RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: Br-77 **FORMS: SOLUBLE**

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 56 HOURS

TYPE DECAY: EC , beta $^{+}$ maximum energy 0.343 MeV (73 %); 98 photon radiations of different energies are emitted. The average energy of photons is .428 MeV, and the average intensity is .83 percent.

Hazard category: C- level (low hazard) : 0.01 to 1 mCi
B - level (Moderate hazard) : > 1 mCi to 100 mCi
A - level (High hazard) : > 100 mCi

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The hazard from the positrons is very small because of the low intensity. The principal hazard is from the gamma rays. The exposure rate from the gamma rays is approximately 5.9 R-cm^2/mCi-hr. (The exposure rate at 1 cm from 1 mCi is ~5900 mR/hr.)
An estimate of the second tenth-value of lead for shielding this nuclide may be approximated by considering the .52 MeV photons, e.g. approximately = 1.3 cm. The first mm of Pb shielding will reduce the radiation by a much larger value because of low energy X-rays.

HAZARDS IF INTERNALLY DEPOSITED:

The Annual Limit of Intake which will result in a whole body exposure of 500 mrem is 1600 microcuries.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are appropriate for monitoring Br^{77} exposure from 1 or more millicuries.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Always wear protective gloves to keep contamination from skin. Change gloves often.

2. G.M. survey meters should be used to verify exposure rates in areas where Br^{77} is handled or stored.

3. The C-level of Br^{77} which is based upon Table 3.1 in the Radiation Protection Manual is unduly conservative 0.1 - 10 microcuries (due to the fact it is not a listed substance.) For survey purposes use the "low hazard" level, above, as the "C-level quantity".

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

10/87