REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: CA-0406-S-222-S (Supercedes NR0476S114S) DATE: August 9, 2001

SEALED SOURCE TYPE: Photon Calibration Source

MODEL: NER-8022, NER-8024

DISTRIBUTOR/MANUFACTURER:

Isotope Products Laboratories
24973 Avenue Tibbitts
Valencia, CA 91355
Phone (818) 843-7000
FAX (818) 843-6168

ISOTOPE:	MAXIMUM ACTIVITY:
Cobalt-60	5 millicuries (185 MBq)

LEAK TEST FREQUENCY: 6 Months

PRINCIPAL USE: (I) Calibration Source

CUSTOM SOURCE: ____YES__X__NO

NR8512

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SEALED SOURCE TYPE: Photon Calibration Source

DESCRIPTION:

The photon sources Model NER-8022 and NER-8024 are to be used to monitor the calibration of a particle detector such as used with a particle accelerator in physics research.

These models consist of a 1 to 8 millimeter (0.04" to 0.31") length of cobalt wire irradiated to contain 1 to 5 millicuries (37 to 185 MBq) of Cobalt-60, encapsulated in a stainless steel capsule. A piano wire butts up against the irradiated wire and is silver soldered to the stainless steel capsule securing the irradiated wire in place. The assembled source size for both models is 0.042 inches (1.1 mm) outside diameter and 9 to 25 feet (2.7 to 7.6 meters) in length.

Both models are constructed the same except that the length of the stainless steel capsule has a length of 16 to 24 inches (40.6 to 61 cm) for Model NER-8022, and 7 feet (2.1 meters) long for Model NER-8024.

LABELING:

Each source is labeled with a string tag stating "Co-60", number of mCi, date, model number, and serial number. The small diameter precludes labeling the source capsule directly.

DIAGRAMS:

Attachment 1: Diagram of NER-8022 and NER-8024

CONDITIONS OF NORMAL USE:

The intended use of the source is for photon calibration. The source is to be used to monitor the calibration of a particle detector such as used with a particle accelerator. The calibrations will be performed while the accelerator is not operating. These sources will be stored in shielded locations connected to guide tubes, or channels leading to various locations inside the detector.

SEALED SOURCE TYPE: Photon Calibration Source

Due to the radiological half-life the expected life-time of the source is 25,000 insertions into the detectors.

PROTOTYPE TESTING:

The manufacturer on the basis of an engineering evaluation, states that these sources will meet the ANSI N542-1977 classification of 77C33222.

EXTERNAL RADIATION LEVELS:

The manufacturer reports the following external radiation dose rates taken by LiF Thermoluminescent Dosimetry using LiF chips and a Harshaw Model 2000D TL Detector.

Distance	Measured Dose Rates	
Contact (1 cm / 0.39")	13.0 R/hr/mCi	(3.5 mSv/hr/MBq)
1 Meter (39.4")	1.3 mr/hr/mCi	(0.35 μSv/hr/MBq)

QUALITY ASSURANCE AND CONTROL:

The sources are manufactured and distributed under the guidelines of Isotope Products Laboratory's quality assurance and control program. The California Department of Health Services has deemed the program acceptable for licensing purposes. A copy of the program is on file with the California Department of Health Services.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The source models NER-8022 and NER-8024 shall be distributed only to persons specifically licensed by the NRC, an Agreement State or Licensing State.

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SEALED SOURCE TYPE: Photon Calibration Source

- These sources shall not be subjected to environmental and operating conditions which exceed ANSI Classification 77C33222.
- These sources shall be leak tested at 6 month intervals using techniques capable of detecting 0.005 microcurie (185 Bq) of removable contamination.
- Handling, Storage, Use, Transfer, and Disposal: To be determined by the licensing authority.
- These sources are only to be used when the accelerator is off.
- This registration certificate and the information contained within the references shall not be changed without the written consent of the California Department Health Services.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data cited below and the stated ANSI N542 classification, we continue to conclude that Models NER-8022 and NER-8024 sealed sources are acceptable for specific licensing purposes.

Furthermore, we continue to conclude that these sources would be expected to maintain their containment for normal conditions of use, which might occur during the uses specified in this registration sheet.

REFERENCES:

The following supporting documents for the sources are hereby incorporated by reference and are made a part of this registry document.

1. DuPont Merck's letters dated March 24, 1995, October 6, 1994, September 17, 1993, December 8, 1989, and February 6, 1990, with enclosure thereto.

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NO.: CA-0406-S-222-S (Supercedes NR0476S114S) DATE: August 9, 2001 PAGE: 5 OF 5

SEALED SOURCE TYPE: Photon Calibration Source

2. Isotope Products Laboratories letter dated July 26, 2000 with enclosures thereto.

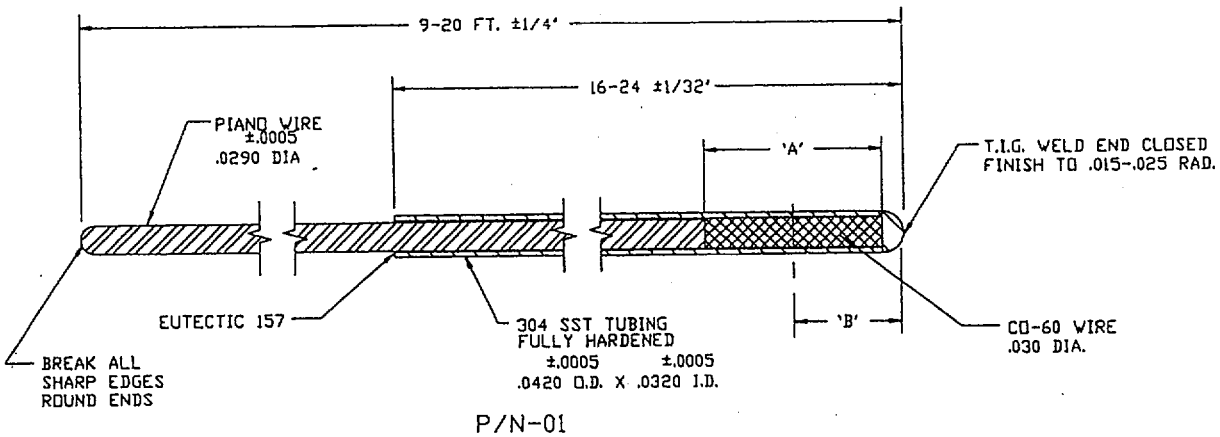
ISSUING AGENCY: California Department of Health Services

DATE: August 9, 2001 REVIEWED BY: John M. Rexroth

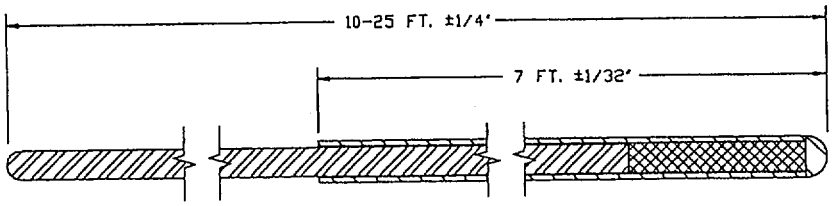
DATE: August 9, 2001 CONCURRED BY: Xiaosong Yin

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: CA-0406-S-222-S (Supercedes NR0476S114S) DATE: August 9, 2001 ATTACHMENT: 1



P/N-01



P/N-02

SAME AS P/N-01 EXCEPT AS SHOWN

ASS'Y P/N	NER #/ CUST.	MCI	DIM 'A' ACTIVE LENGTH	DIM 'B' SOURCE LOCATION
-01	NER 8022	1-5	.04-.30 (1-8 MM)	.08-.22
-02	NER 8024			

Models NER-8022 and NER-8024

Department of Health Services
Radiologic Health Branch
P.O Box 942732, MS 178
Sacramento, CA 94234-7320

MR Fredrick Sturz, Section Leader
Source Containment and Devices Branch
Office of Nuclear Material Safety and Safeguards
PL-37
Washington DC 20555