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THE PROPER CALIBRATION AND USE OF POCKET IONIZATION CHAMBER IN PERSONNEL RADIATION MONITORING

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The pocket ionization chambers (PICs) are used widely in the nuclear facilities for instantaneous assessment of occupational radiation exposure. The PIC has often been criticized for its lack of precision and accuracy and its tendency to produce false readings. The direct-reading PICs and other dosimeters have numerous characteristics which influence the dosimetric response in a radiation environment. In this study, the dosimetric characteristics of several types of PICs have been studied at the secondary standard dosimetry laboratory (SSDL) at the Atomic Energy Research Establishment (AERE), Savar, Dhaka. The secondary standard radiation sources used for this study are: Ra-226, Cs-137, C0-60 and Am-241. The secondary standard ionization chambers were used to measure the dose rate at different points of interest from the sources. The results of this investigation are presented and the implications on proper exposure assessment under hot and humid climatic conditions are discussed. Data are presented to support the statement that direct-reading PICs, when properly used, are precise and accurate instruments.