Uranium Watch

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via electronic mail

Patricia K. Holahan
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Recovery and Waste Programs
Office of Nuclear Material Safety and
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Western Uranium and Vanadium Corporation White Paper: "Recommendations on the Proper Legal and Policy Interpretation for Using Kinetic Separation Processes at Uranium Mine Sites"

Dear Ms. Holahan:

1. INTRODUCTION

1.1. Uranium Watch hereby submits a response to a White Paper, entitled "Recommendations on the Proper Legal and Policy Interpretation for Using Kinetic Separation Processes at Uranium Mine Sites," submitted to the United States Nuclear Regulatory Commission (NRC) on October 19, 2019, by Christopher S. Pugsley, Esq., Thompson and Pugsley, PLLC, on behalf of Western Uranium & Vanadium Corporation (WUC)[1] (NRC Accession Number ML19256C834). Your office acknowledged the receipt of White Paper by letter dated October 30, 2019 (ML19289A494).

1.2. As mentioned in the WUC Cover Letter and White Paper, over the past several years, WUC (then Black Range Minerals (BRM)), NRC Staff, the Colorado Department of Public Health Environment (CDPHE), Uranium Watch, and interested individuals and organizations have engaged in multiple discussions, legal inquiries, and public processes to determine the proper legal and regulatory framework for a uranium concentration process known as "ablation." The White Paper refers to ablation as the use

[1] https://www.sedar.com/DisplayProfile.do?lang=EN&issuerType=03&issuerNo=00026200

of kinetic separation processes at uranium mine sites.

1.3. WUC requested that "the Commission find that the use of kinetic separation to create high grade uranium ores for subsequent 'milling' is not within the scope of the 11 e.(2) byproduct material program and represents either 'mining' to be regulated under State authority or 'source material processing' to be regulated under 10 CFR Part 40 without the need for 11e.(2) byproduct material licensing."

1.4. As will be shown below, the use of kinetic separation, or "ablation," of uranium ore to concentrate the uranium is a uranium milling process. That is, the waste from the uranium ore kinetic separation process is "produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." As a result, the wastes produced by these processes meet the Atomic Energy Act (AEA), NRC, Environmental Protection Agency (EPA), and the State of Colorado and State of Utah definition of 11e.(2) byproduct material. Therefore, the kinetic separation of uranium ore, as described by WUC, must be regulated as a uranium milling operation, subject to all applicable statutes, regulations, and requirements.

2. WUC WHITE PAPER

The White Paper contains many statements and convoluted arguments to support its assertions regarding uranium mining, milling, and the kinetic separation process, the AEA, and federal and state regulatory programs. Many of those statements are irrelevant to the issue at hand, misleading, or are meant to confuse the discussion. Below are comments on some of those statements.

2.1. The White Paper states (pages 10 - 11):

> As has been the case with any number of industries internationally, technology evolves over time to assist in developing economical approaches to the performance of relevant tasks, especially those that require significant human and financial resource expenditures. Hence, the development of kinetic separation processes for mineral recovery as away to make such mineral recovery more economical and to mitigate potential health and safety and/or environmental risk.

COMMENT: As far as I am aware, there has been no analysis under the National Environmental Policy Act (NEPA), or other state or federal statutes and regulations, of the health, safety, and environmental risks associated with the kinetic uranium separation process described in the White Paper. Therefore, it is hard to understand what is meant by "mitigating potential health and safety and/or environmental risk."

2.2. The White Paper states (page 11).

> As a general matter, kinetic separation is a process by which mineral-

> bearing fractions of conventional ores are separated from non-mineral bearing fractions for one and only one purpose: to high-grade the mined ore so that costs associated with recovery, transport, and future milling of such ore may be completed with less associated cost and less waste material for final disposal.

COMMENT: The process described above is a process that extracts and concentrates uranium from the ore. Although there would be less waste from the second part of the milling operation, there would also be waste from the first part of the milling operation: kinetic separation. Therefore, there would be approximately the same amount of waste from the two processes combined. Those wastes are wastes produced by the extraction **or concentration** of uranium or thorium from the ore, which is being processed for its uranium source material content.

2.3. The White Paper state (page 12):

> Kinetic separation is intended to use purely physical processes to separate these mineral and non-bearing fractions without the need for introduction of chemicals in order to high-grade ores for more efficient and cost-effective recovery. Kinetic separation is intended to use the natural concept of force to collide fractions of mined ore to separate these mineral-bearing fractions and to allow for disposition of mine waste streams that do not contain hazardous constituents and to reduce potential risks to public health and safety and the environment.

COMMENT: There is no information presented that demonstrates that are no chemical changes to the ore during the kinetic separation process. Be that as it may, there is nothing in the definition of 11e.(2) byproduct material that indicates that the concentration of uranium and/or thorium ore is solely the result of chemical processing. The physical separation of uranium ore produces a waste stream that contains uranium and uranium progeny, which are contaminants of concern. There is no data presented to support the assertion that the waste produced by kinetic separation does not contain radioactive or hazardous chemical constituents.

