

November 15, 2011

Thomas E. Magette, P.E.
Senior Vice President
Nuclear Regulatory Strategy
Energy Solutions
6350 Stevens Forest Road, Suite 200
Columbia, MD 21046

SUBJECT: Request for Nuclear Regulatory Commission Position on the Definition of Source Material

Dear Mr. Magette:

I have received your letter dated October 4, 2011, requesting clarification of the definition of *source material* as it pertains to several hypothetical scenarios that you lay out in your letter. You've also specifically requested an interpretation under 10 CFR § 40.6. I believe the regulations that would apply to your hypothetical scenarios are sufficiently clear and thus an official interpretation is not warranted.

Each scenario you describe provides limited factual information, which is insufficient to make a licensing determination under NRC regulations. However, based on the limited facts presented, you have correctly identified the regulations to be applied in analyzing your proposed scenarios. The definition in 10 CFR § 40.4 for *source material* contains two paragraphs: paragraph one captures uranium in any physical form, and paragraph two is specifically limited to ores that contain 0.05% or greater by weight uranium or thorium, or any combination thereof. 10 CFR § 40.13(b) exempts any person from needing to obtain a license to possess ore containing source material if the ore is unrefined and unprocessed. The determination of whether the ore is unrefined and unprocessed, thus qualifying for the 10 CFR § 40.13(b) exemption, must be made on a case-by-case basis.

You've described the pertinent facts relevant to your hypothetical scenarios as involving, "a water-steam mixture from geothermal wells that contain various elements including uranium." Pipe scale containing uranium and other materials is deposited on the pipes as the water-steam mixture moves through the pipes. The water-steam solution that contains the suspended solids or dissolved minerals could constitute "ore."

Under the NRC's regulatory framework, and using the facts you've provided, pipe scale that contains uranium below 0.05% by weight is not considered source material and would not require an NRC license. If there is pipe scale with more than 0.05% uranium by weight, the need for a license depends on whether the pipe scale is considered to have been "processed." If determined to be unprocessed ore, the pipe scale would be exempt from the 10 CFR Part 40 licensing requirements under the § 40.13(b) exemption, and would not need to be disposed of in a Part 61 licensed disposal facility.

While a series of examples are provided in 10 CFR § 40.4 for what could constitute processing (including grinding, roasting, beneficiating or refining) the examples are not intended to be all-encompassing and the NRC has not asserted any limiting definition of "processing." As a result, many activities could be considered "processing" for purposes of applying the regulatory framework. Without additional information about the scenarios you've proposed, we cannot make a determination about whether "processing" of the ore has occurred and, therefore, cannot definitively determine the status of the pipe scale as regards a need for an NRC license.

Sincerely,

/RA/

Bradley W. Jones,
Assistant General Counsel
for Reactor and Materials Rulemaking