field studies.

Dosimetry has so far been very simplistic, and efforts have been made to construct much more sophisticated voxel models for individual RAPs, mirroring the approach taken for human exposures. It was, however, queried whether the significant amount of work required to achieve this level of sophistication was warranted, given the overall uncertainties in assessing the impact on non-human species.

Conclusion

The participation of the European ALARA Network to the liaison organisation session and the symposium gave us the opportunity to interact with ICRP and other organisations active in the field of radiation protection. The presence of EAN reaffirmed its role in the dissemination of the practical application of the optimisation principle and we look forward to collaborations with other organisations and the ICRP in that field. ❑

United-Kingdom Health Service Trust Prosecuted by Health and Safety Executive for Overexposure of an Interventional Radiologist

David ORR, H.M Specialist Inspector (Radiation)
Health & Safety Executive, United-Kingdom

Case details

In 2009 the National Health Service Trust in question purchased a new CT scanner. This scanner had the additional feature of being able to be operated in "CT fluoroscopy" mode. The scanner was used for conventional CT work as well as for carrying out biopsies. The traditional method for carrying out biopsies used by the consultants in the Trust involved them leaving the room when the x-rays were on.

In August 2011 the Trust appointed a new Interventional Radiologist. As part of his duties he was required to carry out biopsies using the CT scanner. This consultant was previously employed in Germany where he used a different method to carry out biopsies utilising the real time fluoroscopy function of a different manufacturers CT scanner. Despite not being familiar with the mode of operation of the scanner installed at the Trust he decided to use the same method as he had in Germany, which involved him standing next to the CT scanner and operating the x-rays himself using a foot pedal on the machine whilst observing real time images on the screen inside the CT room.

The other consultants had initially tried a version of this method when the CT scanner had been purchased but didn't like it and they advised the consultant of this, however, he insisted that his method was better and that he would continue using it. The other doctors and managers deferred to his apparent "greater knowledge". This continued to be the case even when several managers and the Radiation Protection Supervisor (RPS) noted that the biopsy images demonstrated that the consultant had his hands in the main x-ray beam whilst carrying out procedures. The consultant was not directly challenged about his work practices by the management of the Trust.

The consultant gave the impression that he knew how to operate the CT scanner, although it later became apparent that he was operating the scanner with the x-rays "on" for periods up to 30 seconds at a time. In fact, the only reason the x-rays terminated after 30 seconds was due to the scanners thermal protection settings preventing the x-ray set overheating.

Within the Trust matters finally reached a head when the Consultant was provided with finger TLDs in November 2011 sometime after he had begun carrying out CT guided biopsies using his technique. Prior to this he had only been issued with a whole body TLD as no finger TLDs had been ordered for him nor were any spares available. The finger TLDs were worn for 2 months and on analysis indicated a skin radiation exposure in excess of 500mSv, which is the annual dose limit for skin or extremities in the Ionising Radiations Regulations 1999 (IRR99). Once this came to light the consultant was prevented from carrying out further biopsy work. In carrying out its own investigation into the incident the Trust estimated that his actual exposure was likely to have exceeded 1 Sv. The consultant did not exhibit any form of immediately apparent radiation injury.

Failings under Ionising Radiation Regulations 1999 (IRR99)

The Trust failed to carry out a suitable and sufficient risk assessment of the work carried out by the interventional radiologist using CT fluoroscopy. A risk assessment had been carried out for routine CT work but was not extended to include CT fluoroscopy when it became apparent that this was being carried out. The Trust had its own appointed Radiation Protection Adviser (RPA) but he was not consulted at any time on any matters relating to CT fluoroscopy.

As a consequence there was no consideration made as to whether or not the radiation exposure of the interventional radiologist or his patients were being kept as low as reasonably practicable. No local rules of systems of work were, therefore, developed or the possible use of engineering controls such as the use of needle holders considered.

