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POLICY ISSUE
(Information)

August 13, 1990 SECY-90-284

For: The Commissioners

From: James M. Taylor
Executive Director
for Operations

Subject: UNAUTHORIZED IMPORT OF RADIOACTIVE GEMS

Purpose: To inform the Commission of the staff's planned actions to address the unlicensed import of radioactive gems.

Background: In a Staff Requirements Memorandum dated November 24, 1987, the Commission directed the staff to process applications for licenses authorizing distribution of neutron-irradiated gemstones. In early 1988, the staff sent letters to all non-power reactor licensees and other interested parties, informing them of the Commission's decision and the steps needed to apply for a distribution license. Distribution licenses for neutron-irradiated topaz were subsequently issued to General Atomics Corporation in October, 1988; the University of Missouri in December, 1988; and, in 1990, Alnor Instrument Company, which is a subsidiary of a foreign-based organization that imports irradiated topaz. Therefore, irradiated topaz is now available from authorized sources. The licensed distributors have established radiation measurement procedures to ensure that gems released to the public do not contain levels of radioactivity in excess of limits specified in 10 CFR Part 30.70.

Discussion: During the past few years, the staff has had a number of meetings and discussions with gemstone industry representatives, emphasizing the need to obtain appropriate licenses for import and distribution of neutron-irradiated gemstones to the public. Nevertheless, the staff continues to receive reports through the media and informal telephone contacts that millions of dollars worth of neutron-irradiated gems, primarily blue topaz, are being illegally imported and distributed in the U.S. every month, in violation of 10 CFR Parts 30 and 110. As discussed in SECY-87-186, dated July 28, 1987, the gems

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CONTACT: Cheryl A. Trottier, NMSS
492-3422

contain small quantities of induced radioactivity, predominantly scandium-46, tantalum-182, and manganese-54, with half-lives ranging from 84 to 303 days. Depending on the impurities in the topaz, longer-lived radionuclides such as cobalt-60, cesium-134, or sodium-22 may also be present. The staff has received no information that the radiation levels from unauthorized gems are a public health hazard, and no enforcement action has been taken over the past few years. Nevertheless, the possibility exists that hazardous radioactive gems, which have not been properly held for decay or checked for high levels of radiation, could be imported at any time. The staff believes that it should now actively enforce NRC regulations prohibiting the unauthorized import of radioactive gems.

As a first step, the staff is sending an information notice (Enclosure) to NRC licensees and the gem trade industry, reminding them of NRC requirements, and informing them that NRC plans to take enforcement actions against unauthorized importers and distributors. The notice identifies conditions under which neutron-irradiated gems may be imported and provides guidance on acceptable documentation for importation of blue topaz.

In addition, the staff has had discussions with the U.S. Customs Service to request its assistance in restricting the illegal importation of radioactive gems. Customs officials have suggested conducting an unannounced 1-2 week operation, starting some time after September 30, 1990, at one or more ports known to receive large quantities of blue topaz. An NRC inspector or contractor would work with the Customs agents to check gems for radioactivity. Illegal shipments could be seized by Customs and the cases referred to the Office of Investigations for investigation of possible violations of NRC regulations. NRC inspectors would follow-up by issuing notices of violation to unauthorized importers. The staff will continue to coordinate with U. S. Customs and formalize arrangements for such a plan.

The staff recognizes that the gem industry is large and diverse, and that 100 percent enforcement of import requirements is not practical, given NRC's limited resources. The staff believes that the information notice, selective inspections and seizures by U.S. Customs, and appropriate referrals to the Department of Justice, will, to a large extent, prompt compliance, and provide reasonable assurance of protection of the public health and safety. If the staff finds that reasonable compliance is not achieved by the initial approach, we will consider additional actions as appropriate.

This paper contains sensitive information related to potential enforcement actions and should not be released to the public.

Coordination: This paper has been reviewed by the Office of the General Counsel and there was no legal objection.

James M. Taylor
Executive Director
for Operations

Enclosure: Draft Information Notice 90-XX:
"Requirements for Import and
Distribution of Neutron-Irradiated Gems"

DISTRIBUTION:
Commissioners
OGC
OIG
GPA
REGIONAL OFFICES
EDO
SECY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

August , 1990

NRC INFORMATION NOTICE NO. 90- : REQUIREMENTS FOR IMPORT AND DISTRIBUTION OF NEUTRON-IRRADIATED GEMS

Addressees:

All irradiated gemstone importers and distributors, and all non-power reactor licensees.

Purpose:

To remind gemstone importers and distributors of long-standing Nuclear Regulatory Commission (NRC) requirements contained in 10 CFR Parts 30 and 110, governing the import and distribution of neutron-irradiated gems, and to provide information on NRC's planned actions on unauthorized importation or distribution. It is expected that licensees, importers, and distributors will review this information and assure that they comply with applicable requirements. This notice does not in itself establish any new requirements, and no written response is required.

Discussion:

Since 1986, numerous inquiries to the NRC indicated that large quantities of reactor neutron-irradiated gems, particularly blue topaz, were being distributed in the United States without NRC authorization. Neutron-irradiated gems contain small quantities of radioactive byproduct material. A special NRC license is required for distribution of such gems to unlicensed persons (such as gem dealers, wholesalers, and consumers). In early 1988, NRC informed all gem industry representatives and non-power reactor licensees that NRC would accept applications for such licenses to distribute neutron-irradiated gems (see Attachments 1 and 2). The license requirements are contained in 10 CFR Parts 30 and 32.

Licensed distributors must have radiation measurement and quality control procedures for ensuring that all gems released to the public are below the radioactivity limits specified in 10 CFR 30.70. The distributors must disclose to their customers that gems are neutron-irradiated. The licenses authorize distribution of cut, finished gems only, because radiation exposures associated with cutting and grinding gems are potentially much higher than those incurred through normal consumer use.

As of April 1, 1990, three organizations (University of Missouri; General Atomics, San Diego, CA; and Alnor Instrument Co., Skokie, IL) have obtained appropriate distribution licenses for neutron-irradiated blue topaz. One import license application is pending. In the meantime, the NRC staff continues to receive reports of unauthorized imports of neutron-irradiated gems, particularly blue topaz. NRC does not have any information to indicate that the radiation levels in such gems are a public health hazard, and has not yet taken any enforcement action. Nevertheless, the possibility exists that hazardous radioactive gems, which have not been properly checked for excessive radiation levels, could be imported by an unauthorized source. Therefore, the NRC staff is taking the following actions:

1. NRC will take enforcement action against unauthorized importers or distributors of neutron-irradiated gems. Enforcement action may include imposition of monetary penalties or referral to the Department of Justice for potential criminal prosecution.

2. NRC will arrange, in cooperation with the U.S. Customs Service, to check imported shipments of blue topaz to verify that they are authorized. Customs agents will look for written certification as to whether gems are unirradiated, accelerator-irradiated, or neutron-irradiated, and whether NRC has licensed the importers. Unauthorized imports of neutron-irradiated gems will be subject to seizure by U.S. Customs, and investigation by the NRC Office of Investigations for possible criminal prosecution.

Neutron-irradiated gems may be imported under one of the following conditions:

a. The importer possesses a valid NRC or state license to possess the gems.

b. The gems were previously distributed in the U.S. under the terms of a valid NRC license authorizing distribution to unlicensed (exempt) persons, and later exported. (Gems that may have been irradiated and exported without going through a licensed distributor may not be imported by unlicensed persons.)

Undocumented gems and gems with incomplete documentation may be subject to import delays, pending verification as to whether they contain radioactive material. All imported blue topaz or other suspect gems will be subject to random checks by NRC or U.S. Customs, to determine the presence and quantities of radioactive byproduct material.

Importers and distributors of blue topaz gems or other irradiated gems should take the following actions:

1. Do not import neutron-irradiated gems unless you have a valid NRC distribution license. (If the gems were previously distributed by an NRC licensee under the terms of a license authorizing distribution to unlicensed persons, and were exported for mounting, they may be imported without a distribution license, if there is sufficient documentation to verify compliance with NRC requirements, including identification of the NRC distributor and license number.)

2. Require your gem supplier to identify and label the gem shipments as neutron-irradiated, accelerator-produced, or unirradiated. If the gems are neutron-irradiated, the shipment should clearly state the name and license number of the licensed distributor/importer. Only the initial distributor/importer in the U.S. needs to be licensed. Secondary distributors and retailers in the U.S. do not need to be licensed. Attachment 3 provides additional guidance on acceptable documentation for imported gemstones.

3. If you wish to obtain an NRC license, contact NRC. Call the Medical, Academic, and Commercial Use Safety Branch at (301) 492-0639.

This information notice does not require a written response to NRC. Any questions on NRC distribution licenses may be directed to Michael Lamastra (301-492-0639). Questions on non-power reactor operating licenses may be directed to Seymour Weiss (301-492-0160).

Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety

Technical Contacts: Cheryl A. Trottier, NMSS
(301) 492-3422

John Hickey, NMSS
(301) 492-3332

Attachments:
1. Letter to American Gem Trade Assoc., dtd. Jan. 29, 1986
2. Generic Letter 88-04, dtd. Feb. 23, 1988
3. NRC Guidance on Import Documentation for Blue Topaz Gemstones
4. List of Recently Issued NMSS Information Notices
5. List of Recently Issued NRC Information Notices

ATTACHMENT 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C 20555

JAN 2 9 1988

The American Gem Trade Association
ATTN: Ms. Peggy Willett
Executive Director
World Trade Center
Suite 181
P.O. Box 581043
Dallas, Texas 75258

Gentlemen:

This letter is to advise you of the recent Nuclear Regulatory Commission decision regarding distribution of neutron-irradiated gems in the United States. The Commission has determined that it will authorize, through exempt distribution licenses, the distribution in the United States of gems such as topaz which have been neutron-irradiated in reactors to enhance their color.

The distribution of neutron-irradiated topaz is a continuing activity, and the NRC therefore plans to act expeditiously on the licensing of domestic reactors and importers. We would appreciate your assistance in informing the gem trade industry of the requirements for licensing of distributors of neutron-irradiated gems. We would also appreciate your providing the NRC with a listing of those individuals or groups that are currently involved in the importation and distribution of neutron-irradiated topaz. This information will assist us in determining the steps that must be taken to license this activity.

Owners of domestic reactors and importers wishing to distribute neutron-irradiated gems, such as topaz, will be required to obtain a specific license from the NRC pursuant to 10 CFR Section 32.11. The license, if granted, will not be subject to the prohibition against distribution of products intended for application to a human being. However, license applications must meet the other requirements of 10 CFR Sections 32.11, 30.14, and 30.70. Copies of these regulations are enclosed.

Any license application must describe the means by which gems will be measured for radiation, the means for assuring that all gems released meet the limits for exempt concentrations of radioactive material, and a commitment that only cut, finished gems will be distributed under the license.

Those persons who are currently involved in irradiating and/or importing neutron-irradiated gemstones should immediately contact the NRC Division of Industrial and Medical Nuclear Safety to discuss current and planned activities so that a determination can be made on the course of action that should be taken. If individuals are currently distributing or intend to distribute neutron-irradiated gemstones, they must obtain a license to specifically authorize this activity. Failure to obtain a proper license could result in enforcement action on the part of the NRC.

Persons (such as secondary distributors and individual consumers) who receive gems from an NRC-licensed distributor do not need a license. Only the initial distributor in the United States must be licensed pursuant to 10 CFR Section 32.11.

I hope that this information is useful in clarifying the NRC position on this matter, and the actions that should be taken by some members of your association. Licensing questions may be directed to Mr. Michael Lamastra at 301-492-0639. Other questions may be directed to the NRC Office of Public Affairs at 301-492-7715.

Thank you for your assistance in this matter.

Sincerely,

Hugh L. Thompson, Jr., Director
Office of Nuclear Material
Safety and Safeguards

Enclosures:
10 CFR Parts 30, 32, and 170

ATTACHMENT 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
FEBRUARY 23, 1988

TO ALL NON-POWER REACTOR LICENSEES

Gentlemen:

SUBJECT: DISTRIBUTION OF GEMS IRRADIATED IN RESEARCH REACTORS (GENERIC LETTER 88-04; SEE ALSO GENERIC LETTER 86-11, DATED JUNE 25, 1986)

On June 25, 1986, we notified you that research reactor licensees might be irradiating and distributing products containing induced radioactivity to unlicensed persons in violation of NRC regulations. We noted that 10 CFR Section 30.14 prohibits introduction of byproduct material into a product for distribution to an unlicensed person, unless the distributor has a specific license issued pursuant to 10 CFR Section 32.11 which permits such distribution. We also noted that due to a long-standing policy against radioactive toys, novelties, and adornments, the staff has not granted licenses for distribution of irradiated gems or similar materials.

Throughout 1986 and 1987, we have received numerous inquiries from licensees and others, requesting that NRC take a definitive position with respect to neutron-irradiated gems such as topaz. These persons reported that large quantities of irradiated topaz are on the United States retail market from both foreign and domestic sources. They requested that, in the interest of fairness and consistency, as well as protection of the public health, NRC expeditiously resolve the issue.

Applications will now be considered for interim licenses authorizing the distribution of neutron-irradiated gems, particularly topaz, to unlicensed persons pursuant to 10 CFR Section 32.11. The NRC will also develop a policy which recognizes the existence of radiation doses and risks which are too low to justify regulation to protect public health and safety. Based on this policy, specific regulations will be developed for classes of radioactive materials such as irradiated gems. The interim licenses, if granted, will not be subject to the prohibition against distribution of products intended for application to a human being. However, license applications must meet the other requirements of 10 CFR Sections 32.11, 30.14, and 30.70. The radioactivity concentration limit for any single radionuclide is given in Schedule A of 10 CFR Section 30.70. The limit applicable for multiple radionuclides may be calculated using the method specified in Note 2 of 10 CFR Section 30.70.

The interim licenses will authorize distribution of cut, finished gems only, because the potential for occupational radiation exposures associated with cutting and grinding gems is much higher than for normal consumer use. License applications must describe the proposed methods for identification and measurements of the radionuclides in the gems, and the quality control procedures for assuring that all gems released to the public are below the limits specified in 10 CFR Section 30.70.

The NRC staff is aware that neutron-irradiated topaz has been imported into the United States which contains radioactivity above the limits specified in 10 CFR Sections 30.14 and 30.70. Accordingly, consistent with the requirements of 10 CFR Section 32.11, the staff plans to control distribution of irradiated gems at the source and, thus, envisions two principal groups of applicants for distribution licenses, i.e., domestic reactors and initial importers. Both groups will be subject to similar regulatory requirements.

Those reactor licensees who are currently distributing, or intend to distribute irradiated gemstones to unlicensed persons must obtain a license which specifically authorizes this activity. Applications for distribution licenses should be submitted with proper fee (see 10 CFR Part 170) to:

U.S. Nuclear Regulatory Commission
Division of Industrial and Medical Nuclear Safety
Washington, DC 20555

Persons (such as secondary distributors and individual consumers) who receive gems from an NRC-licensed distributor do not need a license. Only the initial distributor in the United States must be licensed pursuant to 10 CFR Section 32.11.

This letter is for information only and does not require a response. Those persons who are currently irradiating and/or distributing irradiated gemstones should immediately contact the NRC Division of Industrial and Medical Nuclear Safety to discuss current and planned activities so that a determination can be made on the course of action that should be taken. Questions concerning NRC distribution licenses may be directed to Michael Lamastra (301-492-0639). Questions concerning non-power reactor licenses may be directed to Lester Rubenstein (301-492-1118). Questions concerning license fees may be directed to Glenda Jackson (301-492-8740).

Frank J. Miraglia, Associate Director
for Projects
Office of Nuclear Reactor Regulation

Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material
Safety and Safeguards

NUCLEAR REGULATORY COMMISSION (NRC) GUIDANCE ON IMPORT DOCUMENTATION FOR BLUE TOPAZ GEMSTONES

1. All imported gems should contain clear documentation as to whether they are neutron-irradiated, accelerator-irradiated, or not irradiated at all.

2. Neutron-irradiated gems from foreign reactors must be imported by an NRC or state licensee. The documentation should state the name of the licensee and license number.

3. Neutron-irradiated gems from U.S. reactors, which may have been exported, may be imported by non-licensees if they were previously distributed in the U.S. under the terms of an NRC distribution license. The documentation must state the name of the licensee and NRC distribution license number. A reactor operating license number is not sufficient.

4. Accelerator-irradiated gems and unirradiated gems may be imported by non-licensees. Such gems will be subject to checks by the U.S. Customs Service or NRC, to verify that the gems are not neutron-irradiated.

5. Undocumented gems may be subject to import delays, pending verification as to whether they contain radioactive material.

LIST OF RECENTLY ISSUED
NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to:
90-59	Errors in the use of Radioactive Iodine-131	09/17/90	All medical licensees
90-58	Improper Handling of Ophthalmic Strontium-90 Beta Radiation Applicators	09/11/90	All Nuclear Regulatory Commission (NRC) medical
90-56	Inadvertent Shipment of a Radioactive Source in a Container Thought to be Empty	09/04/90	All U.S. Nuclear Regulatory Commission (NRC) licensees
90-50	Minimization of Methane Gas in Plant Systems and Radwaste Shipping Containers	08/08/90	All holders of operating licenses or construction permits for nuclear power reactors
90-44	Dose-Rate Instruments Underresponding to the True Radiation Fields	06/29/90	All NRC licensees
90-38	Requirements for Processing Financial Assurance Submittals for Decommissioning	05/29/90	All fuel facility and materials licensees
90-35	Transportation of Type A Quantities of Non-Fissile Radioactive Materials	05/24/90	All U.S. Nuclear Regulatory Commission (NRC) Licensees
90-31	Update on Waste Form and High Integrity Container Topical Report Review Status, Identification of Problems with Cement Solidification, and Reporting of Waste Mishaps	05/04/90	All holders of operating licenses or construction permits for nuclear power reactors, fuel cycle licenses, and certain byproduct materials licenses

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
90-61	Potential for Residual Heat Removal Pump Pump Damage Caused By Parallel Pump Interaction	9/20/90	All holders of OLs or CPs for nuclear power reactors.
90-60	Availability of Failure Data In the Government-Industry Data Exchange Program	9/20/90	All holders of OLs or CPs for nuclear power reactors.
90-59	Errors In the Use of Radioactive Iodine-131	9/17/90	All medical licensees.
90-58	Improper Handling of Ophthalmic Strontium-90 Beta Radiation Applicators	9/11/90	All NRC medical licensees.
90-57	Substandard, Refurbished Potter & Brumfield Relays Misrepresented As New	9/5/90	All holders of OLs or CPs for nuclear power reactors.
90-56	Inadvertent Shipment of A Radioactive Source In A Container Thought To Be Empty	9/4/90	All U.S. Nuclear Regulatory Commission (NRC) licensees.
90-55	Recent Operating Experience on Loss of Reactor Coolant Inventory While In A Shutdown Condition	8/31/90	All holders of OLs or CPs for nuclear power reactors.
83-44 Supp. 1	Potential Damage to Redundant Safety Equipment As A Result of Backflow Through the Equipment and Floor Drain System	8/30/90	All holders of OLs or CPs for nuclear power reactors.
90-54	Summary of Requalification Program Deficiencies	8/28/90	All holders of OLs or CPs for nuclear power reactors.
89-18 Supp. 1	Criminal Prosecution of Wrongdoing Committed by Suppliers of Nuclear Products or Services	8/24/90	All holders of OLs or CPs for nuclear power reactors.

OL = Operating ' cense
CP = Construction Permit