NO: NR-595-D-101-S

DATE: AUG 2 6 1983

PAGE 1 OF 4

DEVICE TYPE: Electron Caputure Detector Cell

MODEL: 50319

MANUFACTURER/DISTRIBUTOR:

Sentex Sensing Technology, Inc. 339 Broad Avenue Ridgefield, NJ 07657

MANUFACTURER/DISTRIBUTOR:

SEALED SOURCE MODEL DESIGNATION:

Safety Light Corporation Foil Source Model No. 508-3

ISOTOPE: Hydrogen-3

MAXIMUM ACTIVITY: 150 millicuries

LEAK TEST FREQUENCY: Not required

PRINCIPAL USE: (N) Ion Generator, Chromatography

CUSTOM DEVICE: YES X NO

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NO: NR-595-D-101-S

## DATE: AUG 2 6 1983 PAGE 2 OF 4

1

DEVICE TYPE: Electron Caputure Detector Cell

### DESCRIPTION:

The manufacture incorporates the foil source into a stainless steel cylinder of 1/4" wall thickness. A teflon cover with an electrode is mounted to one end of the cylinder by three screws. This gives a completed cell dimensions of 1" in diameter and 1.6" in length. The cell is placed in a copper cylinder which serves as the heating conductor. The copper cylinder is placed in an aluminum cylinder, which serves as an outside cover. The space between the copper and aluminum cylinders is packed with insulation. The detector cell assembly is then installed into the T-54 explosives detector or the Scentor . vapor detector. The two cells differ in that the copper cylinder length dimensions are not the same. However, the main difference is that in the T-54 the column is permanently mounted to the cell and the heating element heats both the cell and the column, in the Scentor, the column is replaceable and there is a separate heating element for the column. In both instruments a thermostat will cut off the power to the oven when the temperature of the copper sleeve reaches 180°C.

#### LABELING:

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The detector cells are not labeled. However, the device is marked with the following information: manufacturers name and logo, isotope and activity, date of assay of the isotope, standard radiation symbol, and the words, "Caution-Radioactive Material."

#### DIAGRAM:

See attachments.1, 2 and 3.

#### CONDITIONS OF NORMAL USE:

The cell will be used in portable vapor detector equipment. The equipment will be used by trained personnel to detect vapors from explosive materials or determine various chemical vapors in the air. The devices will be used in industrial and laboratory environs. The manufacture expects the life of the device to be five years.

#### PROTOTYPE TESTING:

The foil source was tested by Safety Light Corporation. NRC deemed the source acceptable for licensing purposes in 1975.

The manufacturer performed the following tests prior to shipment of the device:

- o Leak test
- o Electronic adjustments
- o Temperature limit switch performance

NO: NR-595-D-101-S

DATE: AUG 2 6 1983

PAGE 3 OF 4

DEVICE TYPE: Electron Caputure Detector Cell

## PROTOTYPE TESTING:

Additionally, the manufacture stated that the devices sold by Xontec of California are similar to what they are producing. Xontec Model GC 710 and GC 810 devices have been distributed since 1979 in the U.S. and abroad and no problems have been reported.

#### EXTERNAL RADIATION LEVELS:

No radiation levels can be detected at the exterior surface of the device.

#### QUALITY ASSURANCE AND CONTROL:

All components are manufactured by subcontractors. Upon arrival all the parts are checked to determine if they meet the requested specifications. The electronics board assembly and wiring is done inhouse and checked to specifications. The completed units are tested for gas leaks at 1800 PSI of argon and operational checks to ensure the devices will perform as specified.

## LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The detector cells within the devices shall be distributed only to persons specifically licensed by the NRC or an Agreement State.
- Handling, storage, use, transfer, and disposal: To be determined by the licensing authority.
- o The detector cell shall not exceed a temperature of 180°C.
- o This registration sheet and the information contained within the references shall not be transferred or changed without the written consent of the NRC.

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#### SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data cited below, that the device is similar to units that are presently generally licensed by the State of California, we conclude that the Model 50319 detector cell when installed is a T-54 or Scentor device design is acceptable for licensing purposes. Furthermore, we conclude that the devices would be expected to maintain their containment integrity for normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

# AUG 2 6 1983

NO: NR-595-D-101-S

## DATE:

PAGE 4 OF 4

DEVICE TYPE: Electron Caputure Detector Cell

#### **REFERENCES:**

The following supporting documents for the Model 50319 detector cell are hereby incorporated by reference and are made a part of this registry document:

o Sentex Sensing Technology, Inc. letters dated May 10, 1983 and August 9, 1983 with enclosures thereto.

**ISSUING AGENCY:** 

U.S. Nuclear Regulatory Commission

AUG 2 6 1983 Date: AUG 2 6 1983 Date:

Concurrence: Jone in Name



NO:



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