



Tritium Information and Safety Sheet

H-3 is an internal hazard to the body. External hazards are negligible due to the inability of the weak beta to penetrate the dead layer of skin. Common internal routes of entry are inhalation, ingestion, skin absorption, and puncture wounds to the skin.

³H Information

Beta (max): 0.018 MeV

Beta (avg): 0.005 MeV

Maximum beta range in air: 0.1 inches

Half-life: 12.4 years

Biological half-life (whole body): 10 days

The main hazard with tritium is the threat of contamination. It can only be detected by liquid scintillation counting (or more sophisticated detectors) which make it difficult to find in performing a survey. It is also highly mobile as it behaves like water (it can easily evaporate to become airborne)

SHIELDING:

Shielding is not needed as it is not an external hazard. However, it should be contained in glass to lower the chance of diffusing through the container



DETECTORS:

A Geiger-Mueller (GM) detector will **NOT** detect tritium. Liquid scintillation counters will detect H-3 at 30-60% efficiency.



SAFE HANDLING:

All personnel using radioactive materials must be trained by Radiation Safety. By following the principles of ALARA and donning appropriate personal protective equipment (PPE) the hazards of using H-3 can be greatly minimized. Closedown surveys are extremely important when using H-3 as the contamination can spread quickly. Use swipes and count them on a liquid scintillation counter.

When using H-3 be sure to use:

Lab coat Double Gloves Liquid Scintillation Counter



Good work habits include clean work stations, working on bench paper or spill trays, labeling all equipment that is (or could be) contaminated, keeping licensed material secure, clear and up-to-date inventories, and no hand-to-mouth activity such as eating, drinking, or mouth pipetting.

In case of spills call 978-934-3373 or 978-934-3372

In case of emergency call 978-934-4911 (x4-4911 on campus)