ASN operating experience feedback in industrial radiography

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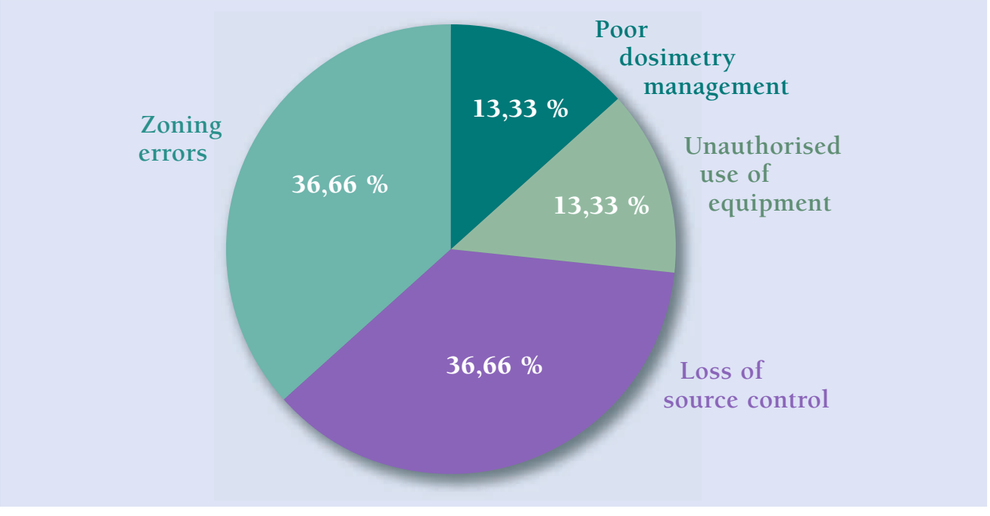
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Some recent incidents with harmful exposures reported to the IAEA have reminded us that industrial radiography constitutes for workers as well as for the public, a major risk which should be prevented and limited. This activity is a priority issue in terms of radiation protection for the French Nuclear Safety Authority (ASN), which performs about one hundred inspections each year focusing on industrial radiography.

Recent incidents reported to ASN

30 incidents reported since 2008 mainly due to:
- Zoning errors: indications, monitoring, knowledge of instructions, etc.
- Loss of source control, most of the time resulting from equipment damages or misuses.
- Shortcomings in dosimetry management.
- Unauthorised use of equipment.

Incident classification



A priority in the ASN inspection programme



ASN has developed specific regulations to guarantee radiation protection for industrial radiography personnel:
- decree No. 85-968 on gamma radiography devices and the French standard NF C 74-100 on X-ray generators,
- order of 2 March 2004 on particular conditions of use regarding gamma radiography,
- French standards NF C 15-164 and NF M 62-102 on facilities.

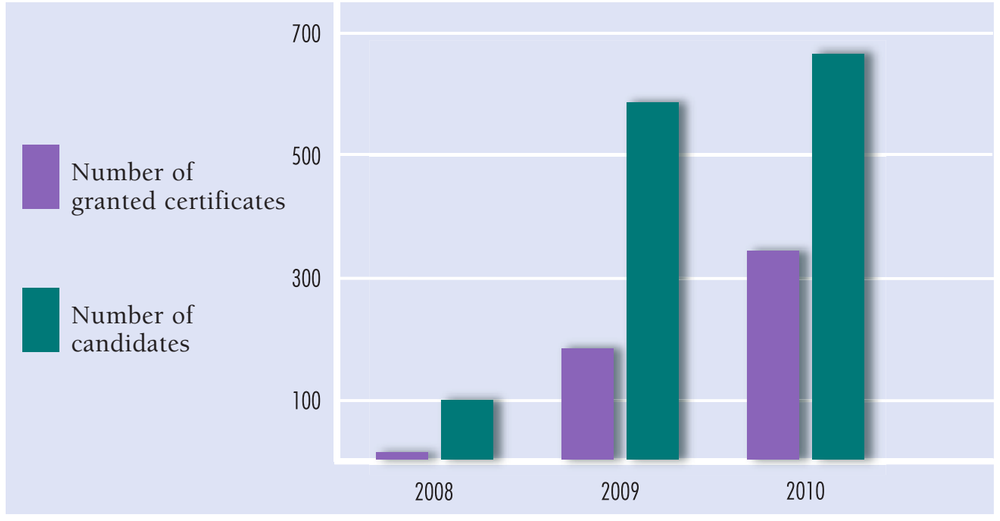
ASN performs every year more than 100 inspections concerning industrial radiography:
- about two-thirds of ASN inspections are unscheduled and carried out on site,
- the 313 licensed radiography centres in France are inspected once every three years,
- in 2012, all of the gamma radiography facilities using 60Co sources will be inspected.

During these inspections, ASN has observed the following good and bad points:
+ properly trained and selected radiation protection officers,
+ correct application of passive dosimetry procedures,
+ satisfactory level of maintenance on gamma radiography devices,
+ radiologists properly trained in radiation protection,
- room for improvement in the radiation protection organisation,
- poor application of the ALARA principle,
- unsatisfactory management of significant events,
- zoning not in compliance with regulations.

Tougher training requirements

The regulations concerning the CAMARI aptitude certificate required to operate industrial radiography devices have been revised in 2008:
- in order to obtain the certificate, candidates must now go through a trial period of at least three months in addition to following a training course and passing written and oral exams,
- there are three specialist options : X-ray generators, gamma radiography devices and particle accelerators,
- the granting of certificates is now centralised by the French public expert in nuclear and radiological risks (IRSN),
- the certificate is valid for 5 years (previously 9 years).

Pass rates are spread from 50% for first-time candidates to 80% for renewals. ASN is involved in the CAMARI certification process and during its inspections ASN ensures that all radiologist have the certificate.

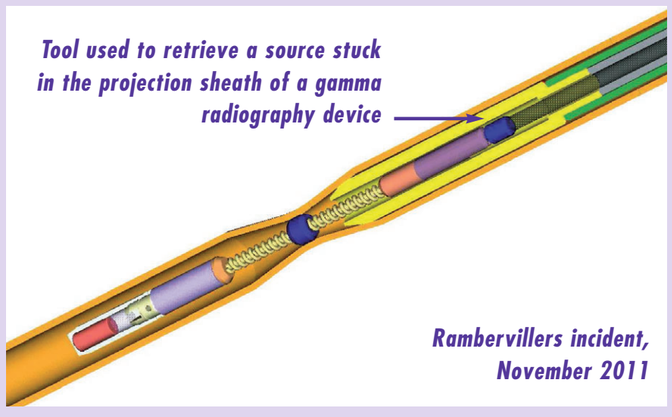


CAMARI aptitude certificate pass rates

Next challenges

Optimising procedures for retrieving stuck sources

One-third of the incidents are caused by stuck radioactive sources. Dealing with these situations requires specially trained response teams and resources that may be significant.



Rambervillers incident, November 2011

ASN is planning to set up a specific regulation in collaboration with the device distributors to ensure that these resources will always be available in both technical and financial terms.

Developing the justification principle

ASN wants to apply the justification principle specifically to gamma radiography in order to promote:
- the use of alternative methods that do not involve ionising radiation or, failing this, the preferential use of X-ray generators or selenium gamma radiography devices;
- the performance of gamma radiography operations in secure bunkers and not on site.

Photo courtesy of ASN, Cegelec.

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