

MATERIALS LICENSE

Amendment No. 13

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, 36, 39, 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		In accordance with letter dated May 7, 1996	
1. E.I. DuPont de Nemours & Co. Inc.		3. License Number	34-02962-02 is amended in its entirety to read as follows:
2. P. O. Box 89 Circleville, OH 43113		4. Expiration Date	November 30, 1994
		5. Docket or Reference No.	030-13909
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. Krypton-85	A. Sealed sources (American Atomic Corp. Model kr85c, kr85e, kr85j and kr85m; or NEN Model NER586; or Amersham Corp. Model kac.d2)	A. No single source to exceed 1000 millicuries	
B. Krypton-85	B. Sealed sources (LFE Model S-70A)	B. No single source to exceed 1200 millicuries	
C. Strontium-90	C. Sealed sources (3M Co. Model 3FIV)	C. No single source to exceed 50 millicuries	
D. Cesium-137	D. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	D. No single source to exceed 350 millicuries	
E. Cesium-137	E. Sealed sources (Kay-Ray Model 7700 series)	E. No single source to exceed 200 millicuries	
F. Cesium-137	F. Sealed sources (Ohmart Model No. A-2102)	F. No single source to exceed 50 millicuries	
G. Cesium-137	G. Sealed sources (3M Co. Model 4F6S)	G. No single source to exceed 300 millicuries	
H. Cesium-137 260052	H. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	H. No single source to exceed 350 millicuries	

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

34-02962-02

Docket or Reference Number

030-13909

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6. Byproduct, source, and/or special nuclear material
- I. Promethium-147
- J. Promethium-147
7. Chemical and/or physical form
- I. Sealed sources (Amersham Corp. Model No. PHB.D1)
- J. Sealed source (Amersham Corp. Model No. PHC.C2)
8. Maximum amount that licensee may possess at any one time under this license
- I. No single source to exceed 540 millicuries
- J. 1 source not to exceed 2.5 curies
9. Authorized Use:
- A. To be used in Measurex Model 2201 source holder for thickness measurement.
- B. To be used in LFE Model SCL-77A source holder for thickness measurement.
- C. To be used in Measurex Model 2201 source holder for thickness measurement.
- D. To be used in In-Val-Co Model B-20-06 source holder for level measurement.
- E. To be used in Kay-Ray Models 7062 Series and 7063 Series, or 7064 Series source holders for level measurement.
- F. To be used in Ohmart Model SHRH-A source holder for level measurement.
- G. To be used in In-Val-Co Model SH-581 source holder for level measurement.
- H. To be used in In-Val-Co Model B-20-06 source holder for level measurement.
- I. To be used in Measurex Model 2201 and/or Model 4201 source holder for thickness measurement.
- J. To be used in Measurex Model 4202 Series source holder for thickness measurement.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at Route 23 South, DuPont Road, Circleville, Ohio, 1175 DuPont Road, Circleville, Ohio.
11. Licensed material shall be used by, or under the supervision of, James D. Richards.
12. The Radiation Protection Officer for the activities authorized by this license is James D. Richards.

COPY

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13. A. (1) Each sealed source containing licensed material, other than Hydrogen-3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months; except those sealed sources as specified by the manufacturer and specifically authorized by the Commission or an Agreement State may be leak tested at intervals not to exceed three years. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak test when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
- B. Any source in storage and not being used need not be tested. When the source is removed from storage for use or transfer to another person, it shall be tested before use or transfer.
- C. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 801 Warrenville Road, Illinois 60532-4351, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.
- D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to perform such services.
14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.
15. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Measurex devices (excluding Model 4202 series) containing sealed sources shall be performed by Jerry Sherwood, Brian Hoops, James Jones, Ray Gene McJunkin, or James Richards in accordance with procedures contained in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

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16. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of sealed sources and the date of the inventory.
17. The licensee shall operate each gauge within the manufacturer's specified environmental limits such that the shielding and shutter mechanism of the source holder is not compromised.
18. The licensee shall assure that the shutter mechanism is locked in the closed position during periods when a portion of an individual's body may be subject to the direct radiation beam. The licensee shall also modify their "lock-out" procedures whenever a new gauge is obtained for use other than purposes for which they are currently authorized to incorporate the device manufacturer's recommendations.
19. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Kay Ray devices containing sealed sources shall be performed by James Richards in accordance with procedures outlined in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.
20. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
21. Except as otherwise specified by this license, installation, initial radiation survey, relocation, removal from service, maintenance, and repair of devices containing sealed sources shall be performed by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

