LETTER TO THE EDITOR

We would like to correct what we believe is an error in an article which appeared in the *Journal of Nuclear Medicine*. McAfee, *et al.*, in their paper entitled "Technetium-99m Pertechnetate for Brain Scanning" in the issue of November 1964, page 811, indicated that the dose of technetium-99 resulting from administration of 10 mC of technetium-99 amounts to 0.5 μC technetium-99. We believe this amount is an overestimate by a factor of almost 10^4. The following calculation is made to obtain a reasonable upper limit of the technetium-99 activity resulting from the use of 10 mC of technetium-99.

Assume a generator at the supplier's laboratory contains 100 mC of molybdenum-99, with no technetium-99 or technetium-99m. Some 24 hours later, the generator is at the hospital ready for use. At that time, the molybdenum-99 will have decayed to approximately 78 millicuries. Thus, the decay products resulting from the 22 mC of molybdenum-99 destroyed correspond to a potential technetium-99 activity that does not exceed:

$$22 \text{ mC} \times \frac{\lambda Tc^{99}}{\lambda Mo^{99}} \tag{1}$$

There will be approximately 78 mC of technetium-99m in equilibrium with the molybdenum-99. Of this quantity, only 10 mC of technetium-99m or 12.8% is desired. Therefore, only 12.8% of the quantity in expression (1) is given to the patient. Thus, the activity of technetium-99 in the patient will not exceed:

$$22 \text{ mC} \times \frac{\lambda Tc^{99}}{\lambda Mo^{99}} \times 0.128 \tag{2}$$

Since the ratio of the decay constants is 3.6×10^{-8}, expression (2) becomes:

$$1.0 \times 10^{-4} \ \mu C$$

It is interesting to compute the ultimate technetium-99 activity that results from the complete decay of 100 mC of molybdenum-99, since this clearly represents an absolute upper limit for this generator.

$$100 \text{ mC} \times \frac{\lambda Tc^{99}}{\lambda Mo^{99}} = 3.6 \times 10^{-3} \ \mu C.$$

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