

Portable Stand for Calibration of Tritium Gas Monitors

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Usually, the radioactive concentration in air is monitored using tritium gas monitors (MTG) provided with ionization chambers. The calibration of ionization chambers can be performed using tritium gas (T2 or HT) or tritiated water (HTO) as contamination agent. Calibration rigs using tritiated water were designed. In the study two calibration methods were analyzed by recycling of controlled contaminated air from ionization chamber. Two alternatives are proposed for the monitoring process of airborne contamination with HTO in the operating area:

-air contamination with saturated vapors of tritiated water bubbling the recycled air in a sealed system through tritiated water with certified radioactive concentration;

-removal of water vapors by desiccation and controlled evaporation air flow of a known quantity of certified tritiated water into a sealed space with controlled volume

Tritiated water standards were prepared using a mixture of high purity water (< 18 μ S conductivity) and double distilled HTO of 45.9 GBq/g in quartz vials. The radioactivity of HTO standards was measured at Liquid Scintillation Counting TRICARB TR 2800 PE and certified by Triple to Double Channel Ratio (TDCR) method. The HTO radioactive concentration used in experiment was in range of 1 kBq/g and 8.7 MBq/g.