COPY

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SUPPLEMENTARY SHEET**

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22. 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. Applications dated April 15, 1989 (excluding Item 10.6 and paragraph Number 3 of Item 10.4) and July 21, 1992;
 - B. Letters dated October 4, 1989 (excluding paragraph Number 3 of Item 10.4); April 30, 1990 (excluding paragraph Number 3 of Item 10.4 and paragraph Numbers 1 and 2 of Item 10.6), June 15, 1990, May 7, 1996 (excluding item 7J, item 15 and references to service work performed by the licensee) and November 7, 1996 (excluding attachment); and
 - C. Facsimile dated January 15, 1997.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date

February 11, 1997

By

Lollen C. Casey

Nuclear Materials Licensing Branch, Region III

COPY

(FOR LFMS USE)
INFORMATION FROM LTS

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

PROGRAM CODE: 03120
STATUS CODE: 2
FEE CATEGORY: 3P
EXP. DATE: 19941130
FEE COMMENTS:
DECOM FIN ASSUR-RECDT N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: E. I. DU PONT DE NEMOURS & CO., INC
RECEIVED DATE: 960528
DOCKET NO: 3013909
CONTROL NO.: 301365
LICENSE NO.: 34-02962-02
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: 290.70
CHECK NO.: 5261023

3. COMMENTS

SIGNED
DATE

D. Hersey
5-29-96

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

1. FEE CATEGORY AND AMOUNT: *3P* *#290*
2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ☒
RENEWAL ☐
LICENSE ☐

3. OTHER

SIGNED
DATE

SC *6/3/96*

RECEIVED
JUN 10 1996
REGION III

Rifard
704

Log	<i>Jun 1 III</i>
Remitter	
Check No.	<i>5261023</i>
Amount	<i>#290.70 (290)</i>
Fee Category	<i>3P</i>
Type of Fee	<i>AMD</i>
Date Check Rec'd	<i>6/3/96</i>
Date Completed	<i>6/3/96</i>
By:	<i>SC</i>

1996 JUN -3 AM 11:57



DuPont Circleville Plant

Materials Licensing Section
U.S. Nuclear Regulatory Commission Region III
801 Warrenville Rd.
Lisle, IL 60532-4351

Ref. License #34-02962-02 Amendment

Attn: Colleen Casey

DuPont Circleville Plant
P.O. Box 89
Circleville, OH 43113

May 7, 1996

I am requesting an amendment to our present license as follows:

- Item 6J Promethium-147
- Item 7J Sealed sources manufactured and distributed in accordance with ANSI ratings and our license issued by the U.S. Nuclear Regulatory Commission.
- Item 8J 1 source not to exceed 2.5 ci.
- Item 9J To be used in Measurex prototype source holder for Research and Development under 10CFR30.
- Item 15 Installation, radiation surveys, relocation, removal from service, maintenance, leak test, safety checks, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Willard Bennett, Jr., Donald Sparks, Mark Kiger, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark DePugh or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an agreement state to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an agreement state to perform such services.

The people listed above attended a Radiation Safety Training Class presented by Measurex. It was conducted by Lisa Burns (RSO), a Health Physicist, and Ken Gibb, Measurex Technical Representative.

I have enclosed the course curriculum and completion certificates for the attendees.

The above mentioned training also qualifies the attendees to perform specifically designated tasks on the Measurex prototype sensor containing a Model PHC.C2 PM-147 source as indicated below.

RECEIVED

MAY 28 1996

REGION III

Perform source holder installation, removal, and repairs that don't involve disassembly of the source holder, as well as radiation safety testing (including testing for source leakage and for proper function of the on-off mechanism and safety features), and measurement of radiation exposure rates adjacent to the prototype sensor. (Please see letter dated March 4, 1996 for more details.)

Operations involving sensor head separation or source holder removal from the sensor head must be done following the step-by-step procedures given in the Measurex Radiation Safety Manual (P/N 4407004-copies distributed at training session.

I have also included pertinent information on the prototype sealed source construction, source holder construction and radiation profiles.

If you have any questions please call me at 614-474-0145.

Respectfully,

James D. Richards, RPO

Enclosures
(JDR-018. ALL)

**DIVISION OF ACCOUNTING AND FINANCE
REQUEST FOR REFUND TO EMPLOYEE/VENDOR**

THE EMPLOYEE/VENDOR IDENTIFIED BELOW HAS OVERPAID THE NUCLEAR REGULATORY COMMISSION FOR GOODS AND/OR SERVICES PROVIDED AND IS DUE A REFUND

EMPLOYEE/VENDOR/PAYEE CODE: _____

NAME: E. L. Du Pont De Nemours & Co.

ADDRESS: Attn: James D. Richards

ADDRESS: P. O. Box 89

CITY: Circleville STATE: OH ZIP: 43113

TRANS CODE: PX

TRANS TYPE: FE FUND: X5280 JOB CODE: _____ AMOUNT: \$.70

TRANS TYPE: IR FUND: R1435 JOB CODE: INTR AMOUNT: _____

TRANS TYPE: IR FUND: R1099 JOB CODE: ADCH AMOUNT: _____

TRANS TYPE: IR FUND: R1099 JOB CODE: FINE AMOUNT: _____

TOTAL REFUND AMOUNT: \$.70

COMMENTS: Lic 34-02962-02/CK 52610123/Rfnd
5/7/96 Reg.

(Limit comments to 40 characters, including spaces)

PREPARED BY: Shirley Crutchfield DATE: June 5, 1996

AUTHORIZED BY: Ann Kimberly DATE: 6/5/96

ORIGINAL INV. NO: _____ DATE PAID: _____ AMOUNT: _____

REFUND ENTERED INTO COLLECT BY: _____

REFUND DETERMINED BY: _____ DATE: _____

Jun 1 III PLEASE ATTACH APPROPRIATE SUPPORTING DOCUMENTATION

52610123 \$290.70 3P AMD

\$290 301365

FEB 12 1997

James D. Richards
Radiation Safety Officer
E.I. DuPont de Nemours
& Co., Inc.
P. O. Box 89
Circleville, OH 43113

Dear Mr. Richards:

Enclosed is Amendment No. 13 to your NRC Material License No. 34-02962-02 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

- A.
1. Please note that at this time we deleted Condition No. 21, as it appeared on Amendment No. 12 because the regulations in 10 CFR 30.35(d) contain the same requirement. Therefore, this Condition is no longer necessary.
 2. We added a new Condition No. 21 with the enclosed Amendment No. 13. This Condition serves to formalize your commitment to only allow specifically licensed individuals, e.g., the device manufacturers, to perform service and maintenance work on your gauging devices. This Condition is effective except for the service work authorized by Condition Nos. 15 and 19.

Your request for additional service work authorization will be addressed very shortly in your renewal license.

3. Please direct any questions or comments concerning this amendment to Colleen C. Casey at (630) 829-9841 or (800) 522-3025.
- B.
- Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:
1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.

301365

2. Notify NRC, in writing, within 30 days:
 - a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
 - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
 - a. Change Radiation Safety Officers;
 - b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
 - c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
 - d. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the

J. Richards

-3-

General Policy and Procedures for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Original Signed By
Colleen C. Casey
Nuclear Materials Licensing Branch

License No.: 34-02962-02
Docket No.: 030-13909

Enclosure: Amendment No. 13

DOCUMENT NAME: M:\03013909.CL7

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RIII <i>CCC C</i>							
NAME	CCASEY:jaw							
DATE	02/11/97							

OFFICIAL RECORD COPY



CIRCLEVILLE PLANT

P.O. Box 89
Circleville, OH 43113FAX NO. 630-515-1078Date & Time: 1/15/97

FACSIMILE TRANSMISSION COVER SHEET

ADDRESSEE(S):

Name	Company or Department	Location
<u>Colleen CASEY</u>	<u>NRC REGION III</u>	<u>Lisle Ill.</u>
_____	_____	_____
_____	_____	_____

COPY:

_____	_____	_____
_____	_____	_____
_____	_____	_____

SENDER:

Name	Business Sector	Location
<u>JAMES D Richards</u>	<u>DuPont</u>	<u>Circleville, Oh.</u>

*** 10 PAGE(S) TO FOLLOW THIS COVER SHEET ***

SPECIAL INSTRUCTIONS/INFORMATION TO RECIPIENT:

Colleen This is the California Registration papers for the
Prote-Typ's Radiation Source holder given to the MEASUREX Corp.
If we can get approval we will be receiving the source at our
site the first week of February. Please call me with any questions.

CIRCLEVILLE FAX NUMBER FOR THIS TRANSMISSION IS 614-474-0245.
SHOULD PROBLEMS OCCUR WHILE SENDING, CONTACT MAILROOM AT 614-474-0328.

