RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: Y-90 **FORMS: SOLUBLE**

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 64.1 hours

TYPE DECAY: beta $^{-}$
maximum energy 2.284 MeV

Hazard category: C- level (low hazard) : 0.01 to 2 millicurie
B - level (Moderate hazard) : > 2 to 100 millicuries
A - level (High hazard) : > 100 millicuries

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The dose rate at 10 cm from an unshielded 1 mCi (dried sample) of Y^{90} (assuming no back-scatter or self absorption in the source) is 3.1 rads per hour, the dose at 1 cm is 300 rads per hour. Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

The dose to the basal cells of skin from 1 mCi per square centimeter on the skin is 8440 mrem/h. (ref:*Basic Radiation Protection Technology, 3rd Ed.*, D.Gollnick.)

HAZARDS IF INTERNALLY DEPOSITED:

The Annual Limit of Intake (oral) which would deliver 500 mrems to the whole body is 50 ¨µCi; the amount that would deliver 5000 mrem to the Lower Large Intestines is 40 µCi.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if 5* millicuries are handled at any one time or millicurie levels are handled on a frequent (daily) basis. *Badges and rings are recommended at 2 mCi for initial use.

Urine assays may be required after spills or contamination incidents.

SPECIAL PROBLEMS AND PRECAUTIONS:

1 Work behind shielding, preferably transparent materials. Survey frequently. Change gloves often.

2. Segregate waste to those with half-lives less than 4 days.

3. Limit of soluble waste to sewer to 10 microcuries/ day per lab.

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