

## RADIONUCLIDE SAFETY DATA SHEET

**NUCLIDE: C<sup>141</sup>e-141**

**FORMS: SOLUBLE**

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### PHYSICAL CHARACTERISTICS:

HALF-LIFE: 32.501 days

TYPE DECAY: beta <sup>-</sup>  
maximum energy 0.580 MeV  
Gamma rays 0.145 MeV (48%)

Hazard category: C- level (low hazard) : 10 mCi to 1 Curie

### EXTERNAL RADIATION HAZARDS AND SHIELDING:

The dose from betas at 1 cm from an unshielded 1 mCi (dried sample) of CE-141 (assuming no backscatter or self absorption in the source) is 310 rads per hour. The exposure rate at 1 cm from 1 mCi due to photons is 0.34 mrad per hour.

Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

Maximum range of the beta is 0.06 inches in plastic. The half value layer for the gammas is 0.028 cm of lead.

### HAZARDS IF INTERNALLY DEPOSITED:

The Annual Limit of Intake which would deliver 500 mrems to the whole body is 54 uCi. (Based on ICRP)

### 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.

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 > 19 days but < 60 days (i.e. may be placed with I-125 wastes).
3. Limit of soluble waste to sewer is 100 microcuries/ day per lab.

