

Paul Mercredi

From: David Swisher [dswisher@avalonraremetals.com]
Sent: Tuesday, October 26, 2010 9:51 PM
To: Paul Mercredi
Subject: FW: Fwd: Re: Fwd: 350017-003 Potential Radiation Exposures to Thor LakeWorkers

Hello Paul....please post below information on public registry.

Thank you,

David Swisher
Vice President Operations
Avalon Rare Metals Inc.
Tel: 604.940.3800
Cell: 604.347.9620

From: doughchambers@rogers.blackberry.net [mailto:doughchambers@rogers.blackberry.net]
Sent: Tuesday, October 26, 2010 8:27 PM
To: J R Goode; Doug Chambers; Leo M. Lowe; Gerd Wiatzka
Cc: David Swisher; Bill Mercer
Subject: Re: Fwd: Re: Fwd: 350017-003 Potential Radiation Exposures to Thor LakeWorkers

No problem to pass on

Doug

Sent from my BlackBerry device on the Rogers Wireless Network

From: John Goode <jrgoode@sympatico.ca>
Date: Tue, 26 Oct 2010 20:07:55 -0400
To: Doug Chambers<dchambers@senes.ca>; Leo M. Lowe<lloew@senes.ca>; Gerd Wiatzka<gwiatzka@senes.ca>
Cc: David Swisher<dswisher@avalonraremetals.com>; bill mercer<bmercer@avalonraremetals.com>
Subject: Fwd: Re: Fwd: 350017-003 Potential Radiation Exposures to Thor Lake Workers

Hi Leo and Doug. Many thanks for the opinion on radiation exposures.

As you can see, David Swisher would like to pass this e-mail on to others. I presume that SENES would have no concerns if this e-mail was sent to the MVEIRB. Please confirm.

Thanks again.
John

----- Original Message -----

Subject:Re: Fwd: 350017-003 Potential Radiation Exposures to Thor Lake Workers

Date:Tue, 26 Oct 2010 17:34:50 -0600

From:David Swisher <dswisher@avalonraremetals.com>

To:jrgoode@sympatico.ca <jrgoode@sympatico.ca>, RHoos@eba.ca <RHoos@eba.ca>, Bill Mercer <bmercer@avalonraremetals.com>, Dezhi Qi <dqi@avalonraremetals.com>

John,

I would like to forward this email to MVEIRB for the public registry to help address some of the concerns that have been addressed in the scoping sessions.....can you confirm with Senes that this is okay to do?

Thank you

David

From: John Goode <jrgoode@sympatico.ca>
To: David Swisher; 'Rick Hoos' <rhoos@eba.ca>; Bill Mercer; Dezhi Qi
Sent: Tue Oct 26 17:24:46 2010
Subject: Fwd: 350017-003 Potential Radiation Exposures to Thor Lake Workers

FYI ... information on radiation exposure for workers at Thor Lake. John

----- Original Message -----

Subject:350017-003 Potential Radiation Exposures to Thor Lake Workers
Date:Tue, 26 Oct 2010 16:03:24 -0400
From:Leo M. Lowe <llowe@senes.ca>
To:<jrgoode@sympatico.ca>
CC:dchambers@senes.ca, gwiatzka@senes.ca, rstager@senes.ca

Hi John,

As discussed by phone yesterday, we understand that in a recent open house in Hay River to discuss Avalon's Thor Lake project, a question arose as to the potential radiation exposures that workers at the site might receive. This message provides some information to address this question.

As indicated in our "High Level Review of Proposed Thor Lake Project - Update" (memo of 3 June 2010 from Chambers et al. to Bill Mercer), the mean thorium and uranium concentrations in the ore based on Avalon data were estimated at 190 ppm thorium and 41 ppm uranium (Table 3 of memo). The concentrations in the flotation concentrate from the mine were estimated to be 3 to 5 times these values. What is the significance of these values?

- First, at the expected average radioactivity values in the ore and concentrate, these materials would not be considered as "radioactive" according to Canadian and international transport regulations for radioactive material, i.e. the average material would be exempt from the regulations.

- Relative to potential radiation exposures, the Canadian Guidelines for NORM (i.e., naturally occurring radioactive material, such as the Thor Lake ore and concentrates) recommend a radiation dose limit for NORM workers of 20 millisieverts per year (mSv/y) above natural background exposures. [It should be noted that there is an expectation that actual doses will be kept at a low level through the application of the ALARA principle (whereby doses are maintained as low as reasonably achievable, social and economic factors taken into account). In radiation protection circles, ALARA is applied universally.] For perspective on the 20 mSv/y worker limit, the average background radiation dose to Canadians is about 2 mSv/y, although this level can vary significantly from place to place across Canada, and tends to be higher in many parts of the NT.

- The expected radiation doses to the most exposed Thor Lake workers are likely to be above 1 mSv/y but less than 5 mSv/y. The exposures would primarily be a combination of the gamma radiation and radon gas that is

emitted from any rocks and soils that contain uranium and thorium. Exposure to any airborne dust would be a fraction of the total exposures.

- The uranium concentration in a low grade uranium mine (0.1% grade) is about 1000 ppm, compared to the 41 ppm uranium in the Thor Lake ore. Today's uranium miners and mill workers, even at high grade uranium mines, are typically exposed to less than 5 mSv/y.

- Thus, the expected radiation exposures of the Thor Lake workers would be a small fraction of the recommended limit for workers. Monitoring of the workers and the workplaces will be used to confirm the expected exposures.

Regards,
Leo

Leo M. Lowe, Ph.D., P.Phys., CRadP
Principal, Senior Health and
Environmental Physicist

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