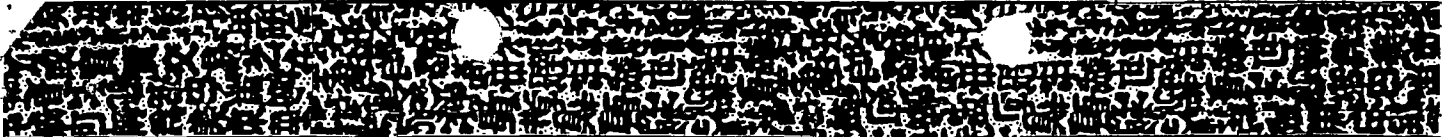


MATERIALS DATA INPUT



DOCKET NUMBER 040-00215	MAIL CONTROL NO. 00161	DATE REQUEST REC'D 01-24-74	PROGRAM CODE (PRIMARY)
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SECONDARY PROGRAM CODES:

#1	#2	#3	#4	#5
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INDIVIDUAL LICENSEE	NAME	NAME
	NAME	NAME
	NAME	NAME

ORGANIZATION LICENSEE	ORGANIZATION NAME S.Y. Appliances Limited	TYPE OF ORGANIZATION	
	DEPARTMENT OR BUREAU	U. S. GOVERNMENT AGENCY	EDUCATIONAL INSTITUTION
		MEDICAL INSTITUTION	INDUST

ADDRESS	BUILDING, STREET 80 Broad Street	CITY New York	STATE NY	ZIP CODE 10004
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APPLICANT'S COMMUNICATION DATED: 01-22-74	CLASSIFICATION U	ASSIGNED TO:	RESULTING AMD. NO.
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ENCLOSURES:
AEC-2 Form
Exhibit 1 thru 3

4 cys rec'd

UNCLASSIFIED DESCRIPTION:
Ltr. req. renewal of their Source Material License

DISTRIBUTION:
PDR
RO

OTHER REFERRALS			
NAME	DATE	NAME	DATE
Malaro w/ reg file cy & folder	01-31-74		
eeb			

A-42



SF APPLIANCES LIMITED

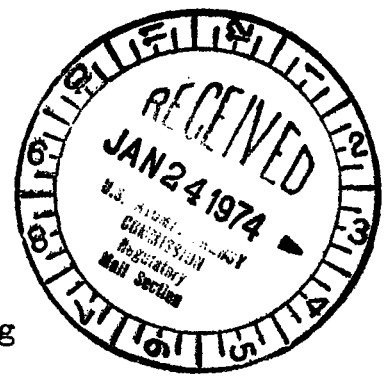
60 WALL STREET, NEW YORK, N.Y. 10004, U.S.A.

Regulatory

File Cy.

Telephone: 212 - 344-1963
Cables: PANSTART

January 22, 1974



United States
Atomic Energy Commission
Washington, D. C. 20545

Att: Director, Division of Materials Licensing

Gentlemen:

Enclosed you will please find our application for renewal of our Source Material License No. STB-258, in quadruplicate, including supplements and exhibits.

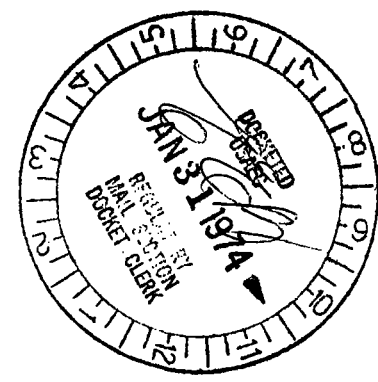
Very truly yours,

S. F. APPLIANCES LIMITED

K. G. Calaway
K. G. Calaway
Vice President

KGC:sf

encl:

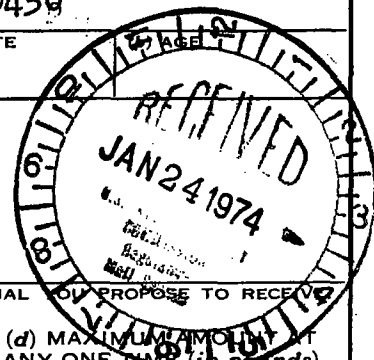


0161

UNITED STATES ATOMIC ENERGY COMMISSION
APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one) <input type="checkbox"/> (a) New license <input type="checkbox"/> (b) Amendment to License No. _____ <input checked="" type="checkbox"/> (c) Renewal of License No. <u>STB-258</u> <input type="checkbox"/> (d) Previous License No. _____		2. NAME OF APPLICANT <p align="center">S. F. Appliances Limited</p> 3. PRINCIPAL BUSINESS ADDRESS <p align="center">80 Broad Street, New York, N.Y. 10004</p>	
4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED <p align="center">613 W. Washington Street Morris, Illinois 60450</p>			
5. BUSINESS OR OCCUPATION <p align="center">Manufacturing</p>		6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP	
7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED <p align="center">Manufacturing Incandescent Mantles</p>			
8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE			
(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (in pounds)
NATURAL URANIUM			
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM (ISOTOPE)	Thorium Nitrate	Granular	723 lbs. (328 Kilos)
(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (in pounds) <p align="center">723 Pounds - 328 Kilograms</p>			
9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES. <p align="center">See supplement to item 9 attached</p>			
10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL). <p>Complete on the job training of plant supervisor, who is instructed in the use and hazards of radioactive materials, and the results of exposure to such materials, and trained in the precautions to minimize the dangers.</p>			
11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9: INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument). <p>Monthly film badge service, and annual air and waste sampling performed by independent contractor. (see item 11(b) 1972 report Exhibit 1&2 att. 1973 survey reports have not been completed.</p>			
(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier). <p>Monthly film badge service - by R. S. Landauer Jr. & Co. Annual air and waste sampling - by Health Physics Associates Ltd.</p>			



11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

Drawing (see exhibit 3 attached)

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9: INCLUDE: (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

See Supplement to item 12 attached

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Evacuate plant

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

Air and waste sampling - See exhibit 1 and 2 attached

13. WASTE PRODUCTS: If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here and explain on a supplemental sheet: Minimal-See Supplement to item 9

- (a) Quantity and type of radioactive waste that will be generated. Para.7, and survey report
- (b) Detailed procedures for waste disposal. exhibit 2 attached

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

- (a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.
- (b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.
- (c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (Specify instrument used, date of calibration and calibration technique used) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.
- (d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(This item must be completed by applicant)

15. The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

S. F. Appliances Limited

(Applicant named in Item 2)

Dated January 22, 1974

BY:

K. G. Calaway
(Print or type name under signature)

K. G. Calaway

Vice President

(Title of certifying official authorized to act on behalf of the applicant)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

SUPPLEMENT TO FORM 9 OF SOURCE MATERIAL LICENSE APPLICATION

SOLUTIONING OPERATIONS PERFORMED ON KNITTED RAYON FOR INCANDESCENT
MANTLE FABRICATION

- 1 - Rayon thread is knitted into continuous open mesh seamless hollow tubular webbing by automatic knitting machines.
- 2 - Solution is prepared by dissolving thorium nitrate in water in the ratio 72 pounds thorium nitrate in 9 gallons water. This is done in a 40 gallon stainless steel tub equipped for mechanical agitation with a stainless steel propeller type mixer, the tub is covered during mixing.
- 3 - 18 pounds of webbing is placed in solution and soaked for one hour, then one end of webbing is placed into rubber wringer rollers and is passed through wringer to remove excess solution, the excess solution drains back into tub for re-use, all personnel handling the wet webbing wear rubber gloves and aprons.
- 4 - The impregnated webbing is then hung on stainless steel racks and air dried.
- 5 - The dried webbing, still on drying racks, is placed in denitrating cabinet, which is tightly sealed to prevent the escape of the denitrating vapors, which are forced through the cabinet by means of a circulating blower. This process requires approximately one hour.
- 6 - The denitrated webbing is placed in open mesh nylon bags and soaked in a dilute morpholine-distilled water solution, the excess solution is removed in a centrifugal extractor, then the webbing is washed three times in distilled water, after each wash the water is extracted. Each drainage from the washing operations is diluted with plain water, at a ratio of three parts water to one part drainage solution before emptying.
- 7 - The solutioned and washed webbing is then dried on portable stainless steel racks at room temperature, after which it is coned into two pound rolls, then passed over steam vapors and sized to the proper width and reconed.
- 8 - Cones of dried and solutioned webbing are then placed on a special rack and passed through a diluted lacquer solution into rubber rollers and excess solution is removed.
- 9 - The Lacquered webbing is then hung on racks to dry for about one hour, after which it is removed and once again placed on cones by use of a coning machine.

Note: All personnel performing the solutioning operations listed are provided with rubber gloves and aprons, to be used when handling solutioned webbing.

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- 10 - Cones of solutioned webbing are now removed from solutioning department to mantle fabricating department and are cut off and sewn to pre-determined length for fabrication into mantles.
- 11 - The sewn mantles are then placed on a special machine where they are turned inside out, and steam pressed to proper size and shape.
- 12 - Head hardening solution (a mixture of alkaline salts and colored dye in water) is applied to the open end, or top of the mantle.
- 13 - The open or top end of the mantle is folded inside and an asbestos thread is sewn into the hem.
- 14 - The finished mantle is stamped with a trademark or a number as required, inspected and packed in polyethylene bags to be packed for shipment.
- 15 - Mantles are packed for shipment in cell type cartons containing 3,000 - 5,000 mantles each.

