

OCCUPATIONAL RADIOPROTECTION

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To reduce the collective dose as well as the individual doses of the workers in nuclear facilities are constant concerns of those in charge of radiation protection (FIG.1). In order to achieve these objectives the following main programs of research and development are in progress:

- ◆ individual monitoring for external and internal irradiation,
- ◆ area monitoring for external radiation,
- ◆ air monitoring,
- ◆ decontamination procedures,
- ◆ optimization and radiation protection engineering.

The purpose of monitoring is to acquire information of the effective dose, the equivalent dose in tissue or organs, and the intake of radionuclides. In practice, however, these quantities cannot be measured directly. They must be determined on the basis of other measured or assessed quantities. In general, one has to rely on the results of area or field monitoring, personal monitoring, or on the measurement of radioactive materials in the body or excreta of the monitored individuals.

Projects for workplace monitoring, air monitoring, contamination survey, are being developed. For the air monitoring program research is still in process to obtain the activity median aerodynamic diameter, AMAD, for the particles present in a thorium processing plant. The evaluation of doses due to internal radiation is rather complex. It is virtually impossible to measure directly the internal doses received by an individual from the intake of radioactive material. A study as contribution to a critical evaluation of the radioprotection by means of retrospective analysis of dose associated with the work with unsealed sources has been carried out. Furthermore, long lived radionuclides measurement by in vitro and in vivo techniques as well as the development of a intake model for internal dose calculation for workers are in progress. The purpose of the projects in optimization area is to evaluate and optimize the dose levels for electromagnetic and/or neutron radiation in different places of nuclear plants, in order to improve safety procedures and to ensure the health physics standards. Radioactive decontamination techniques and methods are being developed for materials handled at the Institute. Appropriate reagents and concentrations are being studied for surface decontamination of small equipment and objects for different radionuclides.



FIGURE 1 - Dose rate control.