In addition the Trust did not assess whether the consultant should be considered as a classified person and be issued with appropriate radiation monitors. Normal custom and practice was to provide routine monitoring of finger dose for all interventional radiologists, but in this case the Trust had none available when he started work and waited until the next issue period to provide them.

When the radiation exposure of his fingers was actually measured the dose recorded in the 2-month wear period exceeded the annual dose limit of the skin of 500 mSv.

Court details

As a result of the above failings, on 7 October 2013 the NHS Trust were fined a total of £30 000 in the Magistrates' Court for breaches of the Ionising Radiations Regulations 1999 in respect of not having a suitable and sufficient risk assessment in place and for exceeding the dose limit to the skin. Furthermore, it was found that some outside undertakings and operators were not aware of their role and responsibilities in relation to the existing legislative framework.

Lessons to be learned

It is imperative that organisations have proper procedures in place for managing new staff to ensure that they are given suitable information, instruction and training to ensure that they work in a safe manner and in accordance with the organisation procedures for radiation protection. All staff, whatever their perceived status, must be managed to ensure they follow good radiation protection practice.

All new work activities must be properly risk assessed. IRR99 gives comprehensive guidance on the matters that need to be considered when carrying out a suitable and sufficient risk assessment. Those persons carrying out the risk assessment must liaise with those actually carrying out the task. The RPA has a key role to play in assisting employers in producing risk

assessments. All subsequent arrangements that are required to ensure radiation exposures are kept as low as reasonably practicable arise from the findings of the risk assessment.
Enforcement action was also taken by the Ionising Radiation (Medical Exposure) Regulations enforcing authority for England, the Care Quality Commission (CQC), in relation to this issue. ❑

❦

This article could be yours!

EAN Newsletter editorial board

The European ALARA Network produces the ALARA Newsletter, which is widely distributed throughout Europe and other countries, to provide a link between all those concerned with ALARA, including health physicists, but also managers, radiation protection organisations, research bodies, regulatory bodies, trade union representatives and the medical sector.

This Newsletter intends to reflect some major aspects of the 'ALARA life': the evolution of regulations, results of research, description of existing databases, ALARA programmes, available ALARA tools, the need for ALARA improvements, lessons learnt from incidents, and recommendations.

The contenant of the ALARA Newsletter has mainly been provided by EAN representatives. However, the EAN Newsletter editoral board has decided to also encourage the recipients of the EAN Newsletter to submit articles for inclusion in future issues.

Submission

Submitted articles should aim to fit with the current editorial line of the Newsletter and will be selected on that basis (example can be found at: http://www.eu-alara.net/index.php/newsletters-mainmenu-37.html

Proposal should be written in English language and submitted electronically in doc format to sylvain.andresz@cepn.asso.fr before 5th September 2014).
Please do mention "EAN_Newsletter_proposal" in the subject of your message. ❑

❦

The next European ALARA Network will be a joint EAN and EUTERP Workshop dealing with education and training in the field of radiation protection.

The workshop will take place at *Hotel Lone*, Rovinj, Croatia, from 7 to 9 may 2014.

Leaflet and registration form are available online :

http://ean-euterp.ekoteh.hr/

A provisional program is joined with this issue of the EAN Newsletter.

15TH EAN/5TH EUTERP Workshop on Education and Training in Radiation Protection: Improving ALARA Culture

Aims and Objectives

Previous EAN and EUTERP workshops have noted the importance of delivering effective radiation protection education and training to workers and other stakeholders. Consequently, this joint EAN-EUTERP workshop considers how education and training programmes can be delivered effectively, to improve radiation protection in practice and disseminate ALARA culture. The workshop will consist of presentations (oral and posters) intended to highlight the main issues, and a significant part of the programme will be devoted to discussions within working groups. Participants will be expected to produce recommendations on education and training issues, to be addressed to relevant local, national and international stakeholders

Scope of the Workshop

The workshop programme covers education and training for various types of stakeholders and is expected to consider the following subjects:

- The new European BSS;
- European qualification and accreditation schemes (ECVET, EQF, etc.);
- The effectiveness and efficiency of education and training;
- Practical ALARA training;
- New learning tools;
- Elements contributing to ALARA culture;
- Incorporating ethical aspects into education and training;
- Education and training at all organizational levels.

