

OFFICIAL USE ONLY – SECURITY-RELATED INFORMATION

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555-0001

July 20, 2022

NRC INFORMATION NOTICE 2022-01: INFORMATION REGARDING THE U.S. GOVERNMENT ACCOUNTABILITY OFFICE INVESTIGATION OF THE TRANSFER OF BYPRODUCT MATERIAL OTHER THAN CATEGORY 1 AND 2

ADDRESSEES

(U) All licensees that possess an active license to manufacture and distribute Category 1, 2, or 3 quantities of radioactive material.

PURPOSE

(U) The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to remind licensees to ensure, before transferring any radioactive material, that license verification meets the requirements set forth in NRC regulations or other equivalent Agreement State requirements. The NRC is also providing this IN to Agreement States for their information and for distribution to their licensees as appropriate.

DESCRIPTION OF CIRCUMSTANCES

(OUO-SRI) On March 23, 2022, the U.S. Government Accountability Office (GAO) notified NRC that they had conducted an undercover investigation focused on the NRC's and the Agreement States' license verification process for materials other than Category 1 and 2. Beginning in 2020, the GAO set up five shell companies to appear as legitimate businesses that routinely use radioactive materials. The GAO set up company websites but did not establish or rent storefronts or other physical locations. The GAO altered the images of NRC and Agreement State licenses found on the internet to authorize up to Category 3 quantities of radioactive materials (see Table 1 in the enclosure for the Category 1, 2, and 3 thresholds) for the fictitious companies.

(OUO-SRI) Using the counterfeited licenses, the GAO contacted radioactive source vendors in the United States and overseas to order Category 3 sources of americium-241, cesium-137, cobalt-60, iridium-192, and selenium-75. The GAO investigators also developed simple device concept drawings to provide to those vendors who requested information on the proposed use of the sources. The GAO successfully received their orders.

DISCUSSION

(U) The NRC is reminding licensees that there could be bad actors interested in obtaining radioactive materials, including Category 3 sources, for malicious purposes. Accordingly, the

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agency reminds licensees to be vigilant when transferring radioactive material, including Category 3 sources, and to be cautious about orders received from new businesses and individuals that they have never worked with before. For radioactive material transfers, the NRC encourages transferring licensees to question information obtained from potentially receiving licensees. Such actions help prevent unauthorized transfers. Examples of information that could appear questionable include, but are not limited to, the following:

- (U) Missing source information – the license indicates “sealed source(s)” as the chemical/physical form and does not include any manufacturer and/or model information consistent with a design approved by either NRC or an Agreement State.
- (U) Missing device information – the license does not include any specific device information, i.e., manufacturer and model information, consistent with a design approved by either NRC or an Agreement State.
- (U) New/custom source design – the license does not include a reference to a design with an accompanying sealed source and device certificate but instead references new/custom design “drawings” approved by the regulator in the license conditions.
- (U) Incompatible types of use – the license lists incompatible types of use, e.g., industrial radiography, gauges, and a medical license.
- (U) Vague or non-customary authorized uses – the license lists vague, non-specific or uncommon authorized uses, e.g., “for research and development” or the material activity is higher than the usual and customary order for the particular use.
- (U) Outdated authorized signatures – the license includes a signature block with an outdated NRC or Agreement State official, e.g., someone who has not signed a license in years, or a former department name, e.g., NRC’s Region II office no longer issues Part 30 materials licenses.
- (U) Delivery to an unknown location - the customer requests delivery of radioactive material to an address not listed on the license, to a P.O. Box, or to a local carrier pick-up/drop-off location.

(U) Please treat this IN as sensitive information and share it only with authorized personnel who have a need to know. This information should not be released to the public.

CONTACTS

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(U) Please direct any questions about this matter to the technical contact listed below,

/RA/
Christopher G. Miller, Director
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

/RA/
Kevin Williams, Director
Division of Materials Safety, Security, State,
and Tribal Programs
Office of Nuclear Material Safety
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Table 1 International Atomic Energy Agency Category 1, 2 and 3 Thresholds						
Radionuclide	Cat 1		Cat 2		Cat 3	
	TBq	Ci	TBq	Ci	TBq	Ci
Am-241 (Be)	60	1,600	0.6	16	0.06	1.6
Cf-252	20	540	0.2	5.4	0.02	0.5
Cm-244	50	1,400	0.5	14	0.05	1.4
Co-60	30	810	0.3	8.1	0.03	0.8
Cs-137	100	2,700	1	27	0.1	2.7
Gd-153	1,000	27,000	10	270	1.00	27
Ir-192	80	2,200	0.8	22	0.08	2.2
Pm-147	40,000	1,100,000	400	11,000	40.00	1,100
Pu-238	60	1,600	0.6	16	0.06	1.6
Pu-239 (Be)	60	1,600	0.6	16	0.06	1.6
Ra-226	40	1,100	0.4	11	0.04	1.1
Se-75	200	5,000	2	50	0.20	5
Sr-90 (Y-90)	1000	27,000	10	270	1.0	27
Tm-170	20,000	540,000	200	5,400	20.00	540
Yb-169	300	8,100	3	81	0.30	8.1

Note: *Calculations Concerning Multiple Sources or Multiple Radionuclides*

The “sum of fractions” methodology for evaluating combinations of multiple sources or multiple radionuclides is to be used in determining whether a location meets or exceeds the threshold and is thus subject to the requirements of this part.

- I. If multiple sources of the same radionuclide and/or multiple radionuclides are aggregated at a location, the sum of the ratios of the total activity of each of the radionuclides must be determined to verify whether the activity at the location is less than the Category 1 or Category 2 or Category 3 thresholds of Table 1, as appropriate. If the calculated sum of the ratios, using the equation below, is greater than or equal to 1.0, then the applicable requirements of this part apply.
- II. First determine the total activity for each radionuclide from Table 1. This is done by adding the activity of each individual source material in any device, and any loose or bulk material that contains the radionuclide. Then use the equation below to calculate the sum of the ratios by inserting the total activity of the applicable radionuclides from Table 1 in the numerator of the equation and the corresponding threshold activity from Table 1 in the denominator of the equation.

ENCLOSURE

Calculations must be performed in metric values (i.e., TBq) and the numerator and denominator values must be in the same units.

R_1 = total activity for radionuclide 1

R_2 = total activity for radionuclide 2

R_N = total activity for radionuclide n

AR_1 = activity threshold for radionuclide 1

AR_2 = activity threshold for radionuclide 2

AR_N = activity threshold for radionuclide n

$$\sum_1^n \left[\frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \frac{R_n}{AR_n} \right] \geq 1.0$$