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On uranium mining ban, the weather isn't an adequate argument

By: Patrick J. Michaels – January 24, 2013

Debate around the future of Virginia Uranium Inc. is getting very hot.

The Virginia legislature might soon be voting on lifting the moratorium on uranium mining that it imposed three decades ago. A broad coalition of critics is armed with what appear to be science-based arguments. One is that the “extreme” climate of Virginia militates against mining, and that it could wash tons of radioactive mine tailings into the Virginia Beach water supply.

As a matter of fact, a publication of mine, given as “Hayden and Michaels, 2001,” is repeatedly cited in the National Research Council’s (NRC) 2012 document, “Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia” (whew!).

The document is an unrefereed Virginia News Letter published by The University in 1981. In 2001, climate normals were updated from the original document. That was the only change to the three-decade-old essay.

From it, the NRC notes that this fair commonwealth gets hit by tropical cyclones, that these storms (and other, smaller systems) have caused some whopping floods, and that rainfall exceeds potential evapotranspiration here, which means we have, on average, a positive moisture balance, as opposed to many other regions on the planet where uranium is mined.

Translation: For much of the year, Virginia’s ground is wet. Therefore uranium cannot be mined. At least that’s what people are saying the NRC says. (It doesn’t.)

Both the 1981 document and the NRC report refer to the Nelson County flood from Hurricane Camille in 1969, one of the heaviest rainfall events ever measured in the U.S.

The Camille flood, and one like it in Madison County in 1995, were terrain-amplified disasters where intense rainbursts were funneled down narrow defiles like Davis Creek or the Rapidan River.

Coles Hill, however, is far from the rugged relief of the Blue Ridge. William Kingston, who received a master’s degree in civil engineering from Virginia Tech for his work modeling Virginia

floods, ran a hydrological model for the area around Coles Hill. The “probable maximum precipitation” (PMP) flood (roughly, the 1,000-year recurrent 24-hour rainfall) results in high water that is more than 30 feet below where mine tailings are likely to be stored.

It would have to rain more than twice the PMP for there to be a chance of a flood of that magnitude.

But wait — won't global warming raise the temperature of the nearby Atlantic Ocean enough to make such a deluge possible?

Fortunately, planet Earth has already run this experiment, during something called the Paleocene-Eocene Thermal Maximum (PETM) about 55 million years ago. This temperature excursion, the largest of the past 100 million years, was caused by a sudden release of greenhouse gases from the earth's crust equivalent to burning all the known reserves of fossil fuels, pronto. That's the current myth, subject to change.

James Zachos, of the University of California-Santa Cruz, has made a career out of studying the PETM. He found an associated rise in tropical sea-surface temperatures of about 9°F. Simple thermodynamic calculations show that this isn't nearly enough to double the PMP flood in Virginia. As a result, that dramatic deluge just isn't going to happen.

Finally, there is the specter of dreaded tropical cyclones. Well, uranium has been extensively mined in south Texas, within 25 miles of the hurricane-studded Gulf of Mexico, with much stronger storms than will ever reach Coles Hill. PMP in south Texas is the highest in the U.S., about 10 inches greater than at Coles Hill. Much of the uranium for France's reactors originally came from two sites in its former colony, Madagascar, that are subject to Category 5 storms. The world's all-time record 24-hour rainfall (71.8 inches in 1966) was measured at nearby Reunion Island.

Those who oppose lifting the moratorium on uranium mining in Virginia need a more substantive argument than the weather. The fact is that uranium has been mined around the world in much more volatile climates.