Koppers Company, Inc.
Occupational Health and Product S[illegible]
440 College Park Drive, Monroevill[illegible] 15146
Telephone 412-327-3000

030-06244

KOPPERS

Log Dec 4
Remitter
Check No. 0591356
Amount $150.00
Fee Category 3P
Type of Fee AMD
Date Check Rec'd. 12/1/88
Date Complete 12/2/88 A. Konkulsky

November 18, 1988

John E. Glenn, Ph.D.
U.S. Nuclear Regulatory Commission
Region I, Material Licensing Commission
631 Park Avenue
King of Prussia, PA 19406

Dear Dr. Glenn:

Radioactive sources listed in Appendix I [three (3) Nickel 63 sources and one (1) Titanium Tritide Foil (Hydrogen 3) source] of this correspondence represent source material historically possessed by Koppers Company, Inc. under License #37-10845-01 (expiration date 10/89) which have been transferred to The Chester Engineers, Inc., License #37-16651-03 (expiration date 1/31/92).

Be advised that the subject sources listed on Koppers License #37-10845-01 have been owned and utilized by Keystone Environmental Resources, Inc. until recently, a wholly-owned subsidiary of Koppers Company, Inc. Keystone Environmental Resources was sold to The Chester Engineers, Inc. in mid-September of this year. The involved sealed source material is contained in chromatographic equipment which was included in the sales agreement.

As such, we wish to amend Koppers License #37-10845-01 and transfer ownership of the involved sources to The Chester Engineers, Inc., License #37-16651-03.

In addition to and as a result of the subject source transfers, the following changes in Koppers License #37-10845-01 are requested:

- Items 6c, 7c, 8c and 9c:

  Eliminate all reference to the Titanium Tritide Foil (Hydrogen 3) source material as utilized in the Scentor Portable Gas Chromatograph.

- Condition 12:

  Eliminate the following individuals:

  - Marjorie P. Mattison
  - Dolores J. Colwell
  - Stephen J. Ondrey
  - Wayne E. Swab
  - Cindy S. Klara
  - John T. Kane
  - Andrew G. Lorince
  - Mark Grunebach
  - George Rusnack
  - John Steel
  - John Ramsay

109901

NOV 22 1988

OFFICIAL RECORD COPY ML10

- **Condition 12 (continued):**

  Add the following individual:

  - Margaret Bergman

- **Condition 17** - Eliminate

- **Condition 19** - Eliminate

Be advised that **four (4) Nickel-63 sources** for use in Hewlett Packard Electron Capture Gas Chromatograph Detector Cells continue to be possessed by Koppers Company, Inc. and remain at the Koppers facility indicated on License #37-10845-01.

To comply with transfer requirements, attached are the most recent leak test/survey results (see Appendix II and III respectively) for the three (3) Nickel 63 sources transferred to The Chester Engineers, Inc.

In addition, documentation is attached as Appendix IV from Sentex Sensing Technology, Inc. confirming that the 150 millicurie Titanium Tritide Foil contained in a Scentor Portable Gas Chromatograph **does not** require routine leak testing.

A check in the amount of $60 is also enclosed as the Amendment Fee specified in 10 CFR 170 Section 170.31(3P).

Your kind attention to this matter is greatly appreciated. Please contact me at 412/325-5271 should you require additional information.

Sincerely,

Michael H. Juba, CIH
Industrial Hygiene -
Tar and Wood Products

/mad
attachments
cc: J. R. Batchelder
J. L. Flaherty
R. Helwick
J. T. Kane
C. M. Meyer
B. S. Nolan
M. Thomas, II
M. R. Urbassik

APPENDIX I

Radioactive sources currently possessed/utilized by Keystone Environmental Resources as a subsidiary of The Chester Engineers, Inc.

APPENDIX I

Radioactive sources currently possessed/utilized by Keystone Environmental Resources as a subsidiary of The Chester Engineers, Inc.

SOURCE MATERIAL	ACTIVITY (millicuries)	APPLICATION
Titanium Tritide Foil (Hydrogen-3)	150	Sentex Sensing Technology, Inc. Scentor Portable Gas Chromatograph
Nickel-63 (Serial #L2351)	15	• Hewlett Packard Electron Capture Detector Cell Model #19235. • Hewlett Packard Gas Chromatograph Model #5890A.
Nickel-63 (Serial #L1727)	15	• Hewlett Packard Electron Capture Detector Cell Model #19235. • Hewlett Packard Gas Chromatograph Model #5890A.
Nickel-63 (Serial #L1728)	15	• Hewlett Packard Electron Capture Detector Cell Model #19235. • Hewlett Packard Gas Chromatograph Model #5890A.

