

Design and Development of Hand and Foot Contamination Monitor

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20436211&lokasi=lokal>

Abstrak

A hand and foot contamination monitor is a health physics instrument to provide detection and measurement of beta-gamma contamination on the palm of each hand and on the bottom surface of both feet/shoes. There are four channels of detection for two hands and two feet. Four G-M detectors have been used in a single unit to cover the whole area of hand and feet. A regulated high voltage DC power supply (900 V) has been designed using the PIC12F675 microcontroller to operate the pancake Geiger-Müller detectors. The reading is displayed on a linearly scaled 0-100 Bq/cm² analog panel meter. The monitor detects beta-gamma radiation emitted by radioactive materials, and if the detected value exceeds a preset level, the monitor sounds an alarm and displays a reading in the respective panel meter. Indicator lamps are used to show the status of contamination. The performance of the system has been tested by using pulse generator and by flat surface radioactive calibration sources. Electronic linearity, detection efficiency, response to the contamination, calibration factor and percentage of error has been measured. Test results were satisfactory and the present system can be used instead of similar imported instruments