



Tritium ³H

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WORKING SAFELY WITH TRITIUM ³H

Radioactive half-life T _{1/2}	12.4 years
Principal emission	18.6 keV beta (maximum)
Monitoring for contamination	Swabs counted by liquid scintillation
Biological Monitoring	Urine samples
Annual Limit on Intake (ALI) ingestion or inhalation	3 x 10 ⁹ Bq (~80mCi) ** (tritiated water)
Maximum range in air	6mm
Maximum range in water	6 x 10 ⁻³ mm
Shielding required	None

Special Considerations

Tritium, because of its low beta-energy, cannot be monitored directly and therefore especial care is needed to keep the working environment clean and tidy. Regular monitoring by counting swabs is advisable in areas where this nuclide is used. Tritium can be absorbed through the skin. Appropriate gloves should be worn. External contamination, although not causing a radiation dose itself, should be kept as low as possible as it can lead to internal and hence hazardous contamination; it can also interfere in experimental results. DNA precursors eg tritiated thymidine are regarded as more toxic than tritiated water partly because activity is concentrated into cell nuclei. This is reflected by lower ALIs for the material in this form. (refer to ICRP 30).

** Based on occupational effective dose equivalent limit of 50 mSv for stochastic risks

The Annual Limit on Intake (ALI) data are based on the recommendations of the International Commission on Radiological Protection (ICRP) Publication 30 but may change should the ICRP Publication 60 recommendations be adopted by your national regulatory authority.

The data provided is general information which gives a basic understanding of radiation safety. You must however consult your local radiation protection adviser to ensure that you comply with all national regulations and local rules.