KINECTRICS

Tritium Oxide Testing Chamber

Our test chamber offers a controlled environment for evaluating equipment performance under tritiated conditions, ideal for research, safety validation, and product development.

- Self-contained polycarbonate chamber (1 m x 1 m x 2 m) designed for great flexibility in testing of equipment of various sizes in a radioactive (tritiated) environment.
- Numerous applications for test chamber ranging from testing of respiratory protective equipment, testing of elastomeric seals, equipment light tightness to tritium oxide, etc.
- Tritiated atmosphere conditions are produced by vaporization of tritiated water inside the chamber.
- Concentrations up to 370 MBq/m3 (10,000 µCi/m3) are achievable, and test-specific relative humidity conditions may be generated from 30% to 90%.
- Stability of tritium concentration, temperature, and humidity may be maintained for durations of many hours. Chamber conditions continuously monitored and recorded through a modern data acquisition system.
- 120V electrical connections and a compressed air supply are available inside the chamber.
- Additional ports available for specialized instrumentation to be fitted inside the chamber.

Let's work together!
Scan the QR code to learn more about our Tritium solutions.

KINECTRICS

Testing of Personal Protective Equipment

Use in a Tritium Oxide Environment

Many types of personal protective equipment (PPE) are used in nuclear facilities and power plants for radiological respiratory protection in tritiated atmospheres. These range from simple respirators worn on the face to air-supplied full-body plastic suits with hood.

It is important to know the level of protection these various forms of PPE provide. A Protection Factor (PF) may be defined as the ratio of ambient tritium concentration to the tritium concentration in the breathing air.

The Kinectrics' Tritium Oxide testing chamber may be used to determine protection factors of all types of PPE against tritium in air.

The test chamber can be used with a test mannequin outfitted with PPE and connected to a breathing circuit: designed to simulate human breathing conditions (square wave, continuous flow).

Breathing rates of up to two cubic meters per hour may be simulated (representative of heavy work).

Air supply into the chamber provides clean air for air-supplied PPE up to 840 litres per minute (30 cubic feet per minute).

In-line monitors connected to the breathing circuit provide mannequin breathing air tritium concentration in real time, while an isotopic exchange bubbler system provides confirmatory time-integrated concentrations with high sensitivity.

Outside the PPE, chamber air tritium concentration is measured by a tritium-in-air monitor and confirmed through silica gel absorbent. Measured concentrations in both the breathing air and external to the PPE allows for determination of the associated Protection Factor.