MHJ/mad
18/November/1988

APPENDIX II

LEAK TEST DATA

Leak Test Results

Date: 9/21/88 **Analyst:** M. H. Juba
Group/Division: Keystone Environmental Resources, Inc.
Plant: Monroeville, PA
License Number: 37-10845-01
Equipment: Ludlum Model 2000 Decade Scaler, Serial #50817, equipped with a Ludlum, Model 44-9, GM Pancake Detector and a Ludlum Model 180-2 Probe Holder, Serial #PRO43375
Gieger Plateau: 780 volts
Source to Detector Distance: 1.5 millimeters

Calibration Source

Nuclide	Major Radiations/ Energies	Initial (μCi)	Date	$T_{1/2}$(1)	n(2)	Current(3) Activity (μCi)
Carbon 14	β^- 0.156 MeV	0.10	5/58	5730	0.005	0.10

(1) $T_{1/2}$ = half life of the radionuclide
(2) n = number of half-lives = $t/T_{1/2}$
where: t = elapsed time
(3) Current Activity: = $I_o e^{-0.693t/T_{1/2}}$
where: I_o = original activity of radionuclide
e = base of natural logarithms (2.718)
t = elapsed time
$T_{1/2}$ = half-life of the radionuclide

Counting Efficiency

	Observed Counts (average of three readings)	
5 min count (calibration source)	28,364/5 min =	5,673 cpm
5 min blank count	352/5 min =	70 cpm

Net Efficiency (En) = C_o-B/C_k = 0.03 cpm/dpm
where: C_o = observed count (cpm)
B = blank (cpm)
C_k = known emission rate (dpm) (2.22 x 10^6 dpm/μCi)

Leak Test Data

Isotope	Serial/Source Number	Sample ID(1)	Observed Count(2)		Approximate(3) Activity (μCi)
			5 min	1 min	
Nickel-63	L1727	L1727-1	374	74.8	7.2×10^{-5}
Nickel-63	L1727	L1727-2	363	72.6	3.9×10^{-5}
Nickel-63	L1727	L1727-3	357	71.4	2.1×10^{-5}
Nickel-63	L1728	L1728-1	341	68.1	$< 1.5 \times 10^{-5}$
Nickel-63	L1728	L1728-2	363	72.6	3.9×10^{-5}
Nickel-63	L1728	L1728-3	359	71.7	2.6×10^{-5}
Nickel-63	L2351	L2351-1	370	74.0	6.0×10^{-5}
Nickel-63	L2351	L2351-2	377	75.5	8.3×10^{-5}
Nickel-63	L2351	L2351-3	381	76.3	9.5×10^{-5}

(1) See Leak Test Sheet (Appendix II) for Sample ID/position index correlation.
(2) Count represents the average of three readings.
(3) Approximate Activity (μCi) = C_o-B/En x 4.505 x 10^{-7} μCi/dpm.
where: C_o = observed count (wipe sample) (cpm)
B = blank count (cpm)
En = net counting efficiency (cpm/dpm)

NOTE: • Regulated limit for surface contamination is 0.005 μCi or 5.0×10^{-3} μCi removable radioactive material as specified in Title 10, Part 31.5(c)(5).

• Raw data available in OH&PS-IH Logbook No. 4763, page(s) 19 & 20.

APPENDIX III

RADIATION LEVELS

Appendix III
Density/Level Gauge Survey and Leak Test Data Sheet

Date: 9/21/88
Surveyed By: M. H. Juba
Group/Division: Keystone Environmental Resources, Inc.
Plant: Monroeville
Location of Unit: Gas Chromatography D-126
Isotope: Nickel-63
Serial/Identification #: Model #19235; Serial #L2351
License #: 37-10845-01
Assay Date: 4/87 **Half Life:** 92 years
Activity: 15 millicuries
Survey Instrument: Victoreen Thyac III, Serial #2668 with GM Detector Tube 1B85
Calibration Date: 8/29/88

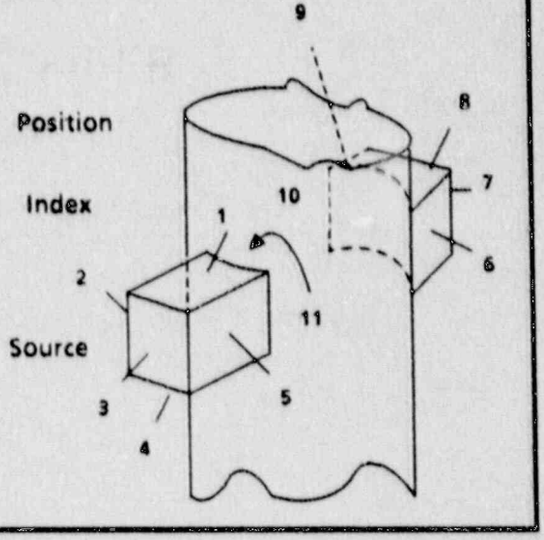
Inspection List	Yes	No	N/A
1. The device has affixed the required manufacturer's label(s)	●		
2. A sign bearing the statement **"CAUTION - RADIOACTIVE MATERIAL"** is posted in the proximity of the gauge.	●		
3. A reading taken with the survey instrument indicates open-closed shutter mechanism is operational.			●
4. Unit in operation; shutter check not possible.			●

Survey Measurements (mR/hr) At Surface

Shutter Open		Shutter Closed	
1.	0.03-0.05	6.	N/A
2.	0.03	7.	
3.	0.04-0.05	8.	
4.		9.	
5.		10.	
		11.	

Sample ID Number

1. L2351-1 - column inlet to detector
2. L2351-2 - detector exhaust outlet
3. L2351-3 - detector housing
4.
5.



COMMENTS:
- Position index schematic is not applicable in this case.
- Hewlett Packard Electron Capture Detector Cell Model #19235. Hewlett Packard Gas Chromatograph Model #5890A.
- Currently in service.

MHJuba/mad
21/September1988

Appendix III
Density/Level Gauge Survey and Leak Test Data Sheet

Date: 9/21/88
Surveyed By: M. H. Juba
Group/Division: Keystone Environmental Resources, Inc.
Plant: Monroeville
Location of Unit: Gas Chromatography D-126
Isotope: Nickel-63
Serial/Identification #: Model #19235; Serial #L1727
License #: 37-10845-01
Assay Date: 7/86 **Half Life:** 92 years
Activity: 15 millicuries
Survey Instrument: Victoreen Thyac III, Serial #2668 with GM Detector Tube 1885
Calibration Date: 8/29/88

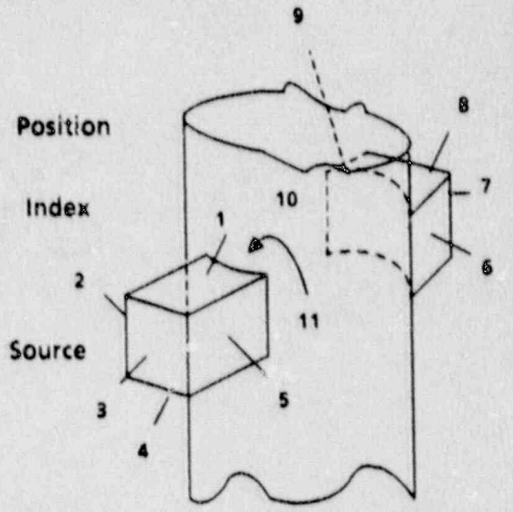
Inspection List	Yes	No	N/A
1. The device has affixed the required manufacturer's label(s)	●		
2. A sign bearing the statement **"CAUTION - RADIOACTIVE MATERIAL"** is posted in the proximity of the gauge.	●		
3. A reading taken with the survey instrument indicates open-closed shutter mechanism is operational.			●
4. Unit in operation; shutter check not possible.			●

Survey Measurements (mR/hr) At Surface

Position Index	Shutter Open	Shutter Closed
1.	0.04-0.05	6. N/A
2.	0.04	7.
3.	0.03-0.05	8.
4.		9.
5.		10.
		11.

Sample ID Number

1. L1727-1 - column inlet to detector
2. L1727-2 - detector exhaust outlet
3. L1727-3 - detector housing
4.
5.



COMMENTS:
- Position index schematic is not applicable in this case.
- Hewlett Packard Electron Capture Detector Cell Model #19235. Hewlett Packard Gas Chromatograph Model #5890A.
- Currently in service.

