

Garrett, Betty

From: Paulson, Oscar (CCC) [Oscar.Paulson@riotinto.com]
Sent: Wednesday, January 19, 2011 7:47 PM
To: Webb, James
Cc: Schutterle, Shelley (CCC); Haag, Kelly (RTEA-Temp)
Subject: Source Material License SUA-1350 Docket Number: 40-8584 Calculation of the Dose from Radon and Radon Decay Products to the Nearest Resident/Member of the General Public

James Webb:

On Wednesday, January 12, 2011, Duane Schmidt of the Nuclear Regulatory Commission (NRC) gave a presentation that included a discussion of the calculation of dose from radon and its decay products to members of the general public and to the nearest resident from licensed uranium recovery facilities. In it, he cited the preamble to the revised 10 CFR 20 (Federal Register Volume 56, Number 98 - Tuesday, May 21, 1991 - Rules and Regulations - page 23375) which states:

The Commission is aware that some categories of licensees, such as uranium mills and in situ uranium mining facilities, may experience difficulties in determining compliance with the values in appendix B to Part 20.1001 – 20.2401, Table 2, for certain radionuclides, such as radon-222. Provision has been made for licensees to use air and water concentration limits for protection of members of the general public that are different from those in Appendix B to Part 20.1001 – 20.2401, table 2, if the licensee can demonstrate that the physiochemical properties of the effluent justify such modification and the revised value is approved by the NRC. For example, uranium mill licensees could, under this provision, adjust the table 2 value for radon (with daughters) to take into account the actual degree of equilibrium present in the environment.

At the Sweetwater Uranium Project, the nearest resident is the security guard who lives in a trailer adjacent to the facility. He is considered a member of the public/resident during times that he is on site but not being paid. Two (2) RadTrak/TrackEtch units are installed in the trailer in which he stays to measure radon concentrations. These are exchanged quarterly. In addition, air samples are collected in the trailer by the two (2) RadTrak/TrackEtch units twice each year. These air sample filters are analyzed by the modified Kusnetz Method to determine radon decay product concentrations in working levels. This data is maintained in a spreadsheet and equilibrium factors for radon and its decay products have been calculated for each six (6) month period (January to June and July to December) for each year for over a decade. These equilibrium factors are averaged to generate an average equilibrium factor for the trailer over time. This spreadsheet containing the equilibrium factors along with the entire dose calculation method is provided in each semiannual 10 CFR 40.65 Report that is submitted to the Commission.

During the August 2009 inspection, you examined the site's 10 CFR 40.65 Report and specifically examined the method used to calculate the dose to the nearest resident/member of the general public (the security guard) from radon and its decay products and stated that you concurred with the method being used. The inspection report documents this review stating:

The inspectors reviewed annual effluent reports for 2007 – 2008 to assess doses to the general public. Doses were assessed for individuals at the background station and at the security trailer. During 2007 – 2008 doses at the security trailer were below the background station measurements. Therefore, the inspectors concluded that doses to the public were below the limits specified in 10 CFR 20.1301 and 10 CFR 1302.

During his presentation, Duane Schmidt stated that use of a site specific equilibrium factor for radon and its decay products requires "approval of a member of NRC staff."

While the use of a site specific equilibrium factor was discussed with members of Commission staff in the past, for example Elaine Brummett in an e-mail dated September 7, 2001 specifically requested that a copy of the calculation sheet and explanation of the method for calculation of doses to the nearest resident be included for her review in each 40.65 Report that is submitted, no recent written approval by a member of Commission staff exists on file for the use of site specific equilibrium factors for radon and radon decay products at the Sweetwater Uranium Project.

Given that you reviewed and concurred with the use of site specific equilibrium factors for radon and its decay products and with the dose calculation method during the August 2009 inspection, Kennecott Uranium Company is requesting that you provide concurrence with the use of site specific equilibrium factors for radon and its decay products and with the dose

calculation method used at the Sweetwater Uranium Project in a reply to this e-mail so that a current approval is on file at the site.

This issue was discussed with you in a telephone conversation on the afternoon of Wednesday, January 19, 2011. The dose calculation method and equilibrium factor spreadsheet can be reviewed in the facility's most recent 40.65 Report which was submitted at the end of August 2010.

If you have any questions please do not hesitate to contact me.

Oscar Paulson

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of the Dose from Radon and Radon Decay Products to the
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Calculation of the Dose from Radon and Radon Decay
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Thread-Index: Acu4O3wl8ukVqQCKRbyxkeg01UsnSw==

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CC: "Schutterle, Shelley (CCC)" <Shelley.Schutterle@riotinto.com>,
"Haag, Kelly (RTEA-Temp)" <Kelly.Haag@riotinto.com>

Return-Path: Oscar.Paulson@riotinto.com

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