

RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: VARIOUS

FORMS: MICROSPHERES
(10 - 15 microns)

PHYSICAL CHARACTERISTICS, RADIATION AND SHIELDING:

($T_{1/2}$ = half-life)

ER = exposure rate @ 1cm from 1 mCi of nuclide in mR/hr

EC = e⁻ capture decay, IT = isomeric transition, HVL = amount of lead (cm) to reduce ER to 1/2, TVL = amount of lead (cm) to reduce ER to 1/10

Cr⁵¹, $T_{1/2}$ = 27.8 d, EC, gamma: 0.321 MeV
ER = 180, HVL = 0.2, TVL = 0.7

Mn⁵⁴, $T_{1/2}$ = 313 d, EC, gamma: 0.835 MeV
ER = 4700, HVL = 1.3, TVL = 4.2

Co⁵⁷, $T_{1/2}$ = 270 d, EC, gamma: 0.122, 0.136 MeV
ER = 960, HVL = 0.01, TVL = 0.05

Zn⁶⁵, $T_{1/2}$ = 245 d, EC, gamma: 1.115 MeV, ER = 2700
HVL = 0.98, TVL = 2.94

Sr⁸⁵, $T_{1/2}$ = 64 d, EC, gamma: 0.514 MeV
ER = 5740, HVL = 0.1, TVL = 1.1

Sn¹¹³, $T_{1/2}$ = 115 d, EC, gamma: 0.255 MeV, Sn = In Xrays = In^{113m}, gamma: 0.392 MeV, ER = 1700, HVL = 0.26, TVL = 0.87,

In^{114m}, $T_{1/2}$ = 50 d, IT to In¹¹⁴: Beta⁻ prin. gamma: 0.192, Xrays: 0.024 - 0.027 MeV, beta: 1.988 MeV, ER = 200 HVL = approx. 0.07, TVL = approx. 0.22

Gd¹⁵³, $T_{1/2}$ = 214 d, EC, gamma: 0.097, 0.103, Xrays: 0.040-0.041, ER = 872, HVL = less than 0.01, TVL = 0.02

Hazard category: C- level (low hazard) : 0.01 to 1 millicurie

B - level (Moderate hazard) : >1 to 100 millicuries

A - level (High hazard) : > 100 millicuries

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if 1 millicurie aggregate activities are handled at any one time. Urine assays may be required after spills or contamination incidents. Take care to avoid producing aerosols. Internal dose difficult to predict depend-
-ing on whether ingested, inhaled or injected.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Store or work with millicurie levels behind lead shielding. Survey frequently. Change gloves often.

2. Segregate wastes to those with half-lives greater than 90 days, but not including H³ or C¹⁴.
3. Limit as readily dispersible aqueous waste to sewer 10 microcuries per day per lab.

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