

# **THE R.E.L.I.R. SYSTEM IN FRANCE**

## **A FEED BACK EXPERIENCE LEARNING SYSTEM ON OCCUPATIONAL RADIOLOGICAL INCIDENTS IN FRANCE**

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### **1. CONTEXT**

The French Society of Radiological Protection qualified Expert Group has set up, at the end of 2000, a feedback experience system on occupational radiological incidents, with the collaboration of several institutions such as the Institut National de Recherche et de Sécurité (INRS) and the Institut de Radioprotection et de Sûreté Nucléaire (IRSN ex-OPRI).

Experience from abroad, particularly in the UK, has shown that one of the most efficient way of reducing incidents occurrence and gravity is the use of lessons learned from past incidents during radiological protection training and sensitisation sessions for the workers.

### **2. OBJECTIVES**

The main objectives of the system are:

- **To learn** to avoid new incidents
- **To favour exchanges** between specialists and non specialists of radiological protection
- **To produce pedagogical documents** available for all on a web site.

That system will make use in priority of incidents and accidents occurring outside nuclear installations. The system relies mainly on several networks: qualified experts, occupational physicians, radiological protection training institutions and health physics professionals.

Its aim is not to perform an exhaustive census of all incidents, but to select incidents that are interesting from a training and prevention point of view whatever their actual gravity and consequences. Is considered as an incident, every situation, event, set of events, behaviour, anomaly... able to generate (or having effectively generated) an uncontrolled occupational exposure.

### **3. PRACTICAL ORGANISATION OF R.E.L.I.R.**

Any individual concerned by or witness of an incident (qualified expert, occupational physician, worker,...) may join a moderator in his work sector. That is totally independent from any mandatory declaration to the regulatory body (work accident declaration, declaration to radiological protection regulatory body,...)

A questionnaire, available on the RELIR web site (<http://reilir.cepn.asso.fr/>), is fulfilled with the help of the moderator. The moderator, radiological protection specialist in his domain, analyses and selects the most interesting cases. He prepares a special form, which presents in a totally anonymous way the incident, its potential radiological consequences and the lessons to be learned.

A Validation Committee (with all moderators and some other institutions representatives) verifies then:

- The pedagogical interest of the case
- The quality of the data (it may ask for more details)
- The anonymity of the document that should not allow to go back to any individual, firm or material.

After validation the cases are made available on the web site.

The first phase has allowed to prepare case studies using incidents that have occurred in the recent years and particularly using existing data at IRSN ex OPRI, Curie Institute and firemen brigade.

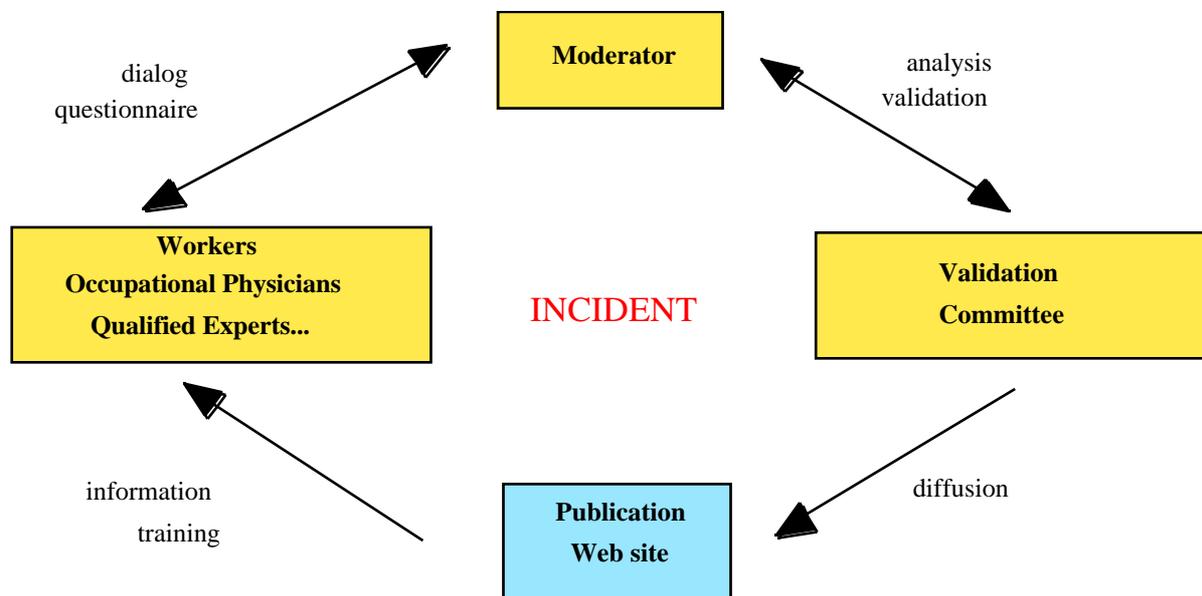
#### 4. CASES PRESENTATION

The first sheets are available on the website. Each sheet (one per case) presents in a pedagogic way, the circumstances of the incident, the results of the moderator analysis validated by the Committee and the radiological consequences. As a conclusion, some recommendations are provided to avoid reoccurrence of similar incidents.

All the sheets are considered as training material usable within any training session to radiological protection. They are, as much as possible, illustrated by technical graphs and pictures to facilitate the understanding of the event. On the website, a glossary is available with the most important technical words' definitions.

#### 5. CONFIDENTIALITY COMMITMENT

Every moderator has signed a chart where he commits himself not to provide to anyone, any not anonymous information as far as individuals, facilities or materials are concerned. He also commits himself to make no use of data he will be aware for commercial advertisement or defamation purpose.



Excerpt from a case :

**Medical and veterinary field**

**Internal Radiotherapy – Loss of an Iridium line**

#### 6. CIRCUMSTANCES

In 1997, in an hospital's Internal Radiotherapy department, at the moment of taking the five Iridium lines back from the patient, somebody realises there's one lost. It is a flexible line of 7 centimetres, its activity is 37 MBq, 1 mCi per centimetre. The line is researched in the patient's bed, and in his room with a radiameter. As nobody finds it, the research is made in the all department, and it is finally detected in a dirty linen bag, just before its departure to the laundry.

The physicist immediately stocks the Iridium line in a container, which is also the radiological safety officer. This container is isolated in a secured place. After this incident, the workers were regularly trained (about every 6 months) and a protocol was diffused to describe the good practices in case of incident, and to inform the workers.

## **7. RADIOLOGICAL CONSEQUENCES:**

Only one person (auxiliary nurse) has been exposed. She was exposed, when she changed the pillow-case on which the Iridium line was fallen. The received dose was evaluated at 35  $\mu\text{Sv}$  for the whole body, supposing that the worker was staying at one meter during about one hour.

## **8. LESSONS TO BE LEARNED FROM THIS INCIDENT:**

1. The radioactive line's fixation technique should be improved. Before, the line was fixed at one extremity, now the double-fixing technique is used;
2. When a patient is treated, the lines must be checked every day.
3. A fixed detector at the exit of the internal radiological zone should have avoided this event.
4. If the worker wears an electronic dosimeter, he would be informed immediately of the presence of the radioactive source in the pillow-case. It is important to report that the worker didn't wear any passive dosimeter.
5. The respect of the obligation to educate the concerned workers (people taking care of the patients) is essential.
6. It is important to avoid a to replace permanent workers by untrained temporary workers.
7. A guideline about incidents must be systematically diffused to the workers. This document takes care of singular situations of each department, and is elaborated by the safety radiation officer.