Monthly radiation protection training of workers: an evaluation of two years operational practice

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European Directive 96/29/Euratom

...member states shall require the undertaking to arrange for relevant training in the field of radiation protection to be given to exposed workers, apprentices and students...
The Belgian regulation RD 20/07/2001, Art. 25

...adds the requirement that the information given to workers should also be repeated on a regular base, depending the need and minimum once a year.

Room for interpretation

Can be fitted in differently, depending on the type of organisation.
Situation in a large medical centre

~ 500 occupationally exposed workers in:
- Biomedical research
- Isotope production
- Medical applications

Wide range in education levels
Wide variety of procedures
High to very high workload
Radiation protection training

- At the start of the employment
- On demand of the department
- On the job training, at the introduction of new applications

And ... introducing training on a regular base for the specific practice of the different worker groups
Why direct communication?

Of dose results
- Once a year (occupational physician) is inadequate
- Communication through the supervisor can fail
- Workers need to know the order of magnitude of their exposure

Of radiation protection topics
- To increase the awareness
- To point out ‘hot topics’
- To ensure continuity in basic training
Concept

Personal dose result from dosimetry service

Data base RPO

MS-Access database merges dose results with personal email addresses

Automatic mail with personal dose report

Link to slideshow with radiation protection information
Dose results and Radiation protection information

Dose results jun-2009

Hp(0.07): value of measured skin dose
Hp(10): value of the measured depth dose, representing total body dose

<table>
<thead>
<tr>
<th>Name</th>
<th>Group</th>
<th>Code</th>
<th>Personal number</th>
<th>Month dose Hp(0.07) (mSv)</th>
<th>Hp(10) (mSv)</th>
<th>Total 12 months Hp(0.07) (mSv)</th>
<th>Hp(10) (mSv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bens Danielle</td>
<td>501</td>
<td>0</td>
<td>00003</td>
<td>0.00</td>
<td>0.00</td>
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Monthly information:

Since last month you know that the eye lens is very sensitive to ionising radiation. Read at following link how to avoid irradiation of the eyes. (CTRL+CLICK)
http://homepages.vub.ac.be/~fyscon/200907UK.pps

In Radiotherapy high-energy radiation is produced. How do we protect workers and members of the public against this radiation?

Topics
- General radiation protection
- Regulatory framework and responsibilities
- Practical radiation protection
- Information for specific groups
Evaluation of the training tool

Through a questionnaire 100 workers were asked:

- If they received the dose report
- If they noticed the link to the information
- If they were actually reading the information
- Their opinion of the usefulness of this training tool
Overall results

How many workers were using the digital tool?
- n=8 (8%)
- n=92 (92%)

How many workers were aware of their exposure level?
- n=23 (25%)
- n=69 (75%)

How many workers noticed the link to the RP information?
- n=37 (40%)
- n=55 (60%)

How many workers were actually reading the info?
- n=22 (40%)
- n=33 (60%)
Influence of exposure level

**Measurable dose**

- **Know the dose level?**
  - n=5 (19%)
  - n=22 (81%)

- **Noticed the link?**
  - n=7 (30%)
  - n=15 (70%)

- **Are reading the info?**
  - n=4 (26%)
  - n=11 (74%)

**Non-measurable dose**

- **Know the dose level?**
  - n=12 (19%)
  - n=53 (81%)

- **Noticed the link?**
  - n=24 (47%)
  - n=29 (53%)

- **Are reading the info?**
  - n=14 (48%)
  - n=15 (52%)
Influence of background education

**Higher education in nuclear science/RP**

- **Know the dose level?**
  - Yes: $n=13$ (92%)
  - No: $n=1$ (8%)

- **Noticed the link?**
  - Yes: $n=13$ (92%)
  - No: $n=1$ (8%)

- **Are reading the info?**
  - Yes: $n=13$ (100%)

**Other groups**

- **Know the dose level?**
  - Yes: $n=62$ (79%)
  - No: $n=16$ (21%)

- **Noticed the link?**
  - Yes: $n=41$ (53%)
  - No: $n=37$ (47%)

- **Are reading the info?**
  - Yes: $n=33$ (81%)
  - No: $n=15$ (19%)
Main findings

Influence of exposure level
Occupationally exposed workers are more interested in RP information when they have dose above reporting level

Influence of higher RP education
Workers with higher education in nuclear science are more interested in RP information, the other group behaves quite indifferently
Need for improvement

Overall the RP information is only reaching 33% of the occupationally exposed workers and needs some improvement

- The link to the slideshow has to be made more visible
- A introduction to newcomers is necessary
- The information needs to become available for workers without access to a pc
General conclusions

Motivation and interest of the workers determine the usefulness of the training tool
- independent from the workload
- increases with dose level

Workers are satisfied with monthly update of the dose report

The information is reaching the workers who can be considered as the main target group
Thank you for your attention