Thanks
Jim

*** CONFIDENTIALITY NOTE ***

614-474-0145

The documents accompanying this telecopy transmission contain information from DuPont Films which is confidential and/or legally privileged. The information is intended only for the use of the individual or entity named on this transmission sheet. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of the telecopied information is strictly prohibited, and that the documents should be returned to DuPont Films immediately. In this regard, if you have received this telecopy in error, please notify us by telephone (614-474-0328) immediately so that we can arrange for the return of the original documents to us at no cost to you.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA501D103B

DATE: August 29, 1996

PAGE: 1 of 9

DEVICE TYPE: Thickness Gauge

MODEL: 4202 Series

MANUFACTURER/DISTRIBUTOR:

Measurex Corporation
One Results Way
Cupertino, California 95014

(408) 255-1500

SEALED SOURCE MODEL DESIGNATION: Amersham Corporation, Model PHC.C2

ISOTOPE: Promethium 147 MAXIMUM ACTIVITY: 2.5 curies

LEAK TEST FREQUENCY: Six (6) Months

PRINCIPAL USE: Beta Gauges (E)

CUSTOM DEVICE: ☐ YES ☒ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES SAFETY EVALUATION OF DEVICE

NO: CA501D103B

DATE: August 29, 1996

PAGE: 2 of 9

DEVICE TYPE: Thickness GaugeDESCRIPTION:DEFINITIONS:

- Source holder: An assembly in which the sealed radioactive source is secured. In addition to protecting the sealed source, the source holder provides the primary radiation shielding, radiation beam "on-off" mechanism, and radiation beam collimation.
- Gauge heads: Enclosures used in pairs; one contains the source holder and the other the detector (ion chamber) and associated electronics.
- Source gauge head: Gauge head which contains the source holder.
- Detector gauge head: Gauge head which contains the detector and associated electronics.

GENERAL DESCRIPTION:

Devices in the 4202 series use the attenuation of beta radiation emitted from a sealed radioactive source to measure the thickness of a sheet product. The sealed sources used in these devices are contained within a source holder that is of the type represented in Attachment I (see below for additional information on the source holder).

Each gauge consists of two gauge heads mounted directly opposite one another. One of the gauge heads contains the radioactive source in the source holder. The other contains the detector. The product to be measured by the device passes through a gap between these two gauge heads. The maximum gap between the two gauge heads will be 2.54 cm (1").

In most applications, the gauge heads will be mounted on scanners. The two heads will scan back and forth in a motion perpendicular to the direction of the product as it moves through the thickness gauge.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES

SAFETY EVALUATION OF DEVICE

NQ: CA501D103B

DATE: August 29, 1996

PAGE: 3 of 9

DEVICE TYPE: Thickness Gauge

DESCRIPTION: (Continued)

DIMENSIONS:

The outer dimensions of the gauge heads are listed below:

<u>Gauge Model No.</u>	<u>Head Designation</u>	<u>Min. Outer Dimensions</u>
4202	2034 (Modular)	8" x 8" x 8"
4202	2050 (Intellipack)	21" x 15" x 12"
4202	4623 (Grateful Head)	8" x 11" x 9"

MATERIALS OF CONSTRUCTION:

Gauge heads:	primarily plastic, aluminum, and stainless steel
Source holder:	primarily stainless steel

SHIELDING:

The stainless steel source holder provides the primary radiation shielding. When the shutter is open or in the "On" position, the detector gauge head serves as the beam stop.

"ON-OFF" MECHANISMS:

The source holder used in the Model 4202 thickness gauge uses a pneumatic actuator to rotate the shutter from a shielded "beam off" position to a collimated "beam on" position. The source holder uses a spring (located inside the air cylinder) to hold the shutter closed in the "Off" position. A continual supply of air at a minimum pressure of approximately 15 psi or more is required to overcome the spring and keep the shutter in the open position.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: CA501D103B

DATE: August 29, 1996

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DEVICE TYPE: Thickness GaugeDESCRIPTION: (Continued)"ON-OFF" INDICATORS:

Visible indication of the radiation beam status is provided by indicators (e.g. light bulbs, LED's) located on the source gauge head and/or on the scanner on which the gauge heads are mounted. On scanners that are more than 15 feet in length, the indicators are located on both ends of the scanner. The red "on" indicator is in a circuit such that indicator failure will interrupt power to the shutter actuator so the shutter will return to the closed position. Lighting of the green shutter closed indicator requires the shutter to be in the closed position.

METHOD FOR SECURING SOURCE IN DEVICE:

To prevent access to the radioactive source except by deliberate action, the source holder is either locked to the gauge head or the gauge head covers are locked such that the head contents are inaccessible.

