

Internal Monitoring of Workers Occupationally Exposed to Radionuclides in the Brazilian Radiological and Nuclear Facilities

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Body of Abstract: In this paper, the radionuclides most frequently requested and usually found in the internal monitoring programme for occupational workers at IPEN/SP/Brazil are described. The measurements of the radionuclides that the workers are potentially exposed have been carried out by bioassay techniques. Monitoring data for internal contamination by in vivo (whole body and thyroid) and in vitro (urine analysis) measurements from 1998 to 2002 are presented. The selection of in vivo or in vitro methods depends on the type of radiation emitted and for practical purpose on the availability of techniques to perform the measurements. The monitoring protocol was developed for the workers of the nuclear fuel cycle and radiopharmaceutical production facilities. A total of 11 radioisotopes were assessed, and the most frequent of them were ^{131}I , ^{99}Mo , ^3H , Th and U that are carried out routinely. Some other radionuclides from cyclotron, research reactor and waste management facilities were also monitored, mainly under real or suspected abnormal condition. In addition, the national regulatory authority requires an internal monitoring for all the workers handling unsealed sources, at least once in a year. These measurements are carried out to verify if satisfactory working conditions are achieved in accordance to the workplace monitoring programme. The data over the years indicates the ^{131}I and the U contribute with more than 70% of total monitoring data. This paper shows a need to improve and optimise the individual monitoring programme according to the presented results and also to extend the programme for others radionuclides foreseen by radiation protection service of IPEN.