



Schweizerische Eidgenossenschaft
Confédération suisse
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Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
Radiation Protection Division

16th European ALARA Network Workshop

ALARA in industrial radiography How can it be improved

Berne, Switzerland, 14 – 16 March 2016



Federal Office of
Public Health
Radiation Protection Division



List of participants and budget

We had 65 registred participants, from more than 15 countries

France, Belgium, Germany, Switzerland, Italy, Austria, Spain,
Netherland, UK, Ireland, Finland, Norway, Sweden, Czeck Republic,
Argentina, Corea, USA

Budget:

Income (fees)	25'000 €
Outcome (organisation, Dinner, site seeing, gifts, etc.)	21'000 €
Benefit	4'000 €



Working group

The Workshop was hosted by
Swiss Federal Office of Public Health (FOPH).

Half the programme was devoted to presentations (2 posters),
and half to working group (6) discussions based on the
following topic areas:

- Radiography equipment: can we make it safer?
- Learning from radiography accidents: how do we stop them happening again?
- Training and safety culture: how can these be improved?
- The ALARA process in radiography: setting suitable dose and risk constraints



Feedback for the participants

What are your overall views of the Workshop?

A good and efficient workshop : organization, welcome, agenda and timing (except starting Monday morning), large participation, interesting presentations and discussions, useful contacts, working groups, visits, ...

...Useful and constructive. Good discussions and networking opportunities.

It was interesting to hear about how surveillance is organised and performed in other European countries, how incidents are managed and what is considered as good practice in radiation protection.



Feedback for the participants

What are your overall views of the Workshop?

The Workshop was very usefull. There was representatives from different institutions to the common interest - application of the principle Alara in the defectoscopy - such opportunities are not many.

Thank you for a well organised workshop with interesting lectures and discussions. It was a positive experience because of the diverse public in the room.

Very well organised, good selection of presentations, all together very useful



Feedback for the participants

Which parts of the Workshop were most useful to you? And why?

All the parts were useful and interesting : general and technical presentations, work in working groups. We can share international experience and knowledge and I appreciate the objectives of the workshop. In relation with my project, I was particularly interested in incident presentations.

...Workshops. Mainly due to opportunity to discuss and raise questions with experts.

The discussions in the workshops were fruitful, especially concerning the different approaches on audits and on-site inspections.



Feedback for the participants

Which parts of the Workshop were most useful to you? And why?

I received a lot of information and I could compare attitudes, access and work in different countries.

Most useful was work in group, reducing size of radiography Controlled Area, Maintenance of radiography equipment, Source recovery equipment, overall - the things that have an impact on the safety of the site, workers and residents.

The presentations by NDT companies for the practical experience it showed and the presentations on the incidents as REX.

The discussions during the breakout sessions: understanding other stakeholders opinions.

It is the combination of presentations, time for networking during the breaks and the work in groups which makes so valuable.



Feedback for the participants

Do you have any suggestions for changes that could be made to improve future EAN workshops?

It could be better to start the workshop on Monday afternoon.

...The workshops were a great success I thought but restricted in that the topic covered was limited to specific area, it had to be otherwise it wouldn't have worked but increasing number of workgroup sessions and maybe at the end of each day covering different areas would be good. Some form of interactive sessions where an incident is analysed and solutions noted would be great.

It was interesting to listen and to talk to members from users, manufacturers and clients. However, most of the participants were **from regulators and surveillance authorities**.



Feedback for the participants

Do you have any suggestions for changes that could be made to improve future EAN workshops?

One should think about how to attract more participants from industry: For regulators and inspectors the engagement in such workshops is part of their job as professionals in radiation protection.

For users, clients and manufacturers it is harder to explain their employers why to spend time and money for such activities, which result in a benefit for the society in general rather than specifically for their companies.

One should consider to enable one-day-participation already in the registration process and/or reduction of fees for employees in industry, who sometimes may contribute to very specific aspects of the general topic.

I would like to have seen more participation of the NDT companies and especially radiographers. We talked a lot about them, but there were not many (if any?) in the room.



Feedback for the participants

Do you have any suggestions for changes that could be made to improve future EAN workshops?

I don't have specific idea how to improve this WS. But it was OK - there were included practical things from various countries like for example, **dealing with emergency situations, new NDT equipments**. I noticed (from some participants) there was some interest about **security radioactive sources** which are used by radiographers. Maybe this topic could be a little bit discussed next time.

During discussions a lot of focus was on the issues (learn from the negative), and I feel that we forgot to stress the point that things can improve and are improving in a lot of countries. Maybe we need also need to learn about why in some respects things are improving (learn from the positive).

I found the workshop very balanced, no suggestions for further improvement, it is good as it is.



Themes and issues arising

- **Safety culture in industrial radiography**
- **Interactions between different stakeholders**
- **Radiography equipment**
- **Radiographer training and self-assessment**
- **Radiography accidents**



Recommendations

1. Radiography equipment: can we make it safer?

- It is considered that improvements to the design of industrial radiography exposure equipment are possible and should be sought, but might only be expected to provide incremental improvements in safety.
- Rather than changing the basic design, improving the robustness of the equipment should be considered. A dialogue between the equipment manufacturers and end users (ie radiographers) would be useful to identify reliability issues in the field.
- In respect of gamma radiography containers, ISO 3999 could be revised to clarify the requirements for the source positioning/exposure system and indicators, and increase the severity of the testing regime.



Recommendations

1. Radiography equipment: can we make it safer?

- The use of selenium-75, non-projection containers and small controlled area systems all provide radiation safety benefits when used correctly, and, where practicable, should be encouraged.
- There is still scope for improvements to warning systems (audible and visual) and dose/dose rate devices, to help avoid operator errors. For example, using modern technologies, multiple devices could communicate wirelessly, and the results logged, to provide an integrated safety system.
- The proper maintenance of radiography equipment, including ancillary items, is essential: this should be reviewed during regulatory inspections.
- The use of personal dosimeters with audible and visual alarms should be mandatory.



Recommendations

2. Learning from radiography accidents: how do we stop them happening again?

- It must be ensured that radiography companies undertake a comprehensive prior risk analysis to identify the possible causes of radiography incidents and their expected consequences. This should consider underlying causes in terms of both equipment and procedural failures. From this, preventative steps to address the underlying causes should be identified and implemented, and practical accident response procedures should be prepared. These should be supported by training and rehearsals.
- Clients should be involved at the radiography planning stage so that they are aware of the causes and potential consequences of accidents, and also to ensure that the conditions on site are conducive to safe working. They should also be advised of any regulatory inspections and be encouraged to take an interest in the outcomes.



Recommendations

2. Learning from radiography accidents: how do we stop them happening again?

- Regulatory bodies should carefully evaluate emergency plans and equipment. They should also encourage a system of no-blame recording, and dissemination of lessons learned, for example through the OTHEA website, and also with closer links to the NDT associations.



Recommendations

3: Training and Safety Culture: how can these be improved?

- There is a clear need for a common approach to training of industrial radiography personnel across Europe. This should include initial training, on-the-job training, practical accident response procedures, and refresher training requirements (including regular short “tool-box talks”). Training needs to include instruction on the correct use and maintenance of equipment (eg from the manufacturers/suppliers) as well as radiation safety.
- The certification of training schemes and training providers, as well as trainees, should be considered.
- To help raise the awareness of clients, information should be provided on the radiation safety issues they need to consider when selecting radiography contractors and planning radiography work. This could be disseminated through the EAN and IAEA (ISEMIR) websites.



Recommendations

3: Training and Safety Culture: how can these be improved?

- Industrial radiography is a highly competitive industry and the pressures of working as an industrial radiographer need to be identified and addressed. From a regulatory perspective, annual stakeholder meetings (radiography companies and clients) may help in this regard. In addition, regulators should be encouraged to publish inspection reports, and include examples of good practice where this is found.
- Competence should be assessed through a process of internal audits, which should aim to assess attitudes and behaviours (safety culture) as well as regulatory compliance.



Site seeing on Monday night departure at 18h00



Bern Minster Cathedral



Swan Isotopen AG



Apero and Dinner, Kornhauskeller





Next steps

- **Publication of the recommendation in ALARA Newsletter**
- **Translation of the recommendation in other languages and publication in EAN members countries**
- **Publication of papers from the presentation**
- **Benefit of the workshop (4'000€) will be send to EAN account after the summer**



Next EAN Workshop

The 17th EAN Workshop is planned for 2017 on “ALARA in accident and post-accident situations” in Portugal.