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New Trend in Radiation Dosimeters

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Background: A radiation dosimeter is a device that measures exposure to ionizing radiation. It has two main uses: for human radiation protection and for measurement of dose in both medical and industrial processes. The personal ionizing radiation dosimeter is of fundamental importance in the disciplines of radiation dosimetry and radiation health physics and is primarily used to estimate the radiation dose deposited in an individual wearing the device. Workers exposed to radiation, such as radiographers, nuclear power plant workers, doctors using radiotherapy, those in laboratories using radionuclides, and HAZMAT teams (personnel specially trained to handle dangerous goods, which include materials that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic.) are required to wear dosimeters so a record of occupational exposure can be made. Such devices are known as “legal dosimeters” if they have been approved for use in recording personnel dose for regulatory purposes. Dosimeters can be worn to obtain a whole body dose and there are also specialist types that can be worn on the fingers or clipped to headgear, to measure the localized body irradiation for specific activities. The aim of this study is to identify and highlight the new technology in the types of radiation dosimeters. **Method:** The study comprises a personal selection of recent reports from radiology journals and the results of Medline searches which highlighted the new trend in radiation dosimeters. **Results and Conclusion:** Radiation dosimeters and dosimetry systems come in many shapes and forms, and they rely on numerous physical effects for storage and readout of the dosimetric signal. The four most commonly used radiation dosimeters are: Ionization chambers; Radiographic films; Thermoluminescent dosimeter systems (TLDs); Silicon diode dosimetry systems (Diodes). However, there are a variety of electronic personal dosimeters, extremity dosimeters, and comprehensive dosimetry management systems to monitor the exposure to ionizing radiation at any work environment. It can get an effective dose monitoring when and where we need it. Electronic dosimeters protect the wearer from the harmful effects of radiation by tracking changes in exposure and keeping an ongoing record of the user’s dose over time. Combined with access control systems, it is possible to limit total exposure to radiation and control access to radiological areas. Dosimetry readers, Ensure accurate radiation exposure monitoring. Manual and automated systems for whole body, extremity, neutron, and environmental monitoring are easy to operate, service, and maintain. Extremity dosimeter is a disk dosimeter designed for nuclear power or nuclear medicine personnel that have a high risk of exposure to ionizing radiation, particularly on their hands, due to their work in close proximity to radiation materials and radiation producing equipment.

Keywords: Radiation dosimeter, Electronic dosimeters, Extremity dosimeter.

Country/Organization invited to participate

Egypt

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