P-11-207

Activities of the Institute of Radiation Protection and Dosimetry on Radiation Overexposure Analysis – Methodology and Results from 1985 to 1998.

F C A Da Silva and A Ramalho
Instituto de Radioproteção e Dosimetria
Comissão Nacional de Energia Nuclear
Av. Salvador Allende, s/n (RJ 089) - Barra da Tijuca
22780-160 - Rio de Janeiro - RJ - Brasil
e-mail: dasilva@ird.gov.br

INTRODUCTION

Since 1985 the Institute of Radiation Protection and Dosimetry (IRD/CNEN) has operated a service carried out by a multi-disciplinary Group called Radiation Overexposure Analysis Group - GADE. It is composed of specialists in radiation protection and dosimetry and has the main objective of taking coordinated actions on radiation overexposure cases [1,2].

The main objectives of the GADE are:

1) to investigate all radiation overexposure cases recorded by personnel dosimetry;
2) to evaluate the worker dose and, if necessary, to give information for medical actions;
3) to find out the real causes of the event and to emit recommendations to avoid other radiation overexposure cases;
4) to modify or to ratify the exposure recorded on the personnel monitoring register;
5) to publish scientific information about all radiation overexposure cases;
6) to maintain a database of all radiation overexposure cases, which happened in Brazil.

METHODOLOGY OF ANALYSIS

The GADE was set up to investigate all cases where the equivalent dose was equal to or greater than 100 mSv (twice the annual limit adopted by the National Commission of Nuclear Energy - CNEN).

The GADE's activities are started by the National Dose Registry Service (IRD/CNEN). This service receives the dose communication report directly from Laboratories of External Personnel Dosimetry when the equivalent dose is equal to or greater than 100 mSv. This communication is sent to the Service in a period of 24 hours.

The methodology used has the following phases: initial inquiring, to get more information about the case; analysis, which involves some information requests (prepared letters) according to a checklist and, when necessary, investigation in location and reconstruction. The radiation overexposure case is closed after elaboration of a Final Report with Conclusions and Recommendations. This Final Report is sent to the Licensing and Control Authorities (City, State or Federal) and to Institution involved.

For special cases that need health care follow-up, the World Health Organization's Brazilian medical radiation team is contacted.

RESULT

From 1985 to 1998, 380 persons suspected of being overexposed were referred to the Radiation Overexposure Analysis Group for investigation. Of these, 306 persons (81%) were associated with medical uses of radiation and 74 persons (19%) with industrial uses of radiation.

Until 1997, the Cytogenetic Dosimetry Laboratory of the IRD has analyzed blood samples from 104 suspected persons [3]. The cytogenetic test has confirmed doses on 26% in medical uses, 52% in industrial uses and 29% in research uses.

The most important radiation overexposure cases happened in industrial uses of radiation, particularly with gamma radiography sources used for non-destructive testing, where workers had radiological damage on the hands.

CONCLUSION

In spite of the industry area has less cases than medical area, we was noticed that 50% of the persons really received dose. It shows that the risk during the routine procedure, at industry area, is the greatest of all application.

The GADE is now giving specific orientation to industry workers to avoid more overexposure events.

It was observed that the number of overexposed persons are falling down due to implementation of radiation protection recommendations in the installation.

REFERENCES

1. Da Silva, F.C.A.; Mota, H.C.; Nouailhetas, Y.J.O.; Cunha, P.G.; Farina,R. *"Activities of the Institute of Radiation Protection and Dosimetry on Radiation Overexposure Analysis"*, II Congreso Regional de Seguridad Radiológica y Nuclear, Zacatecas, México, 1993.
2. Da Silva, F.C.A.; Ramalho A . *"Activities of the Institute of Radiation Protection and Dosimetry on Radiation Overexposure Analysis – Results from 1994 to 1997."*, IV Congreso de Seguridad Radiológica y Nuclear – Congreso Regional IRPA, Habana, Cuba 1998.
3. Ramalho, A.T; Costa, M.L.P.; Oliveira, M.S.; Da Silva, F.C.A. *"Dosimetria Biológica em Casos de Superexposição Ocupacional a Radiações Ionizantes"*, CGEN, RJ, Brasil, 1998.