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URANIUM MINING IN VIRGINIA?

By David C. Cozad

One of the hottest environmental issues in Virginia in recent years has been whether to allow uranium mining in Virginia. Although the vast majority of uranium mining in the United States has occurred in several western states, the Marline Oil Corporation announced in 1982 that it had discovered significant uranium deposits in Pittsylvania County, Virginia. Shortly thereafter, the General Assembly imposed a moratorium on uranium mining pending further study. Since then there has been continuous debate, study, and dispute about whether to allow uranium mining to occur in Virginia. Although proponents of the industry claim that development would provide significant economic benefits to the State, opponents express widespread concern over a host of health and environmental problems associated with the uranium industry. Because of the radioactive nature of uranium, many complex and long-term problems are inherent in the industry. Furthermore, since climatic and geologic conditions in Virginia differ from those in existing mining areas in the West, it is extremely difficult to predict what impacts would result from uranium mining in Virginia.

A recent panel discussion presented by the Environmental Law Society of the Marshall-Wythe School of Law focused on these issues. Del. J. Paul Councill, Jr., member of the Virginia House of Delegates, the Virginia Coal and Energy Commission, and the Uranium Advisory Group, presented a brief history of legislative action involving uranium mining and discussed the current and future status of legislation. Mr. Richard R. Burton, Executive Director of the State Water Control Board, discussed the potential impacts of uranium mining on water resources in Virginia. Presenting the views of those opposed to development of uranium in Virginia was Ms. Georgia Herbert, Staff Attorney for the Piedmont Environmental Council (PEC). This article will discuss the

major questions uranium development poses and review the positions taken by the various interests represented in the panel discussion.

The General Assembly has struggled with the issue of uranium mining for nearly five years. The State has spent over \$500,000 and Marline over \$2.5 million to study the issue. Between 1981 and 1983, Virginia performed extensive economic and environmental impact studies, visited operating mines in Texas and New Mexico and held many public hearings. However, finding no clear answer to the question of how uranium could safely be produced in Virginia, the State extended the moratorium on mining. In an effort to develop definitive policies, the Legislature established a Task Force in 1984 to pull together previous studies and make recommendations as to appropriate performance standards that the uranium industry should be required to meet.

The Task Force issued its report in October 1984, concluding that uranium could be produced in Virginia at an acceptable level of risk if certain performance standards were statutorily mandated. Although federal performance standards exist, states have the option to regulate uranium mining on their own, so long as state standards are at least as stringent as federal standards. The Task Force determined that federal standards were inadequate, and that in order to closely monitor and control the industry, Virginia should issue and enforce its own regulations. Using the Task Force recommendations, Del. Councill drafted a bill that would end the moratorium on uranium mining and allow mining to begin, subject to State regulation.

Del. Councill introduced the bill in 1985, whereupon the committee approved the bill and sent it to the House of Delegates. Councill subsequently withdrew the bill because he felt many members were uncomfortable with its highly complex and technical

nature. He planned to reintroduce the bill in the 1986 session, believing it would pass, but industry officials convinced him to wait because of the currently depressed uranium market. Many industry experts feel that market conditions will improve in the next five years. So the uranium battle is far from over. Marline maintains its interest in mining uranium in Virginia and plans to push for appropriate legislation in the near future. In fact, Marline was the second most active lobbyist in Virginia in 1985, spending in excess of \$55,000.

The key question is whether the performance standards that the Task Force developed and incorporated into the proposed legislation will sufficiently protect the public from the risks inherent in uranium mining. The primary concern of opponents of uranium development is that it will result in human exposure to radioactive materials. The mining process causes the release of radioactive gas from uranium ore that must be ventilated from the mine shafts in order to protect miners' health. These radioactive particles may then be transported through air, surface water, or ground water to surrounding areas. As a result, populations located close to mines may suffer exposure from potentially hazardous concentrations of the radioactive gas.

The proposed bill sets the allowable exposure level for properties adjoining a mine at 285 millirems/year, which the Task Force and the industry believes will adequately protect health. PEC disputes this, claiming a need for a much more stringent standard. PEC points out that the Virginia Department of Health originally suggested a standard of 25 mrem/year, and that both Task Force and industry reports show that a 25 mrem/year standard could be met if the proposed mining facility functions as designed. The problem is that the health risks presented by different levels of radiation exposure are difficult to estimate. The proposed standard is stricter than existing federal stand-

ards, but at the same time appears to allow significantly higher levels of exposure than are necessary given existing mining technology. Opponents of mining argue that because the health risks are unknown, standards should be as strict as possible.

