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Subject: **Meetings of the Part 40 Jurisdictional Working Group; “No Change Option”;**
Recommendations for Federal-Based Worker Education / Training, and
State-based Public Exposure Control

I appreciate the opportunity to provide follow-up to comments presented on behalf of the zircon / mineral sands industry at the part 40 jurisdictional working group meetings, relative to the exemption in 10 CFR 40 for materials containing <0.05% source material and options discussed by the working group concerning the control of source material. The Nuclear Regulatory Commission’s (NRC) part 40 rule has provided an important basis for consideration of source material and its control via definition, exemption, and licensing, and NRC’s desire to address exemption implications via proactive formation of the jurisdictional working group, with informative meetings open to interested public, is an example of “good government”.

As discussed by the working group, the three main options for re-examining the “unimportant quantity” source material exemption in 10 CFR 40.13(a) are 1) no change to the exemption, wherein NRC authority is limited to U and Th at concentrations >0.05% (or below only if resulting from a NRC-licensed process), 2) limit NRC authority to only U and Th that is purposely extracted for it’s source material content, and 3) increase NRC authority to materials that are currently exempt, potentially via a tiered approach linked to concentration and/or dose.

Recommended “No Change Option” - Summary

It is my belief that the “no change option”, with slight modification to ensure control over potential doses to both workers and members of the public, creates the best balance of the “pros” and “cons” inherent in each option, and can be accomplished with the least commitment of

resources both within the regulating and regulated communities. Given existing budgetary and resource constraints, it is imperative for the NRC to creatively seek ways to address concerns with the exemption in a way that is both protective and resource-effective.

With the 0.05% source material exemption in place, control over potential occupational doses can be accomplished via a worker training requirement for likely doses over 100 mrem, either within 10 CFR 40.13(a), a voluntary training program approved by the Occupational Safety and Health Administration (OSHA), or within the context of OSHA's 29 CFR 1910.1096 standard for ionizing radiation. This approach also provides an opportunity for NRC to clarify the role of occupational worker as opposed to member of the public, consistent with the publication of amended definitions and criteria in the Federal Register (60 FR 36038, 7/13/95).

Control over potential doses to members of the public can be accomplished via a limited memorandum of understanding with the states that the level of control exhibited within the scope of the Conference of Radiation Control Protection Directors' (CRCPD) Part N Suggested State Regulation for TENORM provides a sufficient avenue for protection of the public for 40.13(a) exempt material.

Recommended “No Change Option” - Detail

Occupational

Since a prime concern of NRC is the assurance of control over potential occupational doses under the “no change option” to the source material exemption, modification of the option to include worker training requirements consistent with 10 CFR 19 for NRC licensees would serve to address this concern, and can be accomplished in a variety of ways.

1) If NRC desires to establish worker training within the context of 10 CFR 40.13(a), one option to achieve this is the creation of regulatory language in a new subsection 10 CFR 40.13(a)(i), for example:

40.13(a)(i) Any person exempt from the regulations in this part under paragraph (a) of this section must ensure that the provisions for instruction to workers in 10 CFR 19.12(a) and (b), for individuals likely to receive an occupational dose in excess of 100 mrem/yr (1 mSv/yr), are adhered to.

One advantage to this approach is that it may clarify the role of occupational worker as opposed to member of the public. It is my belief that publication of specific language for definitions for “occupational dose”, “member of the public”, and “public dose” in 60 FR 36038 (7/13/95) served to clarify the point that occupational dose covers employment-related exposure to both licensed and unlicensed sources of radiation, and that public dose, as received by a member of the public, does not include occupational dose. Hence, the separation of employees into radiation workers and members of the public (consistent with the pre-1991 version of 10 CFR 20) can be viewed as outmoded, when compared to NRC’s amended definitions. The

addition of training requirements for the use of 40.13(a) exempt material helps solidify the distinction between a single class of worker, and non-employment related member of the public.

2) An alternative option for control of potential dose is the establishment of an OSHA approved voluntary workplace training program for the use of 40.13(a) exempt material consistent with 10 CFR 19.12. OSHA has authority over worker protection from hazards, including ionizing radiation, which is regulated in 29 CFR 1910.1096 (see 1910.1096(p) for OSHA determination of compliance for NRC and agreement state licensees for use of source material, etc.). For example, Mr. Charlie Simmons of Kilpatrick Stockton has already provided NRC and the part 40 jurisdictional working group with an example of OSHA endorsement of a voluntary initiative for worker protection within the refractory ceramic fiber industry.

3) A third option is to establish worker training consistent with 10 CFR 19.12 within the context of OSHA's 29 CFR 1910.1096 rule. Within 1910.1096, section (i) pertains to "Instruction of personnel, posting", and would serve as a natural location to create regulatory language in a new subsection 29 CFR 1910.1096(i)(4), for example:

1096(i)(4) Employers shall ensure that provisions for instruction to workers in 10 CFR 19.12(a) and (b), for individuals likely to receive an occupational dose in excess of 100 mrem/yr (1 mSv/yr), are adhered to.

Public

Since another prime concern of NRC is control over potential doses to members of the public under the "no change option" to the source material exemption, examination of the level of control exhibited within the scope of CRCPD's part N for TENORM should serve to satisfy NRC's concern. Part N, as written, utilizes 5 pCi/g or more of radium (Ra 226 and Ra228) as the radionuclide of control, and provides a dose cap of ≤ 100 mrem/yr to a member of the public from general or specific licensee use, operations, TENORM release, or approved disposal.

Although sources of NORM exist which are predominantly Ra226 and/or Ra228 (and daughters) from processes that destroy the secular equilibrium of Ra with its U238 and Th232 parent nuclides, there are also sources of NORM which fall under the 40.13(a) exemption, and contain U and Th below 0.05% in conjunction with daughter nuclides, including Ra at concentrations greater than 5 pCi/g. Ores, and mineral products, such as zircon, fall into this class. For these materials, consideration of dose should naturally include all daughters within the U and Th decay series, and not just Ra. It is anticipated that oversight of the ≤ 100 mrem/yr dose constraint cap for state licensees will ensure that dose assessment is properly performed.

Some states already have regulations for the control of TENORM that mirror earlier drafts of part N, and it is anticipated that finalization of part N by the CRCPD will accelerate the promulgation of comparable rules in remaining states. A limited memorandum of understanding between NRC and the states that the level of control exhibited within the scope of part N for Ra provides a sufficient avenue for protection of the public for 40.13(a) exempt material via consideration of the radiological properties of materials as a whole, can serve to establish that potential dose to members of the public are covered under the 40.13(a) / part N framework.

“Pros” vs. “Cons”

The information shared by the part 40 jurisdictional group, both in documents and as covered orally in the meetings, provided an excellent overview of the “pros” and “cons” for each exemption option, and it is not my intent to reiterate each pro and con. However, a few of the points stand out:

The primary benefit of the no change option is the maintenance of a stable regulatory environment with respect to a 0.05% U and Th concentration that the regulated community understands and has adapted to. In essence, a 0.05% “ceiling” exists for industries that manage ores and minerals that are not intended to be processed for their source material content. Wherever possible, producers strive to use materials of lower concentration, to avoid license requirements for both them and their customers. The end result is that, to a large degree, materials with U and Th concentrations above 0.05% are unattractive to the market, and the potential for elevated doses from these materials is avoided, except when already subject to NRC control.

The option of lowering the exemption, to levels where most minerals would become subject to NRC control, may actually remove this “market constraint”. If industries must be licensed for the bulk of their feedstock materials, then the incentive to stay below exempt levels will effectively be removed. Depending upon the extent that the exempt concentration would be lowered, the scope of minerals and ores subject to NRC regulation could be vast. The Environmental Protection Agency’s (EPA) draft report “Diffuse NORM Waste Characterization and Preliminary Assessment”, dated 1993, cites enormous volumes of NORM material that either contain or are derived from material at concentrations below the current exempt level.

In fact, the Generic Environmental Impact Statement (GEIS) supporting NUREG-1496 as covered in 1994, when NRC proposed the “Radiological Criteria for Decommissioning” rule, can serve to dramatically point out the concern with adding the large volume of material consistent with a lowering of the exemption. The GEIS (table 5-13) estimated that a total planned capacity at low-level compacts of 85.5 million ft³ (assuming that all the compact sites are actually constructed) would be sufficient for decommissioning waste volumes. However, the estimates do not consider the impact of the high volume of NORM waste (estimated in the EPA diffuse NORM document at 1 billion tonnes annually, with 60 billion tonnes in inventory) that may be subject to NRC control with a lowered exemption. State flexibility, within the context of part N, for authorization of alternate disposal methods could partially alleviate this large volume impact.

Maintaining the “no change option”, with the suggested modifications specified above, provides assurance that potential occupational and public doses can be controlled, while eliminating the need for a complicated review of agency authority vs. the AEA statute, and can be accomplished with the least commitment of NRC resources. A memorandum of understanding with the states enhances their ability to holistically address NORM (including 40.13(a) exempt material) in a part N rule that comprehensively covers possession, use, processing, distribution, transfer, disposal, and manufacture of NORM containing products.

Limiting NRC authority to uranium and thorium that is intentionally extracted for its source material content, on the other hand, may lead to regulation of NORM under an EPA framework that does not provide the same degree of coverage as is provided under the states' comprehensive part N framework, since EPA statutes are more targeted towards releases, disposal, and remediation vs the more holistic state approach. In addition, a thorough review of NRC authority vs. AEA statutory language may lead to the conclusion that limiting NRC authority is not a viable option.

I would like to thank the part 40 jurisdictional working group for providing a public forum for discussion during its meetings, and for considering these suggestions. If you would like to discuss these comments in more detail, please do not hesitate to contact me via telephone, e-mail, or fax.