

Monthly Safety Reminder

Keeping the radioactive genie in the bottle can be a challenge!

AIRBORNE RELEASE ALERT...

Releases of airborne radioactivity by volatilization/evaporation can lead to significant uptakes by workers.

Stock bottles containing volatile, radioactive products are generally sealed by radiopharmaceutical suppliers with a rubber septum. The septum is sometimes mistaken as a sterility barrier and discarded, when in fact it is a critical component in sealing in the nuclear substance, thereby preventing airborne releases into occupied work spaces.

Radioactive products in this category are:

- I-125 and I-131, these are normally volatile when unbound.
- any other isotope prepared in volatile solvent compounds.

Over the last few years releases have occurred involving:

1. I-125 from a poorly closed stock bottle.
2. H-3 in a volatile solvent compound in a poorly closed stock bottle.
3. S-35 methionine released from petri dishes during incubation. These are difficult to control since petri dishes cannot be sealed. In such cases a method of trapping the S-35 on charcoal, or exhausting it away from occupied spaces must be used. Consult HP for advice.

Fortunately, none of these events resulted in significant uptakes by workers.

Recommendations:

- ▲ Whenever possible, leave the septum seal intact, and use a syringe to extract aliquots through the septum.
- ▲ If a pipette is used to extract aliquots and the septum is removed it is very difficult to re-secure the same septum, ie: they usually don't align properly with the top of the bottle.
- ▲ You would need a special crimping tool and metal collars to reattach the septum securely.
- ▲ Check the cap. Some radiopharmaceutical firms install a secondary septum on the underside of the cap, and this will seal against the inner vial, or top of the bottle once the septum is removed and the cap is screwed down tightly.
- ▲ If the original container cannot be resealed then it should be transferred to a sealable secondary container like a larger screw cap tube or can.
- ▲ Even empty containers are not completely empty, and residual radioactivity can escape from an discarded open stock bottle. Close these securely.
- ▲ This category of radioactive product should be stored in a fume hood whenever possible.