

RADIOLOGICAL MONITORING IN INSTITUTO DE PESQUISAS ENERGÉTICAS E NUCLEARES

Sanches M.P., Sahyun A. & Sordi G.M.A.A.
 Instituto de Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP
 Travessa R, 400 - 05508-900 - São Paulo, SP, BRAZIL

[**Introduction**] One external monitoring for air dose measure using $\text{CaSO}_4:\text{Dy}$ thermoluminescent dosimeters put in fixed points was done inside IPEN-CNEN/SP area. This measure was done with the objective to understand the influence of nuclear plants inside of IPEN-CNEN/SP workplace.

[**Materials and Methods**] The adopted method involves the use of TLD's, which measure dose rather than dose rate. TLD's are placed in the field, at the point where the dose is to be measured, for a period of 3 months, and then read out at the same time as reference dosimeters treated similarly in the same general site, but not exposed to radiation. The badge used consist of a small double layer containing three TL discs of $\text{CaSO}_4:\text{Dy}$, inside an outer holder normally used in routine personal dosimetry. In the laboratory it is possible to measure doses as low as $1\mu\text{Gy}$, with an error of approximately $0,2\mu\text{Gy}$, by adoption of these methods. But in field measurements the limit of detection is probably an order of magnitude higher.

[**Results**] This study was carried out to evaluate the radiation level for electromagnetic radiation in different workplaces at IPEN-CNEN/SP. The reference values obtained for background level was $7\mu\text{Gy}\cdot\text{h}^{-1}$. The observed results at the previously established points was up to 8 times the background level. From the results of this evaluation we could get a gross estimation of plant influence and specific influence of some types of sources.

[**Conclusion**] This analysis opens a window to make in a near future, more accurate studies to evaluate the contribution of each installation to cause changes in background doses and what is its contribution to collective dose of IPEN-CNEN/SP population, in plant operators, as well in those people that suffer contributions from each plant operation.

DOSE ASSESSMENT IN THE EVENT OF A NUCLEAR ACCIDENT IN THE IEA-RI RESEARCH REACTOR

Vanusa F. Jacomino; Marcelo F. Maduar; Roberto Frajndlich;
 Eduardo Toyoda; Gian Maria A.A. Sordi

Comissão Nacional de Energia Nuclear
 Instituto de Pesquisas Energéticas e Nucleares
 Caixa Postal 11049 - Pinheiros
 05422-970 São Paulo, SP - Brasil

Individual and collective effective dose equivalents are estimated due to the release of airborne effluents during the occurrence of the design basis and the most probable accident in the IEA-R1 research reactor located at the Instituto de Pesquisas Energéticas e Nucleares-São Paulo, Brasil.

The fission products inventory is simulated using the ORIGIN II code. The source term is determined using the TRIP code, which simulates the transport of radionuclides taking in account the transference of radioactivity between fuel/coolant, coolant/air or fuel/air, retention in the building and removal by the air cleaning and exhaust system. Dose estimations are based on the release scenario described in AEC Regulatory Guide 1.4, environmental transfer models proposed by IAEA-SS-97 and dose factors from ICRP-30.

For the most probable accident, dose and risks are insignificant. The doses predicted for the design basis accident fall well below the threshold level for deterministic health effects. If this accident occurs, the incidence of fatal cancers may reach 0.06 % of the background rate; however, the level of risk is very small since the probability of occurrence of this particular accident ranges from 10^{-4} to 10^{-6} per reactor-year (USNRC, 1975).