



Supplementary Document for the Calibration of Radiation Monitoring Instruments

In the Philippines, radiation monitoring instruments (survey meters, personal dosimeters, EPD) are expressed in various units. Some instruments are in terms of Sievert (**Sv**) while others are expressed in units of Roentgen (**R**). The Sievert is the SI unit for equivalent dose which is related to the biological effects of ionizing radiation. Radiation safety limits are expressed in this quantity. The Roentgen on the other hand is a unit for exposure, which is the amount of ionization produced in air due to interaction of ionizing radiation with air.

As per international standards, radiation monitoring instruments should be expressed in the appropriate units. The recommended operational quantity for workplace or area monitoring is *ambient dose equivalent* $H^*(10)$ while the quantity for individual/personnel monitoring is *personal dose equivalent* $H_p(10)$.

Monitoring instruments that are in units of exposure (R) should therefore be converted to the appropriate quantity. This is to help enable the user to relate the results of measurements to the level of radiation hazards in the facility at the same time compare radiation levels to the relevant regulatory limits.

Converting mR to μ Sv

Use the *conversion coefficient* (**CC**) to convert mR to μ Sv. The **CC** is indicated in the calibration certificate. That is,

For survey meters or doserate meters

$$\text{True reading, } H^*(10) \text{ (in } \mu\text{Sv/hr)} = \text{Instrument Reading (mR/hr)} \times \text{CC (}\mu\text{Sv /mR)}$$

For personal dosimeters

$$\text{True reading } H_p(10) \text{ (in } \mu\text{Sv)} = \text{Dosimeter Reading (mR)} \times \text{CC (}\mu\text{Sv /mR)}$$

If the instrument reading is already in terms of SI Units, i.e. **Sv (Sievert)**, use the *calibration factor* (**CF**) that is indicated in the certificate. That is,

For survey meters or doserate meters

$$\text{True reading } H^*(10) \text{ (in } \mu\text{Sv/hr)} = \text{Instrument Reading (}\mu\text{Sv /hr)} \times \text{CF}$$

For personal dosimeters

$$\text{True reading } H_p(10) \text{ (in } \mu\text{Sv)} = \text{Dosimeter Reading (}\mu\text{Sv)} \times \text{CF}$$