

Fax No. (416) 667-1731

Tel. (416) 667-1211 Telex 06-217501

FAX MACHINE TRANSMISSION

TO- Ms. Cynthia G. Jones.
Health Physicist
COMPANY- Environmental Laboratory Comm
FROM- Laurie E. Eisner

DATE- Jan. 18/89
FAX NO. 301-492-1137
REF.-

MESSAGE :

6-H-3

Dear Ms. Jones:

Subject: Amendment to NRC License #31-24822-01E, Control
No. 20329, Our telephone conversation of 17 Jan. 89

Attached are revised pages 12, 38 and Appendix D. Please use
these pages to replace the corresponding ones in our previous
submission.

Please let me know if there are any further problems.

Sincerely,

Laurie E. Eisner

Laurie E. Eisner, D. Eng.
Director of Product Development

LEE:tcc

Enc.

cc: John Poesl
Mara Cherubin

*Rec'd
1-18-89
Done NMSS/
IMAB*

Number of pages including this cover sheet: 4

IV. D. Total Quantities and Distribution.

1. Annual distribution = 60,000 units (56 mCi).
2. Maximum activity in storage at Mirtone Industries Ltd. = 6,000 units (5.6 mCi ^{241}Am).

E. Expected Useful Life of the Product -- 15 Years:

The expected useful life of the product is 15 years. This estimate is based on experience with the electronic and mechanical components to used. The ^{241}Am source is expected to have a useful lifetime considerably longer than that of the other components. The half-life of ^{241}Am is 458 years. In 15 years the activity of the source will have been reduced by radioactive decay to about 98% of its original activity. The physical form of the source makes it impervious to all normal environmental conditions. Therefore, no impairment of source activity would be expected over a period of 15 years.

V. A. Procedures for Prototype Testing.

1. The outside of the unit and the ion chamber was wiped with filter paper. The wipe was counted for alpha contamination in a low background proportional flow gas counter capable of detecting 0.0 pCi alpha activity.

VII-A QUALITY CONTROL PROCEDURES

1) Manufacturing Facility, Toronto, Canada

- (a) At final assembly a 100% wipe test is performed on the outer case of the unit. Wipes are made in batches of 10 units to the total number of assembled units. The cumulative count for each batch is measured with an Eberline Model SAC-4 Alpha particle counter.
- (b) A bi-weekly wipe test is also performed on benches, floors, tools and storage areas in which units are manufactured and stored.

2) Receiving, Warehousing & Distribution Centre,
Tonawanda, New York 14207

- (a) A 10% wipe test is performed on units received at the Tonawanda facility from Toronto.
- (b) A similar bi-weekly test to that performed in Toronto is conducted at Tonawanda on floors, benches and storage areas.

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APPENDIX D

PERSONS DIRECTLY RESPONSIBLE FOR SUPERVISION OF LICENSED MATERIAL

NAME: Harry Kassabian

TITLE: Director of QA & QC

Harry Kassabian, as Q.C. Manager at the Mirtone manufacturing facility in Toronto, will also be responsible for Radiation Protection functions at this plant.

1) He has attended a course at A.E.C.-L., Chalk River covering Radiation measurement, safety & biological effects. The course also included techniques and precautions involved in the industrial use, storage and disposal of radioactive materials.

U.S. Receiving, Warehousing and Distribution Center Tonawanda,
New York 14207 Phone 716-875-0600

NAME: Richard Miller

TITLE: Distribution Center Supervisor
& Ass. Radiation Officer

As the person responsible for reception, storage and distribution of Model 734700 smoke detectors in the United States, Richard Miller will handle only completely assembled units. These units, to a maximum of approximately 6,000, will be stacked, in cartons, in a reserved area of the company warehouse. Precise count of incoming and outgoing shipments will be maintained in Tonawanda, with a check count being made quarterly.

All defective units will be returned to Toronto for repair or disposal except units damaged beyond repair. These will be disposed of by the Radiation Protection Officer.

1. A. Description of Product and Intended Use

The Mirtone Industries Model 73470U is an ionization type smoke detector for system use, using a 0.9 uCi single source of Americium 241. The detector, intended for use with the manufacturer's multi-zone fire alarm control units, and with similar systems of other manufacturers, is currently listed with Underwriters' Laboratories of Canada and has successfully undergone testing at Underwriters Laboratories Inc., Northbrook, Illinois.

