REFERENCE

1. TURNER DA, FORDHAM EW, AMJAD A, et al: Motion corrected hepatic scintigraphy: Objective clinical evaluation. *J Nucl Med* 19: 142–148, 1978

New Mo-99 Nuclear Decay Data

On behalf of seven contributing members of the Atomic Industrial Forum (AIF), the National Bureau of Standards (NBS) has been supervising and administering a research associate program. The program's goal is to establish a consistent system of radioactivity measurements for the radiopharmaceutical industry, a measurement base that is traceable to the national radioactivity measurement system. In May of 1977, as a result of the joint AIF-NBS standards program, a revised Mo-99 decay scheme was issued by the nuclear data group of ORNL as part of the ENSDF* program.

The member companies have completed two blind round robins utilizing this revised decay data and on or about September 1977 the member companies changed to this revised scheme for evaluation of the Mo-99 that they dispense. This change, depending on what decay data was previously used, could have resulted in radioactivity measurement differences of 2–14% from previous amounts.

The contributing member companies have accepted this change in the nuclear decay data for Mo-99 which will be employed in the calibration of their products. This could be a major change and affect Mo-99–Tc-99m Generators.

The values adopted by the Nuclear Data Project, and hence by the contributing member companies, are shown in Table 1. The member companies have notified their customers if this change did affect their products. If the use of the products affected require further clarification, it is recommended that the supplying company be contacted directly.

HAROLD W. NASS
Chairman
AIF Standards Committee
Union Carbide Corporation
Tuxedo, New York

FOOTNOTE

* Evaluated Nuclear Structure Data File.

TABLE 1.

99MO B- DECAY (66.0 H 2) + 99TC IT DECAY (6.02 H 3)
EQUILIBRIUM SOURCE I (MIN) = 0.10%

Radiation type	Energy (keV)	Intensity (%)	Δ (g-rad/μCi-h)
ce-M- 2	1.630 5	83.64 15	0.0029
ce-NOP- 2	2.106 5	11.73 19	0.0005
Auger-L	2.17	15.4 10	0.0007
Auger-K	15.5	3.1 5	0.0010
ce-K- 3	19.543 15	3.77 7	0.0016
ce-L- 3	37.544 15	0.457 16	0.0004
ce-MNO- 3	40.043 15	0.110 6	~0
ce-K- 5	119.422 15	9.0 4	0.0229
ce-K- 8	121.63 3	0.67 4	0.0017
ce-L- 5	137.423 15	1.02 4	0.0030
ce-L- 8	139.63 3	0.207 13	0.0006
ce-M- 5	139.922 15	0.191 10	0.0006
ce-K- 11	160.013 15	0.764 25	0.0026
ce-L- 11	178.014 15	0.114 4	0.0004
β- 1 max	214.9 10		
avg	59.9 3	0.111 3	0.0001
β- 2 max	352.7 10		
avg	104.3 4	0.134 4	0.0003
β- 3 max	436.1 10		
avg	133.0 4	16.55 7	0.0469
β- 4 max	847.6 10		
avg	289.6 4	1.17 3	0.0072
β- 5 max	1214.1 10		
avg	442.7 5	81.96 18	0.773
total β- avg	388.7 6	99.94 20	0.827
2 weak β's omitted (Σ Iβ = 0.01%)			
X-ray L	2.42	0.73 25	~0
X-ray Kα2	18.2508 8	3.17 17	0.0012
X-ray Kα1	18.3671 8	6.1 3	0.0024
X-ray Kβ	20.6	1.82 10	0.0008
γ 3	40.587 15	1.15 4	0.0010
γ 5	140.466 15	90.6 3	0.271
γ 11	181.057 15	6.06 8	0.0234
γ 14	366.421 15	1.193 24	0.0093
γ 28	739.500 15	12.194 17	0.192
γ 30	777.921 20	4.32 7	0.0715
γ 31	822.972 15	0.133 4	0.0023
27 weak γ's omitted (Σ Iγ = 0.29%)			

A Simple Method to Assay Phosphorus-32 for Radiotherapy Applications

Occasionally phosphorus-32 as sodium phosphate or colloidal chromic phosphate has been used to treat patients with polycythemia vera, leukemias, and malignant effusions. In addition, P-32 has also been used diagnostically for the detection of intraocular tumors.

Since P-32 does not emit gamma rays and thus can't be readily assayed in a dose calibrator, physicians have had to rely predominantly on the supplier's assay for accuracy. In some cases aliquots of the P-32 have been counted in a liquid scintillation system to obtain an estimate of activity. If millicurie quantities of P-32 are available, the bremsstrahlung radiation is adequate for assay in a dose calibrator. On our instrument* the chromium-51 setting gave the highest reading for P-32. With the chromium-51 setting, we have determined for one supplier a multiplication factor of 7.1 ± 0.2 to assay the quantity of P-32 by the dose calibrator.

We propose the following as a method to assay P-32 by dose calibrator.

1. Obtain the assay of the initial shipment of P-32 from the supplier.
2. Determine the setting on your dose calibrator that will yield the highest activity of P-32 from the supplier.
3. Determine factor(s) by repeated measurements at this setting for one or different activities.
4. Should you receive P-32 from another supplier, perform Steps 1-3 again, since commercial suppliers may use different thicknesses of vial materials that will affect the quantity of bremsstrahlung activity counted.

VICTOR N. EVDOKIMOFF
BELTON A. BURROWS
Boston University Medical Center
Boston, Massachusetts

FOOTNOTE

*Mediac, Nuclear Chicago.