

From: "charles simmons" <csimmons@athompsonlaw.com>
To: <lsk@nrc.gov>
Date: 11/17/05 6:40PM
Subject: Comments on 11 09 05 meeting

Dear Ms. Kerr:

Thank you and your agency for the opportunity to submit public comments regarding the discussion held on November 9, 2005 to define discrete sources of Ra-226 and NARM.

Please advise if you have any questions regarding these comments. Thank you.

Charles T. Simmons

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From: "charles simmons" <csimmons@athompsonlaw.com>

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THOMPSON & SIMMONS, PLLC.
1225 19th Street, NW., Suite 300
Washington, DC 20036
202-496-0780/202-496-9111
Fax 202-496-0783
(email):ajthompson@athompsonlaw.com
csimmons@athompsonlaw.com

November 17, 2005

Via Email
Leslie Kerr (lsk@nrc.gov)
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Comments on Rulemaking to Establish a Regulatory Framework for the Expanded Definition of Byproduct Material Established by the Energy Policy Act

Dear Ms. Kerr:

These comments on the above captioned rulemaking are submitted on behalf of the Zirconium Environmental Committee ("ZEC"), a group of companies that engage in the production, research and development, and commercial distribution of zirconium mineral ores and products, including zircon and zirconia.

Zircon (ZrSiO_4) and zirconia (ZrO_2) are materials which contain low levels of naturally-occurring radioactive materials (NORM). As a result, ZEC members could be directly affected by the definition of "discrete source" as it might apply to Ra-226 or other NORM in the contemplated rulemaking.

Accordingly, we offer the following comments for NRC's consideration.

- The IAEA's Code of Conduct for Safety and Security of Nuclear Sources ("Code of Conduct") identified and enumerated high activity, high concentration radioactive sources that present a significant risk to individuals, society and the environment if mishandled or used for malevolent purposes. NRC should promulgate regulations governing "discrete sources" of Ra-226 and NORM that address the threat level contemplated by the Code of Conduct to maintain consistency with international guidance.
- The minimum Ra-226 activity source identified by IAEA as Category 3 is 1.0 Curie, which should likewise be the lower bound for a "discrete source of Ra-226 in NRC's rule.

- The IAEA's Code of Conduct identified radioactive sources of concern based on deterministic health effects, arising from acute, short-term exposures to the source, ranging from minutes to weeks, consistent with the technical basis set forth in TECDOC-1344 "Categorization of Radioactive Sources." NRC should similarly base its regulation of discrete Ra-226 sources on the potential for immediate or short-term harm.
- NRC's July 1, 2005 modification of the Part 110 import/export rules extended the Table 1, Appendix P values to bulk materials because "Material in 'bulk' or 'loose' form raises security concerns that equal or exceed those for material in sealed sources." (70 Fed. Reg. 37985, July 1, 2005). None of the radionuclides listed in Table 1 are of natural origin and none would be encountered in soil, pipe scales, mineral processing residues, or any other non-nuclear, non-NRC licensed industrial activity. On the other hand, radium, as a naturally occurring radioactive isotope, is found in soil, minerals, drinking water and may be inadvertently concentrated by industries processing any material of geological origin (See: CRCPD Part N; UNSCEAR 1988, 2000; US EPA 1991 NORM Survey). As a consequence of its natural origin, considering radium "in bulk" or dispersed within a non-radioactive material can expand the universe of "radium sources" to include large volume, relatively low activity materials that could not possibly present the kind of threat envisioned by the Code of Conduct.
- While radiation sources have been traditionally defined on the basis of activity concentration per unit mass – such as pCi or Bq per gram of material, or in terms of total activity of the source (Curies, as in Part 110 Table 1), these parameters if applied to radium sources could lead to the absurd result of considering large conveyances such as gondola cars to be "discrete sources." For example, 1000 metric tons of a non-radioactive matrix (e.g., soil, pipe scale) containing Ra-226 at 1000 pCi/g would have a 1 Curie total activity, but the size, mass, difficulty of transportation and concealment, and low deterministic risk distinguish this "source" from the small, portable, concealable high-activity sources deemed threatening by the Code of Conduct. Consequently, a limiting volume should be taken into account in the definition of discrete Ra-226 source.
- The qualifying phrase "used for commercial use" should be construed to mean that the source was intentionally manufactured or fabricated for use for its radiation-emitting properties. This construction would avoid including "incidental" NORM in the rule.
- Broadly defining "discrete source" to include low activity Ra-226 or other NORM diverts resources away from materials that pose a genuine threat to health and national security. That regulatory overreaction to radium is costly and misguided is illustrated by the recent action by Singapore officials, in ordering all lightning rods in that state to be removed and disposed of as radioactive waste, because some rods contained Ra-226 ionizers. It should be pointed out that the

CRCPD Suggested State Regulations address radium sources of this type.

- The following definition of "discrete source of Ra-226" is suggested:

The term "discrete source of Ra-226" includes any manufactured article containing 1 Curie or more of Ra-226 one cubic meter or less in volume that is intended for commercial, industrial, medical or research purposes exclusively because of its radioactive properties.

Please do not hesitate to contact the undersigned if you have any questions regarding these comments.

Sincerely,

/S/

Charles T. Simmons
For
The Zirconium Environmental Committee