II. A. Type and Quantity of By-Product Material

The Mirtone Industries Ltd. ionization chamber smoke detectors use a single source with a nominal activity of $0.9 \mu\text{Ci}$. The ion chambers use Amersham Searle Model 1001H sources. The units are manufactured in Canada under AECB License No. 5-8146-84 (Rev. 1)

B. Chemical and Physical Form.

1. The chemical form of the active material is AmO_2 . The physical form is a sealed source. The AmO_2 is dispersed in a gold matrix which is covered by 0.001 mm gold layers and backed by a 0.2 mm silver layer (see Appendix C for drawings).

All components except Am are noble metal and not subject to oxidation or chemical attack. No change in physical form is possible without melting the piece which would require 960°C . Therefore, no changes in chemical or physical properties are expected over the useful life of the detector.

C. Solubility in Water and Body Fluids.

According to a report by ORNL (ORNL TM-2683, "Containment Integrity of ^{226}Ra and ^{241}Am Foils Employed in Smoke Detectors" by R. G. Niemeyer), negligible activity can be leached from intact foils by water. According to the ICRP Publication 19, the absorption of ^{241}Am -chloride from the GI tract is less than 0.03%.

Due to the chemical and physical form of the ^{241}Am in the foils, leaching of activity from the foils in body fluids would be expected to be even less.

(See Appendix B for prototype tests on sources and chambers.)

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Mirtone, A Unit of General Signal Ltd.
425 Alness Street
Downsview, Ontario
M3J 2H4

Radioactive Materials License
Section: VIII
Date: February 1, 1990
Issued by:
Page 1 of 1

VIII STORAGE OF RADIOACTIVE MATERIALS

Mirtone Pittsfield stores only completely packaged smoke detectors. The smoke detectors will be stored on metal shelves and enclosed with chicken wire and have a locked door, refer to drawing on page 2.

LOCATION

Mirtone's warehouse is located at Edwards, Company Inc., Main St. P.O. Box 310. The area is zoned for industry.

BUILDING CONSTRUCTION

"Mirtone, A Unit of General Signal Ltd. will employ the Edwards Company, Inc. warehouse facility as its distribution center in the U.S.A.

The address is Edwards Company Inc., Main Street, Pittsfield, Maine 04967. Note, Edwards Company Inc. is currently licensed by the Nuclear Regulatory Commission (18-19750-02E) to distribute Ionization Smoke Detectors manufactured by them under N.R.C. license 18-19750-01."

ou

DEVICE EVALUATION
CHECK SHEET

REGISTRANT'S NAME & ADDRESS

MIRONE INDUSTRIES LIMITED
ATTN: MR. LAURIE E. EISNER
425 ALNESS ST, DOWNSVIEW (TORONTO)
ONTARIO, CANADA M3J 2H4

DEVICE MODEL

73470 U

DOCUMENTS; DATE & TYPE:

- and Faxes Jan 18 and 19, 1989
- (a) Incoming: 2/29, 1986; Jan 6, 1987; Oct 5, 1987; Aug 15, 1988; Dec 14, 1988
- (b) Registration Certificate #: NR-
- (c) Acceptance Letter: _____
- (d) Other: Deficiency Ltr Dec 1, 1988.

PROPOSED USE: Smoke Detectors

RADIONUCLIDE(S), AMOUNT(S) & FORM(S) (Source make(s) & model(s)):

Am-241, 0.9 μ ci, Amersham Source Model AMM 1001 H

DESCRIPTION:

- (a) Configuration, dimensions: _____
- (b) Materials: Plastic (Noryl SE-1), light (Kohman and Haas Plexiglas); Brass
- (c) Assembly methods (welds, screws, etc.): Screws
- (d) Source mounting & security: Screws & is hardwired into wall. Copy
- (e) Shutter operation: _____
- (f) On-off indicators: LED Light Pipe
- (g) Interlocks, guards, etc.: If you try to pry open the brass
chamber which encloses the Am-241 source, you break the un-

RADIATION SURVEY:

- (a) Instrumentation (type, window thickness, calibration): Ge(Li) detector w/
an MCA; calibration was done with a 0.00795 μ ci Am-241 source
- (b) Survey Conditions:
1. Nuclide & activity: Am-241, 0.9 μ ci
 2. Distance from source, surface: 10.62
 3. Source exposed, shielded: 1
 4. Scatterer (product) in beam? N/A
 5. Guards & shields in place? yes

INSTALLATION CONDITIONS:

- (a) Permanent, portable, moveable: Permanent
- (b) Inherent shielding, inaccessibility: yes - if you try to get at source
- (c) Interlocks, locks (portals, air gap): N/A you break it

DEVICE EVALUATION
CHECK SHEET Cont.