LABELING:

All Measurex Series 4202 gauges are labeled in accordance with California Radiation Control Regulations, Title 17, Sections 30192.1 and 30278.

The source holder is labeled with the following (or equivalent):

- The standard radiation symbol
- Words: "Caution Radioactive Material"
- Radionuclide and activity contained in the sealed source
- Date of assay of radionuclide
- Serial number and mode number of sealed source
- Words: "Removal of this label is prohibited"

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: CA501D103B

DATE: August 29, 1996

PAGE: 5 of 9

DEVICE TYPE: Thickness Gauge

LABELING: (Continued)

The source gauge head is also labeled to identify the source and the device. In addition, this label has the following text (or equivalent):

In the U.S., the receipt, possession, use, and transfer of this device are subject to requirements described on this label, the requirements of the General or Specific License, and the regulations of the U.S. NRC or applicable Agreement State.

It is required that the sealed radioactive source in this device be tested for leakage at installation and every six months thereafter. It is also required that this device be tested for proper operation of the on-off mechanisms and indicators at six-month intervals. The tests described in this paragraph must be performed by an individual authorized by a Specific License.

Except for those service operations that are specifically described in the Measurex Customer Radiation Safety Manual, installation, replacement, transfer, disposal, testing, repair, and maintenance operations that involve the source or detector gauge head, on-off mechanisms or indicators, safety interlocks, and the radioactive source and its holder must be performed by an individual authorized by a Specific License.

DIAGRAM: See Attachment 1: Diagram of the source holder.

CONDITIONS OF NORMAL USE:

Model 4202 gauges are typically used in industrial process control for continuous sheet products. Common applications include process control for paper and plastic products. The gauges are intended for typical industrial environments in facilities located throughout the U.S. (and elsewhere).

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES SAFETY EVALUATION OF DEVICE

NO: CA501D103B

DATE: August 29, 1996

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DEVICE TYPE: Thickness Gauge

PROTOTYPE TESTING:

According to the test results submitted by the manufacturer, Model 4202 gauges are classified as having an ANSI N538 rating of 43-285-985-R2.

EXTERNAL RADIATION LEVELS:

Model 4202 gauges shipped as a Generally Licensed devices have radiation levels within the following limits when measured at a distance of 30 cm (12") with the shutter in the open position:

DR(penetrating radiation) ≤ 5 mRem/hr

DR(non-penetrating radiation) ≤ 30 mRem/hr

Instruments and measurement methods used for surveys of radiation levels are consistent with the procedures stated in the *Measurex Procedures Manual*.

QUALITY ASSURANCE AND CONTROL:

The manufacturer's quality assurance program related to radiation safety for gauges manufactured and distributed under their California license consists of:

1. Incoming inspection of critical components of the source holder (e.g. shutter solenoids or actuators to control position of source).
2. Multiple-hour testing of function of assembled source holder (e.g. capsule insertion/retraction or shutter mechanism are put through a program of repeated actuation cycles to test function).

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES SAFETY EVALUATION OF DEVICE

NO: CA501D103B

DATE: August 29, 1996

PAGE: 7 of 9

DEVICE TYPE: Thickness GaugeQUALITY ASSURANCE AND CONTROL: (Continued)

3. Quality assurance checks by Radiation Safety staff, including:
 - o Inspection and manual check of shutter or insertion/retraction mechanism prior to loading with radioactive source.
 - o Leak testing of solid radioactive sources.
 - o Inspection and manual check of shutter or insertion/retraction mechanism after loading with radioactive source.
4. Gauges to be shipped as part of an entire gauge system (e.g. as opposed to shipment of a source holder containing a new radioactive source to replace a source holder containing a source decayed below usefulness) typically spend several weeks or months in use at the manufacturer's facility during software and general system testing. During this period, the gauge is put through a series of final checks for correct labels, function of warning lights, "on-off" mechanism, external radiation levels, etc. The results of these tests are documented.
5. Authorized users listed in the manufacturer's California license the results of the radiation safety checks and approve gauge shipments. Gauges that fail to satisfy radiation safety requirements are not shipped until the deficiency is corrected.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

1. Measurex Model 4202 gauges shall be distributed to persons Specifically or Generally Licensed by the NRC or an Agreement State.
2. Gauges containing Pm-147 must be leak tested at no more than six-month intervals by persons Specifically Licensed to perform such testing. Such testing must be capable of measuring the presence of any removable contamination of 0.005 microcuries or more. Records of leak tests must be kept available for inspection.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES SAFETY EVALUATION OF DEVICE

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DEVICE TYPE: Thickness GaugeLIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE: (Continued)

3. Gauge "On-Off" mechanisms and indicators must be tested at no more than six-month intervals by persons Specifically Licensed to perform such testing. Records of such tests must be kept available for inspection.
4. Gauge installation, replacement, transfer, disposal, testing, repair, and maintenance operations that involve the source or detector gauge head, on-off mechanisms or indicators, safety interlocks, and the radioactive source and its holder must be conducted by persons Specifically Licensed to perform such operations.
5. The manufacturer does not recommend that General Licensees be authorized for installation, replacement, transfer, disposal, testing, repair, and maintenance operations that involve the source or detector gauge head, on-off mechanisms or indicators, safety interlocks, and the radioactive source and its holder.
6. The manufacturer will provide a Radiation Safety Information package to each Model 4202 gauge recipient.
7. No change shall be made to this registration sheet or the information contained within the references without the written consent of the California Department of Health Services.

SAFETY ANALYSIS SUMMARY:

In testing specific to radiation safety, this source holder design successfully completed over 200,000 cycles of the source insertion and retraction mechanism under a variety of conditions. In comparison to the previous model, the manufacturer has designed the Model 4202 with many safety features. The shutter is spring-loaded to the closed "beam off" position. An ongoing supply of air at a minimum pressure of 15 psi or more is required to keep the shutter in the open "beam on" position. The Model 4202 source holder includes a fire safety pin which locks the shutter in the closed position during a fire or when exposed to extreme temperatures. The holder is primarily stainless steel and provides good radiation shielding even at high temperatures.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

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DEVICE TYPE: Thickness GaugeSAFETY ANALYSIS SUMMARY: (Continued)

Radiation indicators give users information on the shutter status. To insure that the red "beam on" lamps are functional, the shutter cannot be opened if a red lamp fails to illuminate when it should. Green "beam off" lamps will only illuminate when redundant switches indicate that the shutter is physically closed. A series of drawings that were deemed proprietary were provided by the manufacturer during evaluation and demonstration of the actual device and its safety features.

Based upon our review of the information provided, we conclude that the Measurex Corporation Model 4202 gauges are acceptable for distribution to General and Specific Licensees.

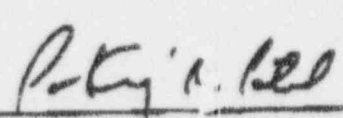
REFERENCES:

The following documents are hereby incorporated by reference and made part of this regulatory document.

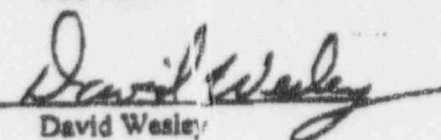
- 1) Measurex Corporation letters dated July 2, 1996, August 26, 1996, and August 28, 1996; with attachments thereto, all signed by Elsa Nimmo.

DATE: August 29, 1996

REVIEWED BY:


Pete PatelDATE: August 29, 1996

CONCURRED BY:


David WesleyISSUING AGENCY: California Department of Health Services

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NQ: CA501D103B

DATE: August 29, 1996

ATTACHMENT 1

Overall Height Approximately 9 inches

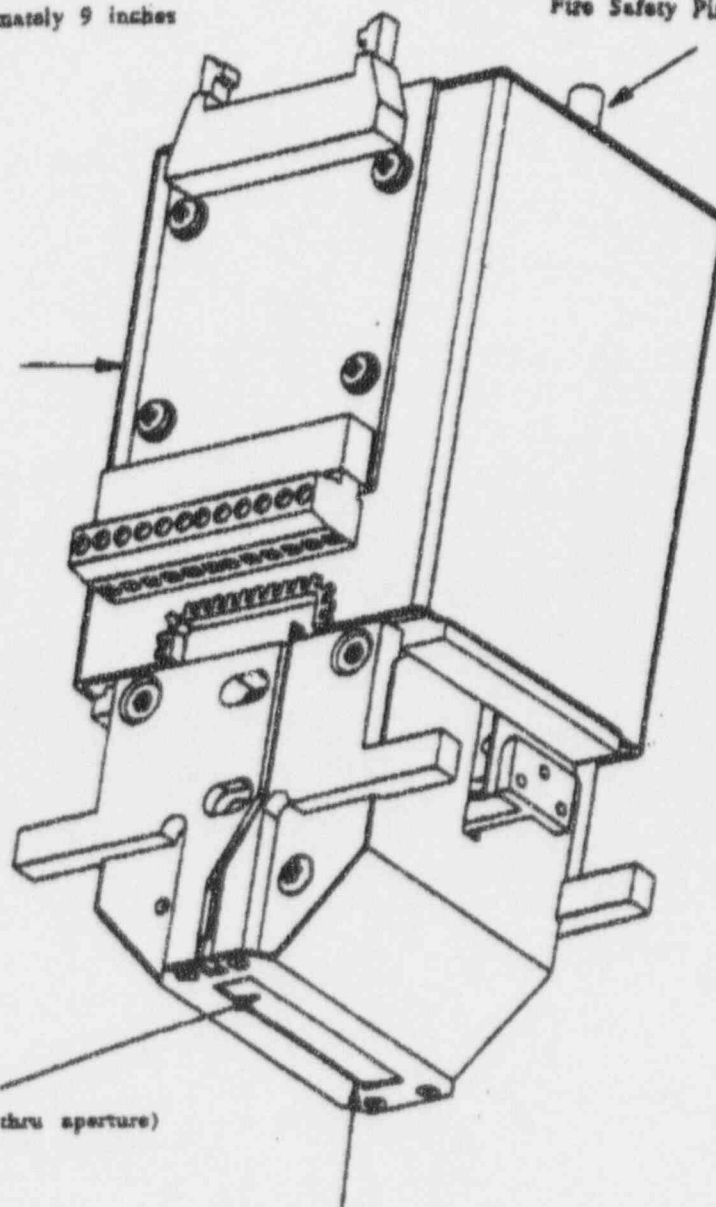
Fire Safety Pin (end)

Air Cylinder (internal)

Solenoid (internal)

Shutter (portion visible thru aperture)

Aperture



Nov. 7, 1996

E.I. Dupont
Route 23 South, Dupont Rd.
Circleville, Ohio 43113

Materials Licensing Section
U.S. Nuclear Regulatory Commission, Region III
801 Warrenville Rd.
Lisle, Ill. 60532-4351
Attn: Colleen Casey
Control # 397777

Colleen,

I have reviewed our existing license and tried to eliminate any unnecessary language. I propose our renewed license read like the attached. (I have high-lighted the sections where we are requesting changes)

I believe I have previously supplied material to support all of the changes except item #20, the request to calibrate our survey meters annually. Please consider this change in both our RSO update amendment and our license renewal request per our phone conversation on Nov. 7, 1996.

If you have any suggestions, questions or I can be of any help please call me at 614-474-0145 or Fax at 614-474-0245.

Thanks,

James D. Richards

James D. Richard's, RSO

RECEIVED

NOV 13 1996

REGION III

Pm: 11-8-96

NOV 23 1996

MATERIALS LICENSE

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, 39, 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. E.I. DuPont de Nemours & Co. Inc.

2. P. O. Box 89
Circleville, OH 43113In accordance with letter dated
September 30, 19923. License number 34-02962-02 is amended in
its entirety to read as follows:

4. Expiration date November 30, 1994

5. Docket or
Reference No. 7030-139096. Byproduct, source, and/or
special nuclear material7. Chemical and/or physical
form8. Maximum amount that licensee
may possess at any one time
under this license

A. Krypton-85

A. Sealed sources
(American Atomic
Corp. Model kr85c,
kr85e, kr85j and
kr85m; or NEN Model
NER586; or Amersham
Corp. Model kac.d2)A. No single source to
exceed 1000
millicuries

B. Krypton-85

B. Sealed sources (LFE
Model S-70A)B. No single source to
exceed 1200
millicuries

C. Strontium-90

C. Sealed sources (3M
Co. Model 3FIV)C. No single source to
exceed 50
millicuries

D. Cesium-137

D. Sealed sources
(In-Val-Co Model
A-00237 or 3M Co.
Model 4F6S)D. No single source to
exceed 350
millicuries

E. Cesium-137

E. Sealed sources
(Kay-Ray Model 7700
series)E. No single source to
exceed 200
millicuries

F. Cesium-137

F. Sealed sources
(Ohmart Model No.
A-2102)F. No single source to
exceed 50
millicuries

G. Cesium-137

G. Sealed sources (3M
Co. Model 4F6S)G. No single source to
exceed 300
millicuries

H. Cesium-137

H. Sealed sources
(In-Val-Co Model
A-00237 or 3M Co.
Model 4F6S)H. No single source to
exceed 350
millicuries

- | | | |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| 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 |
| I. Promethium-147 | I. Sealed sources (Amersham Corp. Model No. PHB.D1) | I. No single source to exceed 540 millicuries |
| J. Promethium-147 | J. Sealed sources manufactured and distributed in accordance with ANSI ratings and our license issued by the U.S. Nuclear Regulatory Commission | J. 1 Source not to exceed 2.5 ci. |

9. Authorized Use:

- A. To be used in Measurex Model 2201 source holder for thickness measurement.
- B. To be used in IFE Model SCL-77A source holder for thickness measurement.
- C. To be used in Measurex Model 2201 source holder for thickness measurement.
- D. To be used in In-Val-Co Model B-20-06 source holder for level measurement.
- E. To be used in Kay-Ray Models 7062 Series and 7063 Series, or 7064 Series source holders for level measurement.
- F. To be used in Ohmart Model SHRH-A source holder for level measurement.
- G. To be used in In-Val-Co Model SH-581 source holder for level measurement.
- H. To be used in In-Val-Co Model B-20-06 source holder for level measurement.
- I. To be used in Measurex Model 2201 and/or Model 4201 source holder for thickness measurement.
- J. To be used in Measurex prototype source holder for Research and Development under 10CFR30

no - change to 4202 Series

10. Licensed material shall be used only at the licensee's facilities located at Route 23 South, DuPont Road, Circleville, Ohio, 1175 DuPont Road, Circleville, Ohio.
11. Licensed material shall be used by, or under the supervision of James D. Richards.
12. The Radiation Protection Officer for the activities authorized by this license is James D. Richards.
13. A. (1) Each sealed source containing licensed material, other than Hydrogen-3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months; except those sealed sources as specified by the manufacturer and specifically authorized by the Commission or an Agreement State may be leak tested at intervals not to exceed three years. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak test when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
- B. Any source in storage and not being used need not be tested. When the source is removed from storage for use or transfer to another person, it shall be tested before use or transfer.
- C. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.
- D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commissioner an Agreement State to perform such services.
14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.
15. Installation, radiation surveys, relocation, removal from service, maintenance, leak test, safety checks, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Willard Bennett, Jr., Donald Sparks, Mark Kiger, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark DePugh or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an agreement state to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commissioner or an agreement state to perform such services.

16. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model number, location of sealed sources and the date of the inventory.
17. The license shall operate each gauge within the manufacturer's specified environmental limits such that the shielding and shutter mechanism of the source holder is not compromised.
18. The licensee shall assure that the shutter mechanism is locked in the closed position during periods when a portion of an individual's body may be subject to the direct radiation beam. The licensee shall also modify their "lock-out" procedures whenever a new gauge is obtained for use other than purposes for which they are currently authorized to incorporate the device manufacturer's recommendations.
19. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Kay Ray devices containing sealed sources shall be performed by James Richards, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.
20. All radiation survey meters will be calibrated annually. The calibration shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.
21. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
22. The licensee shall maintain records of information important to safe and effective decommissioning at Route 23 South, DuPont Road, Circleville, Ohio, per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.
23. 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.

CONVERSATION RECORD

TIME
3:00pmDATE
10/2/96

CHECKLIST

TYPE

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

Location or Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT
WITH YOUORGANIZATION (Office, dept., bureau,
etc.)

TELEPHONE NO.

SUBJECT

C/N 397777 and 301365; L/N 34-02962-02
(RENEWAL) (AMDMT)

SUMMARY

Jim clarified the three issues that licensee needs addressed in time-urgent manner, via amendment:

① the new Promethium 147 sealed source/device (Measurex photo-type)
(registered source) (unregistered device)

② Personnel training evaluation for service work on gauges

③ officially correct license to reflect Jim as LSO.

I will try to resolve/review these issues as quickly as possible. Regarding renewal: license currently ties down 5 documents, including 3 with exclusions. Since renewal letter 10/24/94, 3 additional submissions to renewal have been made @ amendment correspondence. I proposed that Jim resubmit renewal in entirety to base renewed license on as few documents as possible that are current and final. Jim agreed to do this and he may re-use previously submitted portions of documents as necessary.

ACTION REQUIRED

30 days response for renewal resubmission - please call me if more time needed.

No response for amendment, per SQ, except as included in renewal resubmission.

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

ACTION TAKEN

SIGNATURE

TITLE

DATE

2/3/97 Mon.

telecon
late afternoon

614-474-0245.

- ① Issue audit as is now - ^{no add'l} info.
- ② Drafting telecon record for renewal - fax to Jim this week.
- ③ Issue renewal after getting info from Du Pont + Measurex

- Jim does not want to pursue being auth for prototype etc. from Meas.