

**NRC FORM 313**

(10-2017)  
10 CFR 30, 32,  
33, 34, 35, 36,  
37, 39, and 40



**U.S. NUCLEAR REGULATORY COMMISSION**

**APPLICATION FOR  
MATERIALS LICENSE**

**APPROVED BY OMB: NO. 3150-0120**

**EXPIRES: 06/30/2019**

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [InfoCollects.Resource@nrc.gov](mailto:InfoCollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.**

**APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:**

MATERIALS SAFETY LICENSING BRANCH  
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

**ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:**

**IF YOU ARE LOCATED IN:**

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA,  
GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE,  
NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO,  
RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN  
ISLANDS, OR WEST VIRGINIA,

**SEND APPLICATIONS TO:**

LICENSING ASSISTANCE TEAM  
DIVISION OF NUCLEAR MATERIALS SAFETY  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
7100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

**IF YOU ARE LOCATED IN:**

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

**IF YOU ARE LOCATED IN:**

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,  
LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH  
DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS,  
UTAH, WASHINGTON, OR WYOMING,

**SEND APPLICATIONS TO:**

NUCLEAR MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
1600 E. LAMAR BOULEVARD  
ARLINGTON, TX 76011-4511

**PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.**

**1. THIS IS AN APPLICATION FOR (Check appropriate item)**

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_
- C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

**2. NAME AND MAILING ADDRESS OF APPLICANT (Include zip code)**

Zujia Xu  
Cultilux  
1013 Harimaw CT East, Metairie, Louisiana 70001

**3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED**

Cultilux  
1013 Harimaw CT East  
Metairie, Louisiana 70001

**4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION**

Zujia ("Justin") Xu

BUSINESS TELEPHONE NUMBER  
504-667-6931

BUSINESS CELLULAR TELEPHONE NUMBER  
504-430-9982

BUSINESS E-MAIL ADDRESS  
justinxu72@gmail.com

**SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.**

**5. RADIOACTIVE MATERIAL**  
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

**6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.**

**7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.**

**8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.**

**9. FACILITIES AND EQUIPMENT.**

**10. RADIATION SAFETY PROGRAM.**

**11. WASTE MANAGEMENT.**

**12. LICENSE FEES (Fees required only for new applications, with few exceptions\*)**  
(See 10 CFR 170 and Section 170.31)  
\*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

FEE CATEGORY	3I	AMOUNT ENCLOSED \$	9400
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**PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: <https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html>.**

**13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.**

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2; CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

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.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE  
Zujia Xu, Radiation Safety Officer(General Manager)

SIGNATURE

DATE  
12/5/2017

**FOR NRC USE ONLY**

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	



## **5. RADIOACTIVE MATERIAL**

### **a. Element and mass number**

Krypton-85

### **b. chemical and/or physical form**

Krypton-85 in the physical form of a gas containing Argon and Krypton. Its chemical form is a noble (i.e. non-reactive) gas.

### **c. maximum amount which will be possessed at any one time**

Each 1000W and 315W ceramic metal halide bulbs contain 10KBq and 4.8KBq Kr-85 in arc tubes respectively. The company will store max quantity of 4000 pcs of each model bulbs at one time. Therefore, the maximum quantity of Kr-85 possessed at one time will be 59.2 MBq (or 0.0016 Curie).

## **6. PURPOSE FOR WHICH LICENSED MATERIAL WILL BE USED**

The Krypton-85 (Kr-85) gas is used inside of arc tubes for ceramic metal halide bulbs. These bulbs are used in general lighting, whenever there is a need for high brightness bulbs providing artificial white lights.

The ceramic metal halide bulbs are distributed commercially for use of general lighting to produce artificial sun-like lights.

## **7. INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.**

Mr. Zujia Xu is assigned as the Radiation Safety Officer (RSO) at this time. He is responsible for providing technical guidance and assistance on all emergencies involving or potentially involving radioactivity or radiation exposures. Any people who have chance to contact this bulb, including sales person, warehouse shipping and receiving persons, resellers and end users will be educated by RSO the quantity of Kr-85 contained in each bulb.

RSO is responsible to compose a safety manual and a training program. Personnel training is conducted as is commensurate with the individual's duties regarding radioactive materials as required by 10 CFR 19.

## **8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.**

see the attached sheet

## **9. FACILITIES AND EQUIPMENT.**



1013 Harimaw CT East  
Metairie, LA 70001  
[www.cultilux.com](http://www.cultilux.com)

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The ceramic metal halide bulbs are securely stored at the following location 1013 Harimaw CT East, Metairie, Louisiana, 70001. There is no special equipment needed to handle the products.

**10. RADIATION SAFETY PROGRAM.**

See the attached sheet

**11. WASTE MANAGEMENT.**

Cultilux recommends all ceramic metal halide lamps be recycled. The list of recyclers can be found at [www.lamprecycle.org](http://www.lamprecycle.org). If lamps are broken, ventilate area where breakage occurred. Clean-up with mercury vacuum cleaner or other suitable means that avoids dust. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust. It is the responsibility of the waste generator to ensure proper classification and disposal of waste products.

