

From: Elizabeth Ullrich
Sent: Thursday, February 05, 2009 1:55 PM
To: Ruth Bergin
Cc: James Dwyer; Todd Jackson; Thomas Thompson
Subject: RE: work sheets requested attached

thank you. The forms came through fine.

With regard to the other follow-up issues:

1. Assessment of annual dose to workers from uptake of I-125

www.nrc.gov/about-nrc/regulatory/research/radiological-toolbox.html
The web site at the link above is to the NRC's Radiological Toolbox, which contains one method of assessing chronic dose from I-125. According to my co-worker who does most of the internal dosimetry reviews for major inspections, you can look up the dose coefficient for inhalation of I-125 in soluble form (assuming that's the form in which it is inhaled, which is likely at your facility), and that will be in units of, for example, mrem/pCi. You can choose other units if you prefer. For example, for an acute inhalation of 1 pCi I-125 in one day you use the dose coefficient to calculate the dose. However, you can calculate the dose resulting from a chronic intake at that level for a year by multiplying the acute intake dose by 365. The assumption here is that you get the same dose whether you inhale the iodine all at once or spread out inhalation of the same total activity over a year. This is usually a pretty good assumption. According to my co-worker, another approach would be to use an internal dosimetry code, such as IMBA, which allows you to calculate the dose from chronic intakes directly. I am not familiar with IMBA and I am sure there are also other computer codes that could be used.

HOWEVER, like all computer codes, the output will only be as good as the input. In this case, the input is the measurement of the uptake. The tricky issue for you is that you would have to determine the person's new uptake each week, because some of the counts that are detected will be from the previous week's uptake. It would be very conservative to assume, as Rick suggested, that each week is a totally new uptake, and add up the dose from each week's results. If that does not exceed any ALARA level or NRC limit, then no further evaluation may be necessary.

I still need an assessment for workers with the highest uptakes for this year; if those are okay you may not have to assess everyone.

2. Evaluation of the I-125 in effluent air; MDA (or LLC) of the analytical instrument

I have not yet had a chance to find the equation I was looking for; I will get back to you when I do. Having the forms will allow me to do that calculation, however.

3. Inventory of Cobalt-60; Cs-137

A. I need a determination of the amount of Co-60 you actually have on hand at your facility. The determination should detail how much Co-60 is in every area where it is stored, and its form (probably all as contaminant in the seed casing) and use (which is product, and which is waste). If the amount of Co-60 is based on an analysis, I want to see that analysis and how it is used to determine the Co-60 value in the seeds.

B. I need to know what quantity of Cs-137 is in the pig in the waste area, and the form(s) and number of items and activity of the items if possible. If you cannot find the documentation of the material in the pig labeled "Cs-137 seeds", please let me know. Given the radiation levels measured with them in the pig, it should only be opened if absolutely necessary and under carefully controlled conditions. It is curious, though, because I have not yet found inspectors who have come across Cs-137 used as seeds.

4. Assessing total dose to workers

Please let me know whether the total dose assigned to that one worker did or did not include the dose to the dosimetry that was documented as a 'visitor' badge. I will need to see the dosimetry results for each wear period that the individual wore his/her assigned dosimeter and the visitor dosimeter, and the dosimetry results showing the combined doses assigned to the individual if that was done. If it was done, please also show me the documentation that informed the dosimetry vendor that the doses should be combined

It may be that it would be easier for me to visit the Best facility on another day to close these issues, after you have had some time to resolve them. If we can do it by telephone conversation and email or fax, that is also acceptable.

thanks,
Betsy

-----Original Message-----

From: Ruth Bergin [mailto:rbergin@teambest.com]
Sent: Thursday, February 05, 2009 10:51 AM
To: Elizabeth Ullrich
Subject: work sheets requested attached

Dear Betsy Ullrich,

As a follow up to your visit, I have attached the one Iodine and one Palladium work sheet you requested. Please feel free to let me know if you need anything else.

Thank you, Ruth Bergin

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Subject: RE: work sheets requested attached
Sent Date: 2/5/2009 1:20:08 PM
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From: Elizabeth Ullrich

Created By: Elizabeth.Ullrich@nrc.gov

Recipients:
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MESSAGE	9422	2/5/2009

Options

Expiration Date:

Priority: olImportanceNormal

ReplyRequested: False

Return Notification: False

Sensitivity: olNormal

Recipients received: