RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: Na-22 **FORMS: ALL SOLUBLE**

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 2.6 years
TYPE DECAY: positron emission --- maximum energy 0.545 MeV
gamma ray associated with annihilation 0.511 MeV
accompanying gamma photons 1.275 MeV

Hazard category: C- level (low hazard) : 0.001 to 0.1 mCi
B - level (Moderate hazard) : > 0.1 mCi to 10 mCi
A - level (High hazard) : greater than 10 mCi

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The gamma exposure rate at 1 cm from 1 mCi of Na22 shielded for positrons is 12000 mR/hr. The half and tenth values of lead for this gamma are 0.9 and 3.6 cm respectively. The maximum exposure rate at 1 foot from such storage areas must be shielded to less than 2 mR/hr.

The dose rate from the positrons is 310,000 mrads/hr at 1 cm per mCi. The maximum range of the positrons is about 44 inches in air, and about 0.06 inches in lucite. The use of the lead shield for storage will provide and adequate shield for the positron particles.

HAZARDS IF INTERNALLY DEPOSITED:

It is important to avoid ingestion and /or skin contamination.

The Annual Limit of Intake based on a whole body dose of 500 mrem per year is 54 microcuries. The maximum permissible body burden is 10 microcuries; the critical organ being the body fluids.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if 0.5 millicuries or more are being handled at any one time or 0.1 millicurie levels are handled on a frequent (daily) basis.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Work behind shielding, preferably transparent materials. Use remote handling whenever possible.
2. Survey frequently. Change gloves often.
3. Segregate wastes to those with half-lives greater than 90 days (but not with H3 and/or C14).
4. Limit of soluble waste to sewer: 1 microcurie per day per lab.