

Memo CP-D/103

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From: K. Okamoto *K. Okamoto*

Subject: Recommendations from IAEA Consultants' Meeting on Medical Nuclear Data

Following the recommendation by International Nuclear Data Committee (June 1980), the Nuclear Data Section convened a Consultants' Meeting on "Nuclear Data for Medical Radioisotope Production" from 13 to 15 April 1981 in Vienna.

The meeting identified the following radioisotopes and reactions for which evaluation or compilation was considered to be desirable;

- 1) Evaluation (Production Cross Sections) for the commonly used β^+ emitters: ^{11}C , ^{13}N , ^{15}O , ^{18}F .
- 2) Compilation and evaluation (cross sections) for reactions with potentially useful medical applications:
 $^{19}\text{F}(p,n)^{19}\text{Ne}$, $^{16}\text{O}(\alpha,n)^{19}\text{Ne}$, $^{16}\text{O}(d,n)^{17}\text{F}$
No adequate data seem to be available for these reactions.

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- 3) Compilation of experimental data (production cross section and thick target yield) for more commonly used radioisotopes (and their contaminants);

^{11}C , ^{13}N , ^{15}O , ^{18}F , ^{28}Mg , ^{52}Fe ($^{52\text{m}}\text{Mn}$),
 ^{67}Ga , ^{68}Ge , ^{75}Br , ^{77}Br , ^{77}Kr , ^{81}Rb ($^{81\text{m}}\text{Kr}$),
 $^{82\text{m}}\text{Rb}$, ^{111}In , ^{123}Xe , ^{127}Xe , ^{123}I , ^{201}Tl

- 4) Evaluation of excitation functions for the production of the following nuclides produced by all suitable reactions. These may be used as standard reactions for monitoring beam currents. Evaluation is desirable over as wide a range of energies as possible:

^7Be , ^{11}C , ^{22}Na , ^{24}Na , ^{48}V , ^{64}Cu , ^{65}Zn

- 5) Radioisotope production by spallation reaction, though important, is excluded from specific recommendations, because the number of facilities capable of producing radioisotopes by this technique is rather limited at the present time. However, available cross sections and yield data should be included in compilations.

The Meeting also specified some radioisotopes for which revision or extension of available decay data would be desirable. These are:

^{55}Co , ^{68}Ge , $^{81\text{m}}\text{Kr}$ (half-lives uncertain)
 ^{48}V , $^{52\text{m}}\text{Mn}$, ^{62}Zn , ^{68}Ga , ^{75}Br , ^{76}Br ,
 ^{75}Kr , $^{82\text{m}}\text{Rb}$ (branching ratios uncertain)

The importance of reliable information on the energies and abundances of Auger electrons and very low energy x-rays was emphasized for the following radioisotopes:

^{97}Ru , $^{99\text{m}}\text{Tc}$, ^{111}In , $^{113\text{m}}\text{In}$, $^{113\text{m}}\text{In}$,
 $^{117\text{m}}\text{Sn}$ and ^{125}I .

We would like to suggest that above-mentioned reactions be compiled with priority. For data to be compiled at NDS, we shall contact the other compilation centres in order to avoid duplication of compilation. Final recommendation of the Meeting will be issued as INDC(NDS)-123 in June.