PROTOTYPE TESTS:

- (a) Test methods & conditions (related to use?): Same as
(b) Test results: See
(c) Criteria for acceptance: License

QUALITY ASSURANCE:

- (a) Materials: Plastic, Copper & Brass
(b) Assembly methods (welds, screws, etc.): welds, screws
(c) Dimensions: ~ 5" diameter x 3" high
(d) Activity: 1 μ Ci
(e) Shielding, radiation levels: from 0.4 μ R/hr to 10.6 μ R/hr

LABELLING:

- (a) Materials: Paper & Plastic & Paint
(b) Attachment method: Peel on or Printed
(c) Location: On box & on bottom of Smoke detector & on side
(d) Durability: Good on side & detect.

SAFETY MANUAL:

- (a) Operation & maintenance (including calibration): In pt of Sale contain
(b) Damage or malfunction procedures: Testing & directions to detector
(c) Radiation profile: In license packet
(d) Specific warnings (if applicable): in packaging instructions

SERVICES by MANUFACTURER/DISTRIBUTOR:

	<u>Furnished with Device</u>	<u>Upon request</u>
(a) Installation:	<u>X</u>	<u> </u>
(b) Relocation:	<u> </u>	<u> </u>
(c) Maintenance:	<u>X</u>	<u> </u>
(d) Repair:	<u> </u>	<u>X</u>
(e) Source replacement:	<u> </u>	<u>X</u>
(f) Calibration:	<u>See X</u>	<u> </u>
(g) Leak testing:	<u>N/A</u>	<u> </u>
(h) Radiation survey:	<u>X</u>	<u> </u>
(i) Other:	<u> </u>	<u> </u>

COMMENTS:

See package for Comments on License
License.
They mailed us a sample of their product.
Q 1-30-87

1. A. Description of Product and Intended Use

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HEAD OFFICE
425 Alness Street, Downsview (Toronto)
Ontario M3J 2H4 Canada
Telephone: (416) 667-1211 Telex: 06-217501

'87 JAN -7 P1:20

January 6, 1987

Ms. Kristen Smith
U.S. NRC
Material License Section
Division of Fuel Cycle & Material Safety
Mail Stop 396-SS
WASHINGTON, D.C.
USA 20555

Reference: Control No. 382450

Dear Ms. Smith:

In accordance with our telephone conversation on January 5, 1987, I am requesting that the following smoke detectors be added to our distribution license in addition to our 73450A model:

Smoke Detector Model

Source Model

BRK 1800
BRK 1851B
BRK 1839ACI
BRK 1839ACWI-12
Fenwal CPD-7021

NRD 8001
NRD 8001
NRD 8001
NRD 8001
Amersham 196362

Maximum activity per source is 1.0 microcurie for all above sources.

Please feel free to call me if you have any further questions.

Yours sincerely,

Mara Cherubin

Mara Cherubin, CET

02:10 L-10 18.

HEAD OFFICE
425 Alness Street, Downsview (Toronto)
Ontario M3J 2H4 Canada
Telephone: (416) 667-1211 Telex: 06-217501

October 29, 1986

Dr. Bruce S. Mallett, Chief
Materials Licensing Section
United States Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois
60137 USA

Subject: License No. 12-21478-01

Dear Dr. Mallett:

In reply to your letter of October 7, 1986, we would like to continue our program with NRC. We wish to amend our present license for our new warehouse location, which is:

Mirtone Industries Inc.
2225 Kenmore Avenue
Tonawanda, N.Y.
USA 14207

As per my conversation with Mr. Steve Baggett at NRC Washington, we need an exempt distribution license only, since we are applying to New York for a possession and storage license.

Please find attached a cheque number 06174 for \$150US to cover the cost of the amendment. Please feel free to contact me at (416) 667-1211 EXT. 114 if you have any questions.

Yours sincerely,

Mara Cherubin

Mara Cherubin, CET

Encl.

Log	Dec - 1 - 11/86
Remitter	
Check No.	06174
Amount	\$150
Fee Category	34
Type of Fee	Amend.
Date Cleared	12/19/86
Date Completed	12/13/86
By	Messier

*W'd
LFMB
12/19/86*

RECEIVED

NOV 03 1986

REGION III

NOV 3

1986

CONTROL NO. S2450

~~9806240124~~ 12. Suppl 354

MIRIONE

INDUSTRIES
LIMITED

HEAD OFFICE

425 Ainess Street, Downsview (Toronto)

Ontario M3J 2H4 Canada

Telephone: (416) 667-1211 Telex: 06-217501

October 5, 1987

30-29610

exp. date 1/31/92

Mr. Don Mackenzie
U.S. Nuclear Regulatory Commission
N.M.S.F.
Washington, D.C.
USA 20555

Re: Amendment of N.R.C. License 31-24822-01E

Dear Mr. Mackenzie:

We wish to initiate an amendment of our N.R.C. licence to list our Model 73470U ionization smoke detector. Please find a sample detector attached.

The Model 73470U ionization smoke detector is presently being tested at Underwriters Laboratories Incorporated. The 73470U is a modification of the 73450A, which is designed to simplify manufacturing and meet some new market demands.

Also attached, is a cheque for \$120.00 U.S. amendment fee. Once the Model 73470U is approved we will no longer require listing of the 73450A on our N.R.C. license.

Sincerely,

Mara Cherubin

Mara Cherubin
Electronics Technologist/
Technical Writer

6-100

113034

Encl.

Oct-1-1987

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6/12/87

3/1

And

11/13/87

10/13/87

mezzan

62-100 2-11 18.

620329

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HEAD OFFICE

425 Alness Street, Downsview (Toronto)
Ontario M3J 2H4 Canada
Telephone: (416) 667-1211 Telex: 06-217501

December 14, 1988

Ms. Cynthia G. Jones
Health Physicist
U.S. Nuclear Regulatory Commission
Mail Stop OWFN-6H3
Washington, D.C.
U.S.A. 20555

*Rec'd
12-20-88
C. Jones NMSS/IMAS*

Dear Ms. Jones:

Subject: Amendment to NRC License #31-24822-01E
Control No. 20329, Your letter of 1 Dec. '88

We are sending you a new sample of the 73470U, along with all the information requested in your letter to me of 1 Dec. '88. We have made a few changes to the unit since it was originally submitted to you, to comply with UL requirements and we wanted you to have the most up-to-date one.

As we discussed on the telephone, I wish to remind you that the 73470U detector configuration is an upgrade of the 73450A model to comply with the latest UL-268 standard. The majority of the changes are in the electronics portion, some minor modifications to the plastic housing parts and the addition of a plug-in feature versus the pigtail wire configuration used on the 73450A. The only changes in the ionization chamber are as follows:

- 1) Reduction in the outer chamber air slots from 0.060" to 0.050" to obtain the equivalent of a bug screen (dwg. 25560501).
- 2) The hole configuration in the center of the electrode disc has been modified (dwg. 25561011 and 25560481).
- 3) The source holder support bracket has been changed to increase the distance between electrodes (dwg. 25560572 and 25560471).
- 4) The source and source holder assembly as supplied by Amersham is completely identical to the one used on the 73450A.

MIRIONE

Ms. Cynthia G. Jones

- 2 -

December 14, 1988

Please review the detector sample and the documents and let me know if we can be of further assistance. Our response on the second assignment (Control No. 20568) will be the subject of another letter.

Sincerely,

L. E. Eisner
Laurie E. Eisner, P. Eng.
Director of Product Development

LEE:tcc

Enclosures

cc: Joen Poesl
Mara Cherubin

Group 1 enclos 1

25560501
25561011
25560481
25560471
25560572
25561073
25561062
25560522
60450
60460

*MIRIONE
FRY # (416) 667-1731*

LABEL SMOKE DET. PART NO 809 00111
LABEL ON BASE 809 05226
LABEL ON OUTER CHAMBER 809 00520