MHJuba/mad
21/September1988

Appendix III
Density/Level Gauge Survey and Leak Test Data Sheet

Date: 9/21/88 | **Surveyed By**: M. H. Juba

Group/Division: Keystone Environmental Resources, Inc. | **Plant**: Monroeville

Location of Unit: Gas Chromatography D-126 | **Isotope**: Nickel-63

Serial/Identification #: Model #19235; Serial #L1728 | **License #**: 37-10845-01

Assay Date: 7/86 **Half Life**: 92 years | **Activity**: 15 millicuries

Survey Instrument: Victoreen Thyac III, Serial #2668 with GM Detector Tube 1B85

Calibration Date: 8/29/88

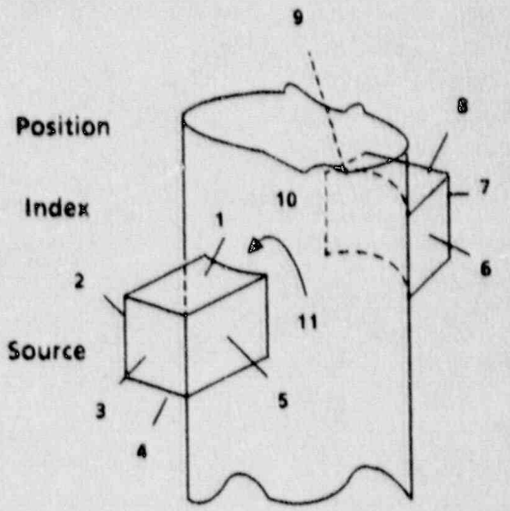
Inspection List	Yes	No	N/A
1. The device has affixed the required manufacturer's label(s)	●		
2. A sign bearing the statement **"CAUTION - RADIOACTIVE MATERIAL"** is posted in the proximity of the gauge.	●		
3. A reading taken with the survey instrument indicates open-closed shutter mechanism is operational.			●
4. Unit in operation; shutter check not possible.			●

Survey Measurements (mR/hr) At Surface

	Shutter Open	Shutter Closed
1.	0.04-0.05	
2.	0.04	
3.	0.03-0.05	
4.		
5.		
6.		N/A
7.		
8.		
9.		
10.		
11.		

Sample ID Number

1. L1728-1 - column inlet to detector
2. L1728-2 - detector exhaust outlet
3. L1728-3 - detector housing
4.
5.



COMMENTS:

- Position index schematic is not applicable in this case.
- Hewlett Packard Electron Capture Detector Cell Model #19235. Hewlett Packard Gas Chromatograph Model #5890A.
- Currently in service.

MHJuba/mad
21/September1988

APPENDIX IV

ADDITIONAL DOCUMENTATION AS FOLLOWS:

- Copy of Sentex Sensing Technology, Inc. NRC License #29-20512-01
- Copy of documentation from Sentex Sensing Technology, Inc.

NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 06

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Sentex Sensing Technology, Inc. 2. 553 Broad Avenue Ridgefield, New Jersey 07657	In accordance with letter dated June 4, 1987, 3. License number 29-20512-01 is amended in its entirety to read as follows: 4. Expiration date February 29, 1992 5. Docket or Reference No. 030-19353

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Hydrogen 3	A. Titanium tritide foils (Safety Light Corporation Model 508-3)	A. Not to exceed 150 millicuries per foil or 6,000 millicuries total

9. Authorized use

A. For use in research and development of electron capture detector cells and for the manufacture, service and distribution of Scentor and Scentor Jr., and Scentograph, gas chromatographs, and Scanex-1, Model T-54 (Scanex Jr.), explosive detectors, to persons authorized to receive the licensed material pursuant to the terms and conditions of a specific license issued by the Nuclear Regulatory Commission or an Agreement State.

CONDITIONS

10. Licensed material may be used at licensee's facilities, 553 Broad Avenue, Ridgefield, New Jersey and at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

11. Licensed material shall be used by, or under the supervision of, Amos Linenberg or S. Bianco.

12. This license does not authorize commercial distribution to person's generally licensed or persons exempt from licensing.

13. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), of 10 CFR Part 20, the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.

~~8803+80024~~

IE PP

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 29-20512-01

Docket or Reference number 030-19353

Amendment No. 06

(continued) CONDITIONS

14. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.

15. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material".

16. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated August 31, 1981
B. Letter dated October 28, 1981
C. Letter dated May 10, 1983
D. Letter dated August 9, 1983
E. Letter dated September 6, 1983
F. Letter dated October 15, 1983
G. Letter dated May 31, 1984
H. Letter dated January 10, 1985
I. Letter dated January 16, 1986
J. Letter dated February 20, 1986
K. Letter dated September 16, 1986
L. Letter dated June 4, 1987

For the U.S. Nuclear Regulatory Commission

Date 20 AUG 1987

By Original Signed By
Jack Davis
Nuclear Materials Safety and
Safeguards Branch, Region I
King of Prussia, Pennsylvania 19406

SENTEX SENSING TECHNOLOGY, INC.

