

Topic: Taseko's Yellowhead Mine Proposal, the presence of uranium and the potential for negative health impacts.

1. The presence of uranium around the proposed mine site.

While the major uranium deposit lies around the old Rexpar claim, there are smaller amounts of uranium scattered throughout the claim area. When this is disturbed, through excavation, the potential for radon to enter the atmosphere will be radically increased.

The following comes from the Austrian Radon Project;

“the giant landslide, with its highly fractured and crushed orthogneisses, is the only possible source of radon, despite the fact that the U and Ra content of the rocks is by no means exceptional. The most important factors producing high radon emanation rates are the production of a high active surface area and circulation pathways for radon-enriched soil air by brittle deformation due to the impact of the landslide mass “

<https://apps.nrs.gov.bc.ca/pub/aris/Report/01737.pdf/>

<https://uat-oneminewebsite.azurewebsites.net/documents/rexpar-uranium-deposits>

https://cmscontent.nrs.gov.bc.ca/geoscience/PublicationCatalogue/PreliminaryMap/BCGS_PM22.pd

2. Uranium and its notable decay products;

The Uranium-238 Decay Chain

1. **Uranium-238 (^{238}U):** The most abundant isotope of uranium, it begins the decay series.
 - **Thorium-234 (^{234}Th):** The first product of Uranium-238's decay, it is short-lived.
 - **Protactinium-234 (^{234}Pa):** Decays from Thorium-234.
 - **Uranium-234 (^{234}U):** Returns to uranium after the decay of Protactinium-234.
 - **Thorium-230 (^{230}Th):** Another thorium isotope that forms.
 - **Radium-226 (^{226}Ra):** A key element in the chain that is long-lived (half-life of 1,600 years) and highly mobile.
 - **Radon-222 (^{222}Rn):** The final transformation in this part of the chain, where Radium-226 decays to produce the radioactive gas Radon-222.

Note that the decay elements with extremely short, or very long half lives, **with the exception of Radium 226**, are much less of a concern than Radon 222 with its half life of about 3.8 days. This gives it sufficient time to persist in the environment long enough to become a very real hazard. However, the relatively long half life of Radium 226 means that its persistence in the environment would result in a continuing source of Radon 222.

3. **Already, the North Thompson valley experiences high levels of radon.**

<file:///tmp/lu2391q2u1ag.tmp/lu2391q2u1ca.tmp/birchIslandsurvey.htm>

<https://geophysical-data.canada.ca/Portal/Search>

<http://www.bccdc.ca/about/news-stories/stories/2021/new-interactive-radon-map>

<https://ncceh.ca/resources/blog/putting-radon-map-new-and-interactive-tool-british-columbia>

4. **In the past, citizens have expressed concern about mining in the area of the Yellowhead claim.**

<https://www.clearwatertimes.com/community/valley-residents-protest-uranium-exploration-5730935>

<https://watershedsentinel.ca/article/jobs-for-cancer-trading-health-for-money/>

5. **Possible transport mechanisms of Radon and Radium to inhabited areas of the North Thompson.**

- Open air, nighttime drainage down creek beds. This is favoured by very heavy gaseous elements, like Radon. Then, because of its very high density, it will accumulate in low-elevation areas such as river valleys.

-Dust from mining activity , taken up by convection or wind. This particulate matter will then settle in the valley. Radium would be present, in its solid state within the dust. As this dust containing Radium settles into the valley, Radon will be produced continuously as the Radium decays.

-Dissolved radioactive products in water will enter the Thompson River system, most notably via Harper Creek. The Austrian Radon Project has more information about this.

<https://www.osti.gov/etdeweb/servlets/purl/201308>

6. **Health concerns related to human exposure to radioactive products, including Radon, from the BCMA;** Note that although the proposed Yellowhead mine is not labelled as a “uranium mine”, the presence of scattered amounts of uranium means that similar cautions must apply.

<https://www.ccnr.org/bcma.html>
