RADIONUCLIDE SAFETY DATA SHEET

NUCLIDE: RB-86 **FORMS: SOLUBLE, EXCEPT GASEOUS**

PHYSICAL CHARACTERISTICS:

HALF-LIFE: 18.66 days TYPE DECAY: beta $^-$
beta maximum energy: 0.6978 MeV (8.76 %)
1.7744 MeV (91.24 %)
gammas: 1.0766 MeV (8.81 %)

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

EXTERNAL RADIATION HAZARDS AND SHIELDING:

The gamma exposure rate at 1 cm from 1 mCi of Rb86 Shielded for betas is 500 mR/hr, and at 1 foot will be 0.5 mR/hr. The half and tenth values of lead for this gamma are 1.4 and 4.6 cm respectively. This means that lead bricks should be available for shielding stock material.

The beta particles are a significant external hazard when the vial is being handled outside of shielding such as for dilutions, etc. The dose rate from betas is 310,000 mrads/hr at 1 cm per mCi. The maximum range of the betas is about 0.25 - 0.3 inches in lucite. The use of the lead shield for storage will provide an adequate shield for the beta particles.

HAZARDS IF INTERNALLY DEPOSITED:

Rb-86 distributes in the total body similarly to potassium. It has a biological half life of 45 days, and an effective half life of 13.2 days. The maximum permissible body burden (MPBB) is 3.0 uCi, based on Stanford Guideline of whole body dose not exceeding 500 mRem/Yr. The annual limit of Intake (ALLI) is 45 uCi.

DOSIMETRY AND BIOASSAY REQUIREMENTS:

Film badges and dosimeter rings are required if 5 millicuries or more are being handled at any one time or millicurie levels are handled on a frequent (daily) basis.

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 wastes to those with half-lives between 4 to 19 days.

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