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SUPPLEMENT TO ITEM 12 OF SOURCE MATERIAL LICENSE APPLICATION

All personnel working with, and in the area containing radioactive materials are informed and instructed in the hazards of exposure to such radioactivity and the necessary precautions to minimize exposure, and are advised as follows.

- 1 - That they are working with radioactive materials.
- 2 - That under normal conditions of operation and on the basis of currently accepted permissible doses of radiation, there is no occupational hazard.
- 3 - That radioactive materials should not be ingested, and they should refrain from or avoid putting in their mouths any cigarettes, impregnated thread or other materials containing thorium, and to wash their hands carefully before eating.
- 4 - That they are required to change shoes and outer garments when entering or leaving plant.

Good housekeeping is maintained at all times by thorough detergent scrubbing and cleaning of all floors, walls and equipment weekly.

Normal fire and safety protection is provided throughout the plant including automatic sprinklers in drying cabinets (exhibit 3) and certain other areas.

Proper radioactive caution and danger signs are posted in areas where these materials are used and stored.

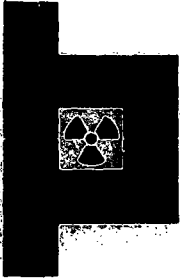
All tanks and containers containing thorium, dry and in solution are kept and stored in their proper location, and labeled with radioactive caution or danger labels and signs.

Permanent records and reports are studied and kept of all radiation surveys, and of personnel monitoring data obtained by monthly film badge reports of each employee.

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exhibit 1

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HEALTH PHYSICS ASSOCIATES LTD. CONSULTANTS IN RADIATION SAFETY

2356 SKOKIE VALLEY ROAD / HIGHLAND PARK, ILL. / PHONE: AREA (312) 433-3330

REPORT OF GROSS ALPHA CONCENTRATIONS
IN AIR SAMPLES

Date of Sample Collection: 10-15-72

Location: S. F. Appliances, Ltd., Morris, Illinois

<u>Sample #</u>	<u>Sample Description</u>	<u>uCi x 10⁻¹⁴ / liter</u>	
1	5,664 liters	8.46	<u>+0.08</u> ^a
2	5,664	14.73	<u>+0.01</u>
3	5,664	3.89	<u>+0.04</u>
4	5,664	4.21	<u>+0.04</u>
5	5,664	6.20	<u>+0.06</u>

^a Error given is the probable counting error for 95% confidence level.


Samples were collected approximately 48" above floor level (breathing zone of sitting personnel) at points of occupancy as indicated below.

Sample #

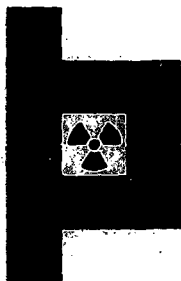
- 1 - Center of basement knitting room
- 2 - First floor solution room

Second floor fabricating room

- 3 - East area
- 4 - West area
- 5 - At sewing table


Approved for Health Physics Associates

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 New York, N. Y. 10004



HEALTH PHYSICS ASSOCIATES LTD. CONSULTANTS IN RADIATION SAFETY

2356 SKOKIE VALLEY ROAD / HIGHLAND PARK, ILL. / PHONE: AREA (312) 433-3330

REPORT OF GROSS ALPHA & BETA CONCENTRATIONS
 IN WATER SAMPLES

Date of Sample Collection: 10-15-72

Location: S. F. Appliances, Ltd., Morris, Illinois

<u>Sample #</u>	<u>Sample Description</u>	<u>Gross Alpha^a</u>	<u>Gross Beta^a</u>
1	1st wash from morpholine and distilled water	46.8 $\pm 0.3^b$	44.8 $\pm 0.2^b$
2	2nd wash - distilled water	3.4 ± 0.1	6.2 ± 0.1
3	3rd wash - distilled water	9.5 ± 0.1	17.3 ± 0.1
4	4th wash - distilled water	1.9 ± 0.1	7.7 ± 0.1
5	tap water	0.008 ± 0.002	0.017 ± 0.001

^a Results given are in nCi/l of total residue.

^b The error given is the probable counting error for the 95% confidence level.

Note: Standards used:
 Alpha - Americum-241
 Beta - Strontium-90 in equilibrium with yttrium-90


 Approved for Health Physics Associates

EXHIBIT 3 - ITEM 11(c)

LAYOUT OF MANTLE SOLUTIONING AND DRYING ROOM - MORRIS, ILL.

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New York, N. Y. 10004