# **Radiation Safety Manual for Cultilux Facilities**



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1. Policy
2. Radiation Safety Officer (RSO)
3. Sources and Source Material (Krypton 85)
4. Waste Storage
5. Waste Disposal



## **1. Policy**

### **Cultilux Policy Towards Exposure to Radiation**

It is the policy of Cultilux that the release of radioactive material and the exposure of people to ionizing radiation be kept As Low As Reasonably Achievable (ALARA). The ALARA policy is based on the following three principles:

- a. Exposures of personnel to radiation or the release of radioactive material to the environment may not exceed the limits in the federal and state regulations.
- b. Unplanned exposure of personnel or uncontrolled releases to the environment that could exceed 10% of permissible limits will be investigated to determine whether the exposures or releases were ALARA and whether action is required to limit future exposures or releases.
- c. Exposures and releases that do not exceed 10% of the permissible limits are low enough that no further consideration of ALARA is necessary.

## **2. Radiation Safety Officer (RSO)**

The corporate Radiation Safety Officer (RSO) is responsible for ensuring the safe use of radioactive material at Cultilux location. The RSO is responsible for managing the radiation safety program; identifying radiation safety problems; initiating, recommending, or providing corrective actions; verifying implantation of corrective actions; and ensuring compliance with all applicable regulations.

the responsibilities of the RSO include, but are not limited to, the following:

- \* Read, be familiar with, and comply with all sections of these Rules and Procedures.
- \* Ensure that all personnel complete all required radiation safety training.
- \* Arrange for proper storage and disposal of radioactive material waste.
- \* Maintain copies of inventory records of radioactive materials
- \* Arrange for termination of licenses when no longer required
- \* Coordinate with warehouse personnel to ensure:
  - personnel exposure to radioactive material as low as reasonably achievable.
  - all persons using radioactive material have completed all required radiation safety training.



- that notification be given to the RSO immediately in the event of any radiological emergency, fire, contamination, flood, etc. and must provide all possible assistance with regard to prevention of hazards from radiation exposure
- all current records of the radioactive materials are maintained at the facility.
- proper storage of all radioactive materials
- classification of radioactive waste, as required by these rules prior to the collection of the waste for disposal.
- prompt response to requests for an itemized inventory of the facility's storage of radioactive material
- immediate initiation of cleanup of any broken sources and dispose of radioactive waste in an approved manner.
- that storage of sources, the area and containers for waste are properly labeled.



### 3. Sources and source Material (Krypton 85)

Krypton-85 is a radioactive gas found in the atmosphere and produced by nuclear explosions, nuclear power plants, volcanoes and earthquakes. Krypton-85 is odorless, colorless and tasteless and emits low level radiation levels of both gamma and beta rays. Krypton-85 is usually produced in gas mixtures with argon or xenon to improve the ionization in light bulbs by reducing their starting voltage.

Krypton-85 decays by beta into rubidium-85, with a half life of 10.756 years and a maximum decay energy of 0.687 MeV.

The subject of this license is an arc tube. The tube is within the glass of products specifically exempted from certain licensing requirements by operation of 330.40 (c)(1)(G)(iii) because it contains less than 0.27 micro curies of Kr-85 and radiation levels do not exceed 1 millirad per hour at a distance of 1 centimeter when measured through 1 milligrams per square centimeter of absorber.

The arc tube is designed to function to produce high power artificial white light for general lighting. Each 315W ceramic metal halide bulb contains approximately 4.8KBq of Kr-85. Each 1000W ceramic metal halide bulb contains approximately 10KBq of Kr-85. The outer envelope of the electron tube consists of ceramic glass which is fused to close each end to form a cylinder. The arc tube will not operate if the seal is imperfect or the glass envelope is cracked or otherwise compromised.

The license encompasses possession, temporary storage and distribution of the ceramic metal halide bulbs which contain the arc tubes.

The inventory of lamps varies as incoming and outgoing orders are filled. The facility's total inventory will never exceed 59.2 MBq (or 0.0016 Curie).





#### **4. Waste Storage**

The only waste generated by Cultilux is defective lamps that may be occasionally returned by servicers and lamps damaged at Cultilux during handling. The defective lamps are stored in a labeled container. When a lamp is placed in the container, a log is filled out documenting the date and number of lamps deposited. The number of discarded lamps are taken into consideration when determining the total number of lamps and the possession limits of the license.





## 5. Waste Disposal

Defective lamps are stored in a labeled container. The number of discarded lamps are taken into consideration when determining the total number of lamps and the possession limits of the license.

The lamps will require disposal when:

- the container is near capacity or
- the total number of lamps in the facility (including inventory and defective lamps) is approaching the possession limits or
- the possession license is terminated

If disposal is necessary, the RSO will contact a licensed waste management company to make arrangements for proper disposal.