2.4. The White Paper states (page 16) in regard to the amount of uranium in the waste stream after kinetic separation.

> Upon separation, the waste rock stream typically comprises approximately ninety (90) percent of the mass but contains only about five (5) percent of the uranium (and any other minerals) that were present in the pre-AMT material. Logically, the ore stream comprises the balance of the mass (-10%) and contains the balance of the uranium and other minerals that coated individual sand grains prior to AMT (- 95%).

COMMENT: The estimate of the amount of uranium in the waste stream does not support

the conclusion that the waste streams "do not contain hazardous constituents." The AEA and the NRC's regulations at 10 C.F.R. § 40.4 define source material as (1) uranium or thorium, or any combination thereof, in any physical or chemical form. NRC regulation at 10 C.F.R. § 40.13 exempts any person who receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound, solution or alloy. The anticipated kinetic processing waste stream contains about 5% uranium. Therefore, it is not exempted from regulation as "source material" if that material does not, in fact, meet the NRC's definition of "11e.(2) byproduct material."

2.5. The White Paper (page 21) argues with respect worker health and safety:

> Thus, there is little to no concern for occupational health and safety outside the ambit of typical mining regulations on the federal and State levels that would require increased regulatory oversight such as an AEA-based license.

COMMENT: The White Paper does not include or reference any academic or official government study of the health and safety impacts from the kinetic uranium separation process described therein. Therefore, any statements regarding health and safety impacts are purely speculative. Further, those impacts have no bearing on the issue of whether or not the uranium concentration process produces waste that falls under the AEA definition of 11e.(2) byproduct material.

2.6. The White Paper (page 21) states with respect the disposition of the waste from the uranium concentration process:

> Limited evaluation to date indicates that, during screening, not only uranium but also other alpha-, beta- and gamma emitters report to the finest size fractions. As such these are removed from the remnant coarse-grained waste, leaving a "clean" waste product that can be emplaced and stored for the long term either on the surface or returned underground as mine backfill.

COMMENT: As discussed herein, the waste from the concentration of uranium from uranium ore meets the AEA definition of 11e.(2) byproduct material. Further, if the waste were not defined as 11e.(2) byproduct material, because of a uranium (source material) content of more than .05%, the waste would fall under NRC regulations applicable to the possession of source material. The White Paper claims that the so-called "clean" waste product can be emplaced and stored for the long term on the surface or underground. Storage for the "long term" is really disposal. The AEA and NRC and EPA regulations determine the applicable requirements for that disposal.

2.7. The White Paper (page 21) states with respect the disposition of excess water from the uranium processing operation:

> If however, at a particular mine site, it becomes necessary to dispose of excess water, it is considered it will be both economically beneficial as well as environmentally preferable to treat the water to recover any uranium and remove any other potential constituents of concern (COC) that may be present in solution prior to disposal through an NPDES permit, evaporation or deep well disposal.

COMMENT: Here the White Paper fails to mention that disposal through an National Pollutant Discharge Elimination System (NPDES) permit means the discharge of the waste water off site. There is no mention that, in addition to a NPDES permit or state equivalent, the operator would also be required to have a Ground Water Discharge Permit and install monitoring wells.

There is no mention of the EPA regulations applicable to the discharge of effluents from uranium mine or milling operations.[2] It is apparent that this type of mineral processing at a mine site was not considered by the EPA when developing this rule. The regulation applies to discharges from uranium mine drainage and conventional uranium mill operations.

Deep well disposal requires an EPA or applicable State permit. Also, the recovery of uranium from mine water or other effluent at a mine site requires an NRC or NRC Agreement State permit. However, the White Paper fails to mention of that requirement. Again, the White Paper skirts significant regulatory programs applicable to uranium operations at both mines and mills.

2.8. The White Paper (page 22) discusses the oversight of worker health and safety by the Mine Safety and Health Administration (MSHA) and assures the NRC that MSHA oversight will protect the health and safety of the workers.

COMMENT: The description of kinetic uranium separation in the White Paper does not make clear whether the the process will occur underground, above ground, or both. The White Paper does not refer to specific MSHA regulations that would be applicable to kinetic uranium processing above ground or underground at a uranium mine site. There is no discussion of the background of these regulations that assures that the promulgation of MSHA regulations included as assessment of the impacts to worker health and safety from the uranium recovery process described in the White Paper.

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[2] 40 C.F.R. Part 440 Subpart C, Ore Mining and Dressing Point Source Category; Uranium, Radium, and Vanadium Ores Subcategory; Sections 440.30 to 440.35.

3. APPLICABLE DEFINITIONS AND REGULATIONS

3.1. The AEA, as amended by the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA; Public Law 95-604, November 8, 1978),[3] at Title 1, contains some relevant definitions related to the Title I Remedial Action Program for the remediation of uranium mill tailings and mill sites that were no longer operating as of 1978