September 23, 1988

RECEIVED

SEP 26 1988

INDUSTRIAL HYGIENE SECTION

Mr. Mike Juba
Koppers
400 College Park Drive
Monroeville, PA 15146

Dear Mr. Juba:

Pursuant to your order for the SCENTOR, this letter shall confirm the following information about the radioactive source contained in the automated gas chromatograph manufactured by our company:

> The radioactive source is Hydrogen 3 in the physical form of a titanium tritide foil. The manufacturer is Safety Light Corporation and the Model No. is 508-3. The maximum amount of radioactivity is 150 millicuries.

It is a sealed source. The radioactive foil is encased in a sealed, stainless steel cylinder of 1/4" thickness. This cylinder is further enclosed within an additional cylinder of copper with thickness of 1/16". The copper cylinder is contained within the oven assembly of the instrument. The oven assembly is enclosed within a three-sided aluminum box which is bolted to the electronic module. The electronic module is constructed of aluminum of 1 3/32" thickness.

The following questions/answers may also be helpful to you.

	QUESTION	ANSWER
1)	Is it a sealed source?	Yes. (see above)
2)	What is the nature and access to the source?	There is no direct access to the source. In order to enter the source, the oven assembly must be unbolted from the instrument chassis and the copper container contained therein be broken. In addition, the sealed stainless steel cylinder which houses the radioactive foil must be cut. It is, therfore, extremely unlikely this can be done under normal circumstances.

553 Broad Avenue • Ridgefield • New Jersey 07657 • 201-945-3694

3) Who cleans the source?	Pursuant to the instructions contained within the instruction manual, the oven is not to be opened by anyone other than Sentex personnel. If, for whatever reason, the source must be replaced, the assembly must be returned to the manufacturer. Wipe testing of the source is not required pursuant to the information we have received from the Nuclear Regulatory Commission.
4) What are the procedures for maintaining the source?	Because of its sealed character and the nature of the readioactive source (Hydrogen 3) we know of no procedures which are required for the source's maintenance. Here again, pursuant to NRC's advice, a wipe test is not required.
5) What are the temperature limitations of the source?	The radioactive source is safe until the oven temperature of 210 C is achieved. The unit, however, is equipped with an automatic switch-off device. This device will automatically disconnect the oven assembly if the heat therein exceeds 180 C.
6) Should there be periodic inspection of the source?	Pursuant to Sentex's instruction, the oven assembly should not be tampered with. Periodic <u>visual</u> inspection of the oven assembly can be performed on a monthly basis; the source itself, however, because of its sealed character, cannot, and should not be inspected.

7)	Calibration of source?	Not required.
8)	Replacement of the source?	Safety Light Corporation (manufacturer of the radioactive source) gives an estimated 1/2 life of the source as 11 years. It is, therefore, unlikely that the source should need replacement prior to that time. If, however, for whatever reason, replacement is required, the assembly should be returned to Sentex. A normal, usual shipping container (double wall thickness cardboard box) may be used. Special packing or notice requirements are not necessary pursuant to 49 CFR 173.22 (excepted quantity) under Section UN2911.
9)	What are the venting instruments?	The instrument may be maintained under normal conditions. Normal air circulation (windows), fan system, or air conditioning) is sufficient. If the instrument is used outdoors no problems should arise.

I have enclosed a copy of our Nuclear Regulatory Commission's License #29-20512-01, which verifies the information herein.

I hope this information is sufficient for you to license this source or amend your present license. If you have authorization for this source, as do many of our users, please send me a copy of your license or ask your radiation safety department to contact me. Best Regards.

Sincerely yours,

SENTEX SENSING TECHNOLOGY, INC.

Joanne M. Bianco
General Manager

JMB/e
Enclosure

109901

OFFICIAL RECORD COPY ML10

PA 11/25

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03123
STATUS CODE: 0
FEE CATEGORY: 3P
EXP. DATE: 19891130
FEE COMMENTS: _____

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: KOPPERS CO., INC.
RECEIVED DATE: 881122
DOCKET NO: 3006244
CONTROL NO.: 109901
LICENSE NO.: 37-10845-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: $60.00
CHECK NO.: 0491356

3. COMMENTS

SIGNED EMD
DATE NOV 29, 1988

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED / /)

1. FEE CATEGORY AND AMOUNT: 3P $60

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT _____
RENEWAL _____
LICENSE _____

3. OTHER _____
_____

SIGNED S. Kimberly
DATE 12/6/88