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AN ACCURATE AND INEXPENSIVE GAMMA CAMERA-BASED SYSTEM FOR WIPE TESTING

To the Editor: I read the article, "An Accurate and Inexpensive Gamma Camera-Based System for Wipe Testing," by Curtis B. Caldwell (*J Nucl Med Technol* 1997;25:201–204) with a great deal of interest. I like the concept of using a damaged collimator that is stashed away in an out-of-the-way corner to count wipe tests and save the technologist time when time is at a premium. However, there may be an error in the methodology.

I could not discern from the article if wipe efficiency (i.e., the ratio of radioactive atoms on a contaminated surface that are physically transferred to the wipe) was taken into account. If wipe efficiency was not taken into account and one assumes the conventional ratio of 0.1, then the reported MDAs are underestimated by a factor of 10 and the cited regulations are not met. If the error is real (and I am not certain that it is), I also wonder if this is a widespread error in methodology within the nuclear medicine community. Apparently the error was not caught during the review process. I would not like anyone to be cited for a violation of the regulations when the concept of using a damaged collimator for wipe testing is really quite excellent.

Dave Horn, CNMT
Powhatan, Virginia

Reply: Dave Horn raises an important point regarding the need to incorporate a wipe efficiency or collection factor into the calculation of removable activity. This factor was not taken into account in my paper (*1*). I did not make it clear that I was calculating minimum detectable activity (MDA) *on the wipe*, to which one must apply the collection factor to derive an estimate of removable activity. Note that one must be aware of the vagaries of local regulations in this matter. For example, when reporting leak tests of sealed sources in Canada, one need not take into account a collection factor. In my experience in Canada, the federal regulatory body has not enforced the use of a collection factor for contamination monitoring in nuclear medicine (despite the fact that Canadian regulations require the use of a collection factor). If the collection factor has not been determined experimentally, it should be assumed to be 0.1, as noted by Mr. Horn. Note that there have been few publications regarding collection factors for nuclear medicine radiopharmaceuticals (*2*).

If the collection factor must be assumed to be 0.1, then it would be necessary to modify the acquisition time used to ensure that less than 50 Bq per 100 cm^2 of removable contamination was present (i.e., 5 Bq on the wipe). In order to obtain an MDA less than 5 Bq (on the wipe) in a reasonable counting time, it would be necessary to perform the testing when the background count is low (i.e., after normal working hours). For our set-up, a 10-min acquisition time in "after hours" background conditions is sufficient to reduce the MDA to below 5 Bq (on the wipe) for all radioisotopes tested. In our department a much longer acquisition time would be required during normal working hours due to the higher background count rate.

I certainly agree with Mr. Horn that I would not wish anyone to be cited for a violation of regulations due to unclear writing on my part.

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