Working Group Topics

- Tools to improve the effectiveness of training: new methods of delivery, blended learning and post-training interaction.
- How to measure the effectiveness of training: post-training assessment, ALARA evaluation, etc.
- The role of qualification and recognition schemes (ECVET, EQE, RPE) and their value in the workplace.
- Incorporating ALARA culture in training requirements for radiation workers and managers as well as regulators and inspectors.
- How to improve risk awareness and the radiation protection and ALARA knowledge for different stakeholders according to the exposure situations.

Target Audience

The workshop will be of interest to a variety of stakeholders including training providers, employers and employees' representatives, regulatory bodies, RP networks, research and other organisations involved in radiation protection.

Venue, Registration and Fees

The workshop will take place in Hotel Lone, in Rovinj, Croatia, starting on the 7th of May, 2014 and finishing on the 9th of May, 2014.

A welcome reception will be held on the evening of the 6th of May. A gala dinner is planned on 8th May on St Andrew Island near Rovinj. An excursion to Brijuni Island on the 9th ; departure at 13 h 00, return around 19/20 h.

The registration fee will be 400 € and will include: welcome reception, workshop dinner, three lunches, two coffee breaks per day, transport to and from the workshop dinner, the excursion to Brijuni (Pula), and the usual workshop materials.

Participants should register before 15th of April, 2014 at

http://ean-euterp.ekoteh.hr/

Hotel booking, at a special rate, is possible via the workshop website, for Hotel Lone (4*) and Hotel Eden (3*).

How to get to Rovinj?

By plane

There are 5 easy-access airports to go to Rovinj:

- Ljublajana Airport: 188 km from Rovinj – http://www.lju-airport.si
- Trieste Airport: 107 km from Rovinj – http://www.aeroporto.fgv.it/it/home/index.htm
- Venice Airport (Marco Polo): 256 km from Rovinj – http://www.veniceairport.it
- Zagreb Airport: 250 km from Rovinj – http://www.zagreb.airport.hr
- Pula Airport: 40 km from Rovinj – http://airport.pula.hr

By car

You can rent a car at your arrival airport and join Rovinj with your vehicule.

- From Ljubljana: 188 km with A1 (E70) then A9 motorways
- From Trieste airport: 107 km with H5/A1 then A9 motorways
- From Venice airport: 256 km with A25, A55, A4 then E70. Take H5 and finally join A9 motorway.
- From Zagreb airport: 250 km with A1, A6, A7 and A9 motorways.
- From Pula airport: 55 km with A9 motorway.

Taxis and bus/coaches are also available at the airports. Here are some information regarding bus lines.

- From Ljubljana: http://www.ap-ljubljana.si
- From Trieste airport: http://www.autostazionetrieste.it/index.php?option=com_content&task=view&id=22&Itemid=0%20
- From Zagreb airport: http://www.akz.hr

By boat

From Venice, you have the possibility to reach Rovinj by boat (4 hours). More information available at http://www.venezialines.it

More information on the website http://www.inforovinj.com ❑

ALARA NEWS

European ALARA Network plans to publish a book

In 2009, EAN created a specific working group on ALARA Culture. As part of the ALARA culture dissemination, the working group has been drafting a book entitled:
Optimization in Radiation Protection (ALARA) – A practical guidebook.

This book is intended to be an update of the previous publication "ALARA: from theory to practice", which have proved very popular.
This book aims to be used by radiation protection professionals or other stakeholders involved in the ALARA process. The book is strongly underpinned by concrete examples of optimization and it is intended to regularly up-date the book with new examples.

The book is currently under finalization and should be reviewed in May 2014 and presented to the EAN Steering Committee in June 2014.

OPERRA and COMET calls

On mid-December 2013, the Open Project for the European Radiation Research Area (OPERRA – see EAN Newsletter previous issues) and COMET launch a first call for proposals.

The key aspect addressed by this call is 'the understanding of the human health risks arising from exposures to low dose of ionizing radiation'. These research topics are considered to be of priority for reducing uncertainties in current understanding of basic biological processes. These are three alternative approaches, which are expected to be addressed in separate proposals.

1. Analysis of mechanisms involved in low dose radiation through the use and development of suitable cellular models (for example 2D, 3D, including somatic cells, stem cells, and organo-typic tissue models) as well as animal models.
2. Determination of the role of genetic background, immunological status, age, gender and lifestyle on radiation-induced effects, as well as identification of other factors influencing individual radiation sensitivity.
3. Identification, development and validation of biomarkers for radiation-induced health effects (cancer and non-cancer) through sound molecular epidemiological studies in children and/or adults in conjunction with the most suitable and promising retrospective and prospective cohorts with access to biological samples and sound dosimetry.

The deadline for submission is 14th March 2014.

General information regarding the call (OPERRA-COMET guide for applicant etc.) could be found here:

http://www.melodi-online.eu/operra_comet_calls.html

FAQ ALARA

On the ORPNET webpage, IAEA proposes a list of frequently asked questions (FAQs) which intends to provide information to radiation protection specialists so that they can answer quickly and correctly the most frequently asked questions. The ALARA Newsletter proposes in each issue a selection of these FAQs.

Should the cost of the ALARA study be included in the cost of the protection action?

No, because implementing ALARA is a regulatory requirement: the law must be applied regardless of the cost. This cost is therefore part of the total cost of radiation protection at a site and cannot be charged against a specific ALARA study.

However, the cost of the study must be in line with the level of doses: Thus, taking several man-months to carry out an ALARA study for a non-repetitive project of a few man.mSv would be totally unreasonable! ❑

Reference:

http://www-ns.iaea.org/tech-areas/communication-networks/norp/faq.asp?fq=72

Contacts

European ALARA Network Contacts Persons

AUSTRIA
Mr Alfred HEFNER
Seibersdorf Labor GmbH
2444 SEIBERSDORF
Tel: +43 50550 2509; Fax: +43 50550 3033
E-mail: alfred.hefner@seibersdorf-laboratories.at

BELGIQUE
Mr Fernand VERMEERSCH
SCK/CEN, Boeretang 200, 2400 MOL
Tel: +32 14 33 28 53; Fax: +32 14 32 16 24
E-mail: fvermeer@sckcen.be

CROATIA
Mr Mladen NOVAKOVIC
Radiation Protection, EKOTEH Dosimetry,
Vladimira Ruzdjaka 21, 10000 ZAGREB
Tel: +385 1 604 3882; Fax: +385 1 604 3866
E-mail: mlnovako@inet.hr

CZECH REPUBLIC
Mr Jan KROPACEK
SUJB - State Office for Nuclear Safety,
Syllabova 21, 730 00 OSTRAVA
Tel: +420 596 782 935; Fax: +420 596 782 934
E-mail: jan.kropacek@sujb.cz

DENMARK
Mr Kresten BREDDAM
National Institute for Radiation Protection
Knapholm 7, 2730 HERLEV
Tel: +45 44 54 34 63
E-mail: krb@sis.dk

FINLAND
Mrs Maaret LEHTINEN
STUK – Radiation Practices Regulation
Laippatie 4, 00880 HELSINKI
Tel: +358 9 75988244 Fax: +358 9 75988248
E-mail: maaret.lehtinen@stuk.fi

European ALARA Newsletter
Coordinated by CEPN and HPA

ISSN 1270-9441
c/o CEPN
28, rue de la Redoute
F-92260 Fontenay-aux-Roses
http://www.eu-alara.net

FRANCE
Mrs Olvido GUZMÁN
ASN, 15 rue Louis Lejeune CS-70013
92541 MONTROUGE Cedex
Tel: +33 1 46 16 44 06 ; Fax: +33 1 46 16 44 37
E-mail: olvido.guzman@asn.fr

NORWAY
Mr Gunnar SAXEBØL
Norwegian Radiation Protection Authority, Grini Naeringspark 13, Postal Box 55, 1345 ØSTERÅS
Tel: +47 67 16 25 62; Fax: +47 67 14 74 07
E-mail: gunnar.saxebol@nrpa.no

GERMANY
Mrs Annemarie SCHMITT-HANNIG
BfS, Ingolstädter Landstrasse 1,
85764 OBERSCHLEISSHEIM
Tel: +49 3018 333 2110; Fax: +49 3018 10 333 2115
E-mail: aschmitt-hannig@bfs.de

PORTUGAL
Mr Fernando P. CARVALHO
Instituto Tecnologico e Nuclear
Estrada Nacional 10, 2686-953 SACAVEM
Tel: +351 21 994 62 32; Fax: +351 21 994 19 95
E-mail: carvalho@itn.mces.pt

GREECE
Mr Sotirios ECONOMIDES
Greek Atomic Energy Commission (GAEC)
P.O. Box 60228, 15310 AG-PARASKEVI
Tel: +30 210 6506767; Fax: +30 210 6506748
E-mail: sikonom@eeae.gr

SLOVENIA
Mr Dejan ŽONTAR
Slovenian Radiation Protection Administration
Langusova 4, 1000 LJUBLJANA
Tel: +386 1 478 8710; Fax: +386 1 478 8715
E-mail: dejan.zontar@gov.si

ICELAND
Mr Guðlaugur EINARSSON
Geislavarnir Ríkisins, Rauðararstigur 10
150 REYKJAVIK
Tel: +354 552 8200; Fax: +345 552 8202
E-mail: ge@gr.is

SPAIN
Mr Arturo PEREZ MULAS
CSN, Justo Dorado 11, 28040 MADRID
Tel: +34 91 346 02 62; Fax: +34 91 346 03 16
E-mail: apm@csn.es

IRELAND
Mr Stephen FENNELL
Radiological Protection Institute of Ireland,
3 Clonskeagh Square, Clonskeagh Road, DUBLIN 14
Tel: +353 1 206 69 46; Fax: +353 1 260 57 97
E-mail: sfennell@rpii.ie

SWEDEN
Mrs Birgitta EKSTRÖM
SSM - Department of Nuclear Power Plant Safety
Solna strandväg 96, 171 16 STOCKHOLM
Tel: +46 8 799 42 45; Fax: +46 8 799 40 10
E-mail: birgitta.ekstrom@ssm.se

ITALY
Mrs Cristina NUCCETELLI
ISS – Technology and Health Department
Viale Regina Elena 299, 00161 ROME
Tel: + 39 06 4990 2203; Fax: +39 06 4990 2137
E-mail: cristina.nuccetelli@iss.it

SWITZERLAND
Mr Nicolas STRITT
Swiss Federal Office of Public Health, Radiation Protection Division, 3003 BERN
Tel: +41 31 324 05 88; Fax: +41 31 322 83 83
E-mail: nicolas.stritt@bag.admin.ch

THE NETHERLAND
Mr Cor TIMMERMANS
NRG Radiation & Environment, P.O. Box 9034,
6800 ES ARNHEM
Tel: +31 26 3568525; Fax: +31 26 3568538
E-mail: timmermans@nrg.eu

THE UNITED KINGDOM
Mr Peter SHAW
PHE Public Health England
Hospital Lane, LEEDS - LS16 6RW
Tel: +44 113 267 9629; Sec: +44 113 267 9041 Fax: +44 113 261 3190
E-mail: peter.shaw@phe.gov.uk