

TX0-LTR-0024

ELECTRONIC DELIVERY

September 15, 2023

Director, Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

- References:
- 1) Docket No. 70-7027
 - 2) TRISO-X letter from Jennifer Wheeler to Director, Office of Nuclear Material Safety and Safeguards, "TRISO-X Fuel Fabrication Facility License Application Submittal," dated April 5, 2022
 - 3) NRC letter from Matthew Bartlett, Senior Project Manager, Fuel Facility Licensing Branch, to Jennifer K. Wheeler, "Request For Additional Information For The TRISO-X, LLC License Application For A Fuel Fabrication Facility (Enterprise Project Identification Number L-2022-NEW-0005)," dated July 27, 2023
 - 4) TRISO-X letter from Jennifer Wheeler to Director, Office of Nuclear Material Safety and Safeguards, "Response to Request for Additional Information (Set 2) for the TRISO-X License Application," dated August 25, 2023

Subject: **Supplemental Response to Chapter 1 RAI-10 and RAI-11 (Set 2) for the TRISO-X License Application**

TRISO-X, LLC (TRISO-X) hereby submits a supplemental response to Chapter 1 RAI-10, *Source and Byproduct Material*, and RAI-11, *Type, Quantity, and Form of Licensed Material*, regarding the review of the License Application for the TRISO-X Fuel Fabrication Facility (Reference 2). This response is for the RAI set transmitted by letter dated July 27, 2023 (Reference 3) and supplements the response transmitted by letter dated August 25, 2023 (Reference 4).

Requests for Withholding

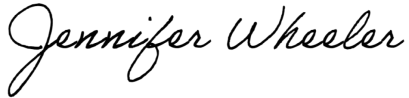
None. The enclosed submittal contains public information.

Summary of this Submittal

This submittal includes a response to Chapter 1 RAI-10, *Source and Byproduct Material*, and RAI-11, *Type, Quantity, and Form of Licensed Material*. There are no associated enclosures or attachments to this letter.

If there are questions or if additional information is required, please contact me at (865) 850-0893 or jwheeler@triso-x.com.

Sincerely,

A handwritten signature in cursive script that reads "Jennifer Wheeler".

Jennifer K. Wheeler, P.E.
Vice President, Regulatory Affairs

TRISO-X, LLC
801 Thompson Avenue
Rockville, MD 20852

Copy: Mr. Matthew Bartlett, US NRC, NMSS
TRISO-X Regulatory Records File

Chapter 1 Supplemental RAI Responses for the TRISO-X License Application

RAI-10 Source and Byproduct Material:

Regulatory Basis:

The following information is necessary to demonstrate compliance with the regulations in 10 CFR 70.21(b), which states, "An application for license filed pursuant to the regulations in this part will be considered also as an application for licenses authorizing other activities for which licenses are required by the Act, provided the application specifies the additional activities for which licenses are requested and complies with regulations of the Commission as to applications for such licenses." In addition, 10 CFR 70.22(a)(4) requires the application to include, "The name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the SNM the applicant proposes to use or produce;"

Guidance on one acceptable approach for demonstrating compliance with these regulations is provided in NUREG-1520 sub-section 1.2.4.3.3 Characteristics of the Material, "The application identifies the elemental name, maximum quantity, and specifications, including the chemical and physical form(s), of the licensable material that the applicant proposes to acquire, deliver, receive, possess, produce, use, transfer, or store. For such material, the specifications include the isotopic content and amount of enrichment by weight percent."

Describe Issue:

The LA section 1.2.4 states in the opening sentence that the section only applies to SNM, but it references 10 CFR parts 30 and 40 for byproduct material and source material, respectively. Since the TRISO-X facility is located in the Agreement State of Tennessee, has TRISO-X consulted with the State of Tennessee to determine if the byproduct (10 CFR 30) and source (10 CFR 40) materials can be regulated under the NRC license? Please also note the statement that SNM is regulated under 10 CFR 30 and 40 is not accurate.

Information Needed:

Please clarify if the State of Tennessee is in agreement in having the byproduct and source material licensed by the NRC. If so, please provide documentation that shows the State's agreement to have byproduct and source material licensed by the NRC. Ensure that only items to be regulated by the NRC license are listed in LA section 1.2.4.

TRISO-X Response:

The State of Tennessee is not in agreement in having the byproduct and source material licensed by the NRC. Byproduct and source materials are under the jurisdiction of the Tennessee Department of Environment and Conservation (TDEC) based on the agreement between the Atomic Energy Commission and the State of Tennessee effective September 1, 1965. Therefore, License Chapter 1, Section 1.2.4 will be revised to include only the types, quantities, and forms of licensed material regulated by the NRC.

License Changes:

License Chapter 1, Section 1.2.4, will be revised as follows (changes in red) to only include the types, quantities, and forms of licensed material regulated by the NRC.

Chapter 1 Supplemental RAI Responses for the TRISO-X License Application

1.2.4 Type, Quantity, and Form of Licensed Material

The following types, maximum quantities, and forms of special nuclear materials (SNM) are authorized under 10 CFR 70, ~~30 and 40~~.

1. [REDACTED] SRI kilograms of U-235 contained in uranium enriched to less than 20%, in any chemical/physical form. Contaminants may include 10^{-7} grams of transuranic materials per gram of uranium, and 600 Becquerels of fission products per gram of uranium.
2. 350 grams of U-235 in any chemical/physical form and at any enrichment for use in measurement and detection instruments, check sources, and instrument response standards.
3. 350 grams of U-235 in any chemical/physical form and at any enrichment for use in research and development studies.
4. 25 millicuries of plutonium as counting and calibration standards and/or for use in research and development studies.
- ~~5. 300 millicuries of Cs-137 as sealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards.~~
- ~~6. 2 millicuries of any licensed material between atomic numbers 3 and 83 as sealed and unsealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards.~~
- ~~75.~~ 1 microcurie of any ~~licensed material between atomic numbers 84 and 95~~ SNM as sealed and unsealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards.

Chapter 1 Supplemental RAI Responses for the TRISO-X License Application

RAI-11 Type, Quantity, and Form of Licensed Material:

Regulatory Basis:

This RAI uses the same regulatory basis as RAI 10.

Describe Issue:

As discussed in RAI 10, typically byproduct and source material are regulated by the Agreement State. The application should include a justification for including byproduct and source material on the NRC license and confirmation of support from the Agreement State. Without this justification, materials regulated by the Agreement State should be removed from LA section 1.2.4, as follows:

- The first 4 items are SNM and should be licensed by the NRC.
- Item 5 should be licensed by the State.
- Item 6 is strictly byproduct material (although its states “licensed material”) and should be rewritten similar to the following for licensing by the State:
 - 2 millicuries of any byproduct material between atomic numbers 3 and 83 as sealed and unsealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards.
- Item 7 would need to split into two parts, one to be submitted to NRC and the second to be submitted to the State since atomic numbers 84 to 96 includes byproduct, source, and SNM.
 - Item 7a (NRC application)
1 microcurie of any SNM as sealed and unsealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards;
 - Item 7b (State application)
1 microcurie of any byproduct or source material between atomic numbers 84 and 95 as sealed and unsealed radioactive sources for use in measurement and detection instruments, check sources, instrument response standards, and counting and calibration standards.

Information Needed:

Provide a justification for including source and byproduct material on the NRC license and include confirmation of support from the Agreement State. Modify the type, quantity, and form of licensed material identified in the LA (e.g., section 1.2.4) to only include those items to be regulated by the NRC.

TRISO-X Response:

See response to RAI-10.

License Changes:

See changes in response to RAI-10.