^3H	Nuclide Safety Data Sheet Hydrogen-3 [Tritium] **www.nchps.org**	^3H

I. PHYSICAL DATA

Radiation:	Beta (100% abundance)	
Energy:	Max.: 18.6 keV; Average: 5.7 keV	
Half-Life [$T_{½}$] :	Physical $T_{½}$:	12.3 years
	Biological $T_{½}$:	10 - 12 days
	Effective $T_{½}$:	10 - 12 days*

* Large liquid intake (3-4 liters/day) reduces effective $T_{½}$ by a factor of 2+; ^3H is easily flushed from the body

Specific Activity:	9650 Ci/g [357 TBq/g] max.	
Beta Range:	Air:	6 mm [0.6 cm; 0.25 inches]
	Water:	0.006 mm [0.0006 cm; 3/10,000 inches]
	Solids/Tissue:	insignificant [No ^3H betas pass through the dead layer of skin]

II. RADIOLOGICAL DATA

Radiotoxicity[1]:	Least radiotoxic of all nuclides; CEDE, ingestion or inhalation:	
	Tritiated water:	1.73E-11 Sv/Bq (0.064 mrem/uCi) of ^3H intake
	Organic Compounds:	4.2E-11 Sv/Bq (0.16 mrem/uCi) of ^3H intake
Critical Organ:	Body water or tissue	
Exposure Routes:	ingestion, inhalation, puncture, wound, skin contamination absorption	
Radiological Hazard:	External Exposure - None from weak ^3H beta	

IV. DOSIMETRY MONITORING

Urine bioassay is the only readily available method to assess intake [for tritium, no intake = no dose] Be sure to provide a urine sample to Radiation Safety whenever your monthly ^3H use exceeds 100 mCi, or after any accident/incident in which an intake is suspected

V. DETECTION & MEASUREMENT

Liquid Scintillation Counting is the only readily available method for detecting ^3H
NOTE: PORTABLE SURVEY METERS WILL NOT DETECT LABORATORY QUANTITIES OF ^3H

VI. SPECIAL PRECAUTIONS

^3H_2O, they are generally less volatile and hence do not normally present a greater hazard

- The inability of direct-reading instruments to detect tritium and the slight permeability of most material to [tritiated] water & hydrogen [tritium] facilitates undetected spread of contamination. Use extreme care in handling and storage [e.g. sealed double or multiple containment] to avoid contamination, especially with high specific activity compounds.

[1] Federal Guidance Report No. 11 [Oak Ridge, TN; Oak Ridge National Laboratory, 1988], p. 122, 156; Radionuclide and Radiation Protection Data Handbook [Delacroix, et al; Radiation Protection Dosimetry, Kent, England: Nuclear Technology Publishing 1998], p. 19.

VII. GENERAL PRECAUTIONS