Probably the greatest hazard of uranium mining involves the long-term disposal of "mill tailings," which is the waste ore left after the extractable uranium has been removed. For every 1-5 pounds of uranium produced, a ton of radioactive tailings must be dealt with. This waste remains hazardous for thousands of years and presents serious handling and storage problems because the radioactive chemicals in the tailings can dissolve in rainwater and contaminate surface and underground water. Contamination of water supplies because of radioactive seepage is a problem in the arid western United States; in Virginia, which has a much wetter net precipitation climate, the potential problems from tailings piles are even more serious.

The Task Force recommended that uranium wastes be classified as a hazardous waste and regulated as other hazardous wastes are regulated under Virginia law. Under federal law, uranium wastes are not defined as hazardous wastes, and are exempt from laws which govern the disposal of hazardous wastes. As a result the standards proposed by the State are stringent relative to federal regulations and, if met, would probably adequately control the tailings. However, the debate is whether the technology exists to enable a mine operator to meet the standards. In the West, synthetic liners are used to contain the tailings until they dry out and no longer present a seepage danger. However, the effective life span of these liners is questionable, and in a net precipitation state such as Virginia the tailings will remain wet and dangerous far longer than in the West. Uranium has never been mined in a net precipitation climate in the U.S., and

opponents of uranium mining argue that Virginia should not be a testing ground for an unproven technology. The fear is that even if Virginia adopts stringent performance standards, the State will have to meet these standards through the use of undemonstrated technology. Before allowing uranium mining, the General Assembly will have to decide whether it believes that the tailings facility that the industry proposed will prevent leakage for hundreds or even thousands of years.

Another recommendation of the Task Force was that no process water from the mine should be discharged into either surface or groundwater. In response to this requirement, the company designed a closed water system to be used in its mining operation, similar to a system currently used in France. Opponents of mining claim that the company is unable to show how they could treat the waste-water sufficiently to ever permit safe discharge. The State fears that once the mine is shut down, the process water will be discharged into surface waters or allowed to leach into ground waters. Questions remain as to how the company will dispose of the process waters over the long-term.

A primary area of dispute between proponents and opponents of mining focuses on the assumptions that the Task Force made in developing its assessment of the health risks of uranium mining. The report assumed that no one would ever drink radioactive groundwater. This assumption may be unrealistic in light of the fact that serious questions remain as to whether there would be seepage from tailings piles. Also, the economic analysis assumed that no environmental degradation would occur as a result of uranium operation. This again may be unrealistic, and the result is that the cost/benefit ratio that the Task Force developed cannot be taken as presenting the whole picture because it under estimated costs.

Perhaps the greatest concerns of opponents of uranium mining center on the

potential for environmental problems long after the mine is shut down. A mine is expected to have a useful operating life of thirteen years, yet the potential for water contamination and radiation exposure will exist for hundreds or thousands of years. It is unclear who will pay to clean up water supplies or to compensate injured parties if the adverse impacts occur far in the future. If the company is not around, the State could end up stuck with a sizable clean-up bill. Ground water problems are extremely expensive to clean up; an estimate by a University of Virginia professor places the costs of clean-up of a "modest" groundwater contamination problem at over \$100 million. The Task Force attempted to address these issues by recommending financial guarantees such as bonding to ensure that funding for reclamation is available. Also, they recommended adopting strict fines for non-compliance with license conditions as well as strict liability for damage for uranium facilities. However, because of the potential for damage of tremendous magnitude far in the future, opponents of mining doubt that these measures will guarantee long-term protection for the State.

Despite the risks and uncertainties inherent in the uranium industry, Del. Council believes it can be done safely and should be permitted because of the potential economic benefits. The area proposed for development is in Pittsylvania County, which is currently in a depressed economic condition. The project is expected to employ 453 persons for a thirteen year period. Additionally, construction expenses of the mine are expected to be around \$80 million, of which nearly half will be made in Pittsylvania County. Other potential benefits include local tax revenues and mine expenditures for energy and miscellaneous other goods. Del. Council says that public participation in the decision-making process has been high and for the most part favorable to allowing development.

The arguments of opponents of uranium development can be summed up as being two-fold. First, opponents claim that because of the wet nature of Virginia's climate, existing technology will not allow the industry to meet performance standards for the long period of time that is necessary. Even in the West, where arid conditions exist, serious water contamination and health problems are not unknown. Second, opponents believe that even if the standards are met, some injuries will still result from radiation exposure. The potential for human exposure to radiation can never be reduced to zero, and regardless of how careful the industry is, opponents fear injuries will result.

Although the issue currently is dormant because of the depressed uranium market, Marline is definitely planning to pursue operations in the future. Thus, the bill to end the moratorium on uranium mining will almost surely be considered in the near future. The uranium mining issue requires the legislature to balance potential economic benefits against health and environmental risks. Although the benefits are fairly clear, the risks are not. Some costs may not occur until far in the future, and for that reason policy makers are presented with a particularly difficult dilemma. Whatever decisions are made today will have profound impacts in the future, and thoughtful consideration of long-range concerns is crucial if the legislature is to reach a responsible decision.