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COMMENTS ON THE US/UAG REPORT

A Different Perspective

I do not agree with the recommendation of the Uranium Subcommittee/Uranium Administrative Group (US/UAG) that the moratorium on uranium development can be lifted.

The case for uranium mining and milling in Virginia has not been made, in my opinion, despite extensive studies by the US/UAG, consultants and the industry. The burden of proof is on those who wish mining to proceed and this burden has not been met for me. The risks of cancer deaths and illnesses from radiation released from the uranium ore and waste products called tailings are high in the state's proposal. The great many unknowns about the development and its impacts could push health risks much higher and raise costs to the Commonwealth, substantially reducing projected economic benefits.

If Virginia allows uranium mining and milling, it would be the first state to do so in a climate where rainfall exceeds evaporation and where many people would be exposed potentially to the resulting radiation in the water and air. Previous domestic uranium mining has been in arid, sparsely populated Western regions where transmission of radiation in water is not a concern. In Virginia's wet climate where water is discharged from the site and filters through tailings, the transmittal of radiation to people through streams and the groundwater is a major issue.

The experimental nature of the uranium industry in Virginia's wet climate and the environmental problems from radioactive tailings disposal in the West
have caused the General Assembly to be justifiably cautious in approving the industry. Legislation has called for the assessment of risks and benefits. The US/UAG has had no actual experience to evaluate. French uranium is cited by the industry as similar, but no impacts data were produced on this situation. Rather, the UTF and US/UAG reports and conclusions about costs, benefits and risks of a uranium industry are based on consultants predictions using mathematical models and other techniques to speculate about future effects of one mine and one mill. This site is known as the Swanson site in Pittsylvania County. No estimates were made of impacts of a statewide industry.

In my judgment, the consultants risk assessment study and cost/benefit analysis on which the UTF and US/UAG reports are based underestimate the health risks and overstate the benefits of the Swanson uranium mining and milling for the following reasons:

1.) The Swanson risk and cost/benefit calculations assume no negative impacts on ground water or surface waters. It is assumed that there will be no leaching of radioactive wastes or heavy metals to groundwaters that are used by neighbors, no substantial polluted discharges to streams, no accidents, no long-term deterioration or collapse of the 100 foot high tailings pile by flood, earthquake, erosion or design failure for the thousands of years the tailings are radioactive.

These are unrealistic assumptions in the net precipitation climate of Pittsylvania County, where groundwater reaches close to the surface and where above-ground tailings disposal will be required exposing the waste to weather and collapse. Mill Creek will be diverted around the site but no negative impacts are projected. An open-pit mine will be dug to 850 feet through the Chatham Fault and tailings disposed near the Bannister River, using an undemonstrated containment technology.
A VPI/SU professor consulting with the UTF concluded that virtually all contaminants that would be disposed in the proposed tailings pile will eventually leach to groundwater. When and how fast pollutants will filter out will depend on the thickness and material of the liner under the tailings pile.

If the study's assumptions are wrong and polluted groundwaters flow through the rock fractures to affect groundwater supplies or surface water pollution increases, then the risks and economic costs to individuals and the state would rise.

2.) The US/UAG report estimates that up to .56 additional cancer deaths will result from the one mine/one mill Swanson development in the 13 years of operation. This assumes that the maximum exposed individual will receive 7.8 millirems of radiation, based on the industry and state consultant estimates. However, the UTF and the US/UAG have proposed state standards that would allow 285 millirems of radiation to the maximum exposed person, which is estimated to produce up to 21 cancer deaths during the 13 years. It is reasonable to expect that if the law permits 285 millirems that the industry could emit up to that level.

If more than one mine and one mill is developed in Pittsylvania County or other parts of the state, additional people will be exposed and risks increase. To estimate the maximum cancer risk from a uranium industry, rather than just one mine and mill, calculations should be based on the proposed statutory total radiation standard of 285 millirems. This amount of radiation could produce anywhere from 28.5 to 399 additional cancer deaths in an average population of one million exposed persons. Various scientific
organizations have differing views about just how many cancer deaths to expect. The state's consultant used the lower extreme of 28.5, while other governmental scientific organizations predict up to 399 cancer deaths.

3.) Health risks, other than neighbors' cancer deaths, were not estimated for the Swanson development. Traditional risk assessment methods are limited to predicting fatal cancers in the general public. The following risks are reasonable to expect:

* Worker accidents, illnesses and deaths were not included in the risk assessment but were left to future analyses. In addition to the employee risks associated with any surface mining, they will be exposed to radioactive materials in the mine, mill and tailings areas.
* Illnesses in the general population, including cancer, that do not result in death, were not included.
* Impacts on sensitive persons, notably children and pregnant women, would be more substantial than the impacts on the average population projected.
* Health risks were based on normal, expected operating conditions and do not, because they cannot, predict effects of a catastrophic event such as a flood, major accident or design failure that could collapse the tailings pile.

4.) Benefits calculations assume that the Swanson mine and mill will operate at full production for the 13 years of expected operation, producing 468 full-time jobs, while the history of the industry is one of cyclical unemployment. Benefits to employees would decrease and costs to the Commonwealth increase if periodic unemployment occurs.
5.) No calculations were made by the consultants, UTF, or the US/UAG of the long-term health and environmental effects and costs to the Commonwealth, those that occur for many years after closure of the mine and mill. Risks, costs, and benefits are projected for only the 13 years of operation, although risks and costs will continue for many years after the 13 years of benefits cease.

The US/UAG estimates that first year costs to the Commonwealth to regulate the Swanson site to be $850,510. Recurring costs during mining operations are projected to be $664,410 a year. No post-closure costs are projected, although the General Assembly should expect some to occur. After closure, the Commonwealth or the Federal Government will assume permanent ownership of the tailings pile, along with the costs of monitoring and managing the site, and responsibility for damages and cleanup should an environmental problem occur. In the event the tailings management technology fails or a flood or earthquake occurs, a very expensive tailings remedy could be required.

These calculations of long-term costs and predictions of catastrophic events were not made by state officials because of the very high degree of uncertainty about such impacts of uranium mining and milling in Virginia. A great deal of hard work and investigation by legislators, state officials, private citizens and the industry has been devoted to improving our understanding of impacts of a Virginia uranium industry. The Swanson site-specific research was a valuable case study, which enabled the UTF to draft better uranium standards. However, while knowledge of a Virginia uranium industry has improved greatly over the past two years, uranium mining and milling in our climate and population density would be an experiment. Predicting impacts of such development are informed guesses, at best.
In my judgment, the unknowns and the identified risks to the public and the environment exceed the projected benefits and call for retaining the moratorium on mining and milling. This is a conservative approach that asks for a higher level of confidence before approving this unique industry.

However, if the General Assembly weighs the risks, costs and benefits differently, is willing to accept the uncertainties, and lifts the moratorium on uranium mining and milling, I endorse the US/UAG and UTF recommendations for legislation.

The total radiation dose standard should be made more protective for the public than the 285 millirems a year proposed in Recommendation 2 of the report. This proposal would expose an individual to the equivalent of 10 chest X-rays a year. This is added to the naturally occurring radon at the Swanson site of 130 millirems or about 5 chest X-rays, for a total of 15 X-rays each year of operation. In my view, this is too high a level of risk for Virginia to accept. Regulators hope to set lower exposure limits in the uranium permitting process, but lower levels should be specifically written into any uranium mining law. A better alternative standard is a total radiation dose standard of 25 millirems per year above background for sources other than radon and a concentration standard of 0.5 picocurie per liter for radon, for a total of approximately 170 millirems a year.

In addition the concept of setting radiation exposure limits in a uranium permit that are more stringent than the statutory limit (known as As Low As Reasonably Achievable or ALARA) should be specifically authorized in any uranium mining law, so that radiation limits below 170 millirems are possible.

A trust fund should be established in any authorizing statute to cover long-term state costs of monitoring and managing a closed tailings site, including
funds to pay for remedial action if a major environmental problem occurs. The mining companies and not the taxpayers of Virginia should bear this burden.

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