

RADIATION SAFETY NEWSLETTER

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RSO Column - Bob Wilson

The U. S. Nuclear Regulatory Commission has published a report on three recent incidents resulting in offsite contamination. In two of the incidents, a graduate student was working with P-32 on the weekend. In the first P-32 incident, the student unknowingly contaminated the floor of the lab and spread the contamination throughout the building and everywhere he went that day. In the second incident, the student unknowingly contaminated himself. Contamination was spread in his car, at his church and at several residences. If the students in both incidents had conducted a standard radiation survey of the area, which is required of all labs at UK, and checked themselves upon leaving, the contamination spread would have been prevented. In the third incident, a researcher who was himself contaminated spread C-14. He was looking for materials in a freezer and unknowingly handled the C-14 because it was not properly labeled. This could have been avoided if the freezer and the radioactive material were properly labeled.

When doing your lab surveys, include some floor wipes and the lab entrance threshold areas. Following any spill of radioactive materials, no matter how small the quantity, confirm by survey that the contamination was confined and not spread to areas outside the lab. Even minor spills can result in wide spread contamination if they are not handled properly. Please feel free to call Radiation Safety at

any time for assistance in monitoring and cleanup techniques.

Beta Shielding: Some Alternatives

it is easy to fabricate into an assortment of geometries, it is transparent and fairly inexpensive and it is readily available. Still, there are excellent, low-cost alternatives.

Some things to consider: A good beta shield should be of low weight material. This reduces the production of Bremsstrahlung x-rays, which are more penetrating. On the more practical side, this is not a big concern when only a few millicuries are involved. Aluminum sheets are very good for beta shielding. A typical Plexiglas box for waste storage can run from \$350-500; centrifuge tube boxes and work shields are around \$100 to \$130 or more. Rarely is such expense necessary in order to provide adequate shielding. Solid wood panels, plywood and aluminum, can all be readily fabricated into shielding devices at a fraction of the cost of commercially marketed products. By this approach, the shielding business can remain "in the family", utilizing the capabilities of UK shops or local craftsmen to produce items tailor-made to individual specifications. So there's no reason why a work shield or waste shield can't be beautiful, functional and cost-effective.

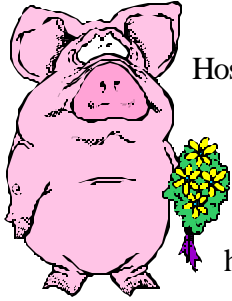
Of course, with its reduced density (from 1/2 to 1/3 that of acrylics) a greater thickness of wood

is required to absorb the high end of the P-32 spectrum. But in terms of the total percentage reduction in dose rate, wood offers an excellent shielding alternative. At any rate, the ultimate judge of attenuation efficacy will be a GM meter test survey using samples of shielding materials under typical work conditions. In the final analysis, innovative attitudes toward beta shielding can offer ecologically reasonable opportunities to cut exposure, cut costs and be esthetically pleasing.

What You Always Wanted To Know About Food – Jerry Schlenker, Senior HP

Food contributes an average of 20 mrem/year to our natural background radiation dose, mostly from potassium-40, carbon-14, tritium, radium-226 and thorium-232. Typical total activity levels of the above radionuclides in the following food items (pCi= 10^{-6} uCi):

Beer	390 pCi/liter
Tap water	20 pCi/liter
Milk	1,400 pCi/liter
Salad oil	4,900 pCi/liter
Whiskey	1,200 pCi/liter
Brazil nuts	14 pCi/g
Bananas	3 pCi/g
Flour	0.14 pCi/g
Peanuts & peanut butter	0.12 pCi/g
Tea	0.40 pCi/g



Trivia Time

The answer to the September Hospital Staff Trivia Teaser is: Female doctor. Try this one:

Ham Yesterday, Pork Today

When Adrian, Buford, and Carter eat out, each orders either ham or pork.

1. If Adrian orders ham, Buford orders pork.
2. Either Adrian or Carter orders ham, but not both.
3. Buford and Carter do not both order pork.

Who could have ordered ham yesterday, pork today?

FAQs (From Tracy):

When is P-32 made fresh? Answer: P-32 is made fresh on Thursday for Friday delivery from NEN and ICN.

If I place an order today when will it arrive? Answer: Orders received by 11:30 A.M. will be placed that day and most will be received on the next business day (Beware of winter and hurricane seasons!)

NOTE: Orders for radioactive material should be placed Dec. 21 for delivery on the 22nd, which is the last regular work day until after the holidays.

Radionuclide Cost –Saving Possibility:

In a recent roundtable discussion meeting of southern university safety directors, two universities described achieving truly significant savings in the cost of radioactive materials for research. They sought sole vendor bids for all their radionuclides. There were some reservations at first, but the large cost savings caused this approach to become very popular. Of course, there will always be some specialty items and other exceptions, etc. that must be purchased from specific sources.

Please contact the Radiation safety Office with your response to this approach. The benefits could be great



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