

## Recommended nuclear decay data

**Nuclide : Co-60**

**Decay Mode :  $\beta^-$**   
**Half-Life : (1925.3  $\pm$  0.4) d [2]**

| Radiation Type   |          | Energy (keV) | Intensity (%) |    | Ref. |
|------------------|----------|--------------|---------------|----|------|
| Auger-L          |          | 0.7-0.9      | 0.0392        | 12 | [1]  |
| Auger-K          |          | 6.26-8.32    | 0.0154        | 5  | [1]  |
| $\beta^-$ max    |          | 157.8        | «0.001        | -- | [1]  |
| $\beta^-$ max    |          | 318.22       | 99.88         | 3  | [1]  |
| $\beta^-$ av     |          | 95.77        |               |    | [1]  |
| $\beta^-$ max    |          | 665.3        | «0.001        | -- | [1]  |
| $\beta^-$ max    |          | 1491.4       | 0.12          | 3  | [1]  |
| $\beta^-$ av     |          | 625.87       |               |    | [1]  |
| $\beta^-$ max    |          | 2823.9       | «0.001        | -- | [1]  |
| X-ray L          | $\Sigma$ | 0.74-0.94    | <0.001        | -- | [1]  |
| X-ray K $\alpha$ | $\Sigma$ | 7.46-7.48    | 0.0098        | 4  | [1]  |
| X-ray K $\beta$  | $\Sigma$ | 8.26-8.27    | 0.00136       | 5  | [1]  |
| $\gamma$         |          | 347.14       | 0.0075        | 4  | [2]  |
| $\gamma$         |          | 467,5        | «0.001        | -- | [2]  |
| $\gamma$         |          | 826.10       | 0.0076        | 8  | [2]  |
| $\gamma$         |          | 1173.2       | 99.85         | 3  | [2]  |
| $\gamma$         |          | 1332.5       | 99.9826       | 6  | [2]  |
| $\gamma$         |          | 2158.8       | 0.0012        | 2  | [2]  |
| $\gamma$         |          | 2505.7       | «0.001        | -- | [2]  |

Reference : [1] PTB-6.11-97-1, Braunschweig, Oktober 1997  
 [2] PTB-Ra-16/5, Braunschweig, September 1998  
 [3] LMRI, Table de radionuclides, 1982 ff  
 [4] NCRP Report No.58, 2<sup>nd</sup> Edition, February 1985

## Recommended nuclear decay data

**Nuclide : Ra-226**

**Decay Mode :  $\alpha$**

**Half-Life : (584400  $\pm$  2600) d [2]**

| Radiation Type   |          | Energy (keV) | Intensity (%) |    | Ref. |
|------------------|----------|--------------|---------------|----|------|
| Auger-L          |          | 8.7          | 0.97          | 10 | [4]  |
| ce-K-1           |          | 87.59        | 0.677         | 23 | [4]  |
| ce-L-1           |          | 167.94       | 1.29          | 4  | [4]  |
| ce-M-1           |          | 181.52       | 0.345         | 14 | [4]  |
| ce-NOP-1         |          | 184.90       | 0.119         | 7  | [4]  |
| $\alpha$         |          | 4601.7       | 5.94          | 12 | [4]  |
| $\alpha$         |          | 4784.4       | 94.05         | 12 | [4]  |
| X-ray L          | $\Sigma$ | 12.1-13.6    | 14.3          | 14 | [2]  |
| X-ray K $\alpha$ | $\Sigma$ | 74.8-83.8    | 19.5          | 22 | [2]  |
| X-ray K $\beta$  | $\Sigma$ | 87.2-97.9    | 5.62          | 13 | [2]  |
| $\gamma$         |          | 186.10       | 3.51          | 6  | [2]  |
| $\gamma$         | Pb-214   | 242.0        | 7.12          | 11 | [2]  |
| $\gamma$         | Pb-214   | 295.22       | 18.15         | 22 | [2]  |
| $\gamma$         | Pb-214   | 351.93       | 35.1          | 4  | [2]  |
| $\gamma$         | Pb-214   | 351.93       | 35.1          | 4  | [2]  |
| $\gamma$         | Bi-214   | 609.31       | 44.6          | 5  | [2]  |
| $\gamma$         | Bi-214   | 665.45       | 1.46          | 3  | [2]  |
| $\gamma$         | Bi-214   | 768.36       | 4.76          | 7  | [2]  |
| $\gamma$         | Bi-214   | 768.36       | 4.76          | 7  | [2]  |
| $\gamma$         | Pb-214   | 785.96       | 1.04          | 2  | [2]  |
| $\gamma$         | Bi-214   | 806.17       | 1.22          | 2  | [2]  |
| $\gamma$         | Bi-214   | 934.06       | 3.07          | 4  | [2]  |
| $\gamma$         | Bi-214   | 1120.3       | 14.7          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1120.3       | 14.7          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1155.2       | 1.63          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1155.2       | 1.63          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1238.1       | 5.78          | 7  | [2]  |
| $\gamma$         | Bi-214   | 1238.1       | 5.78          | 7  | [2]  |
| $\gamma$         | Bi-214   | 1281.0       | 1.43          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1281.0       | 1.43          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1377.7       | 4.00          | 6  | [2]  |
| $\gamma$         | Bi-214   | 1377.7       | 4.00          | 6  | [2]  |
| $\gamma$         | Bi-214   | 1401.5       | 1.27          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1401.5       | 1.27          | 2  | [2]  |
| $\gamma$         | Bi-214   | 1408.0       | 2.15          | 5  | [2]  |
| $\gamma$         | Bi-214   | 1408.0       | 2.15          | 5  | [2]  |
| $\gamma$         | Bi-214   | 1509.2       | 2.08          | 5  | [2]  |
| $\gamma$         | Bi-214   | 1509.2       | 2.08          | 5  | [2]  |
| $\gamma$         | Bi-214   | 1661.3       | 1.15          | 3  | [2]  |
| $\gamma$         | Bi-214   | 1661.3       | 1.15          | 3  | [2]  |
| $\gamma$         | Bi-214   | 1729.6       | 2.92          | 4  | [2]  |
| $\gamma$         | Bi-214   | 1729.6       | 2.92          | 4  | [2]  |
| $\gamma$         | Bi-214   | 1764.5       | 15.1          | 3  | [2]  |
| $\gamma$         | Bi-214   | 1764.5       | 15.1          | 3  | [2]  |
| $\gamma$         | Bi-214   | 1847.4       | 2.11          | 3  | [2]  |
| $\gamma$         | Bi-214   | 1847.4       | 2.11          | 3  | [2]  |
| $\gamma$         | Bi-214   | 2118.6       | 1.17          | 3  | [2]  |
| $\gamma$         | Bi-214   | 2118.6       | 1.17          | 3  | [2]  |
| $\gamma$         | Bi-214   | 2204.2       | 4.98          | 12 | [2]  |
| $\gamma$         | Bi-214   | 2204.2       | 4.98          | 12 | [2]  |
| $\gamma$         | Bi-214   | 2447.9       | 1.55          | 4  | [2]  |
| $\gamma$         | Bi-214   | 2447.9       | 1.55          | 4  | [2]  |

$\gamma$ -lines with intensity < 1,0 % omitted

X-ray and  $\gamma$ : Ra-226 i.e.g. with daughters up to Bi-214

- Reference :
- [1] PTB-6.11-97-1, Braunschweig, Oktober 1997
  - [2] PTB-Ra-16/5, Braunschweig, September 1998
  - [3] LMRI, Table de radionuclides, 1982 ff
  - [4] NCRP Report No.58, 2<sup>nd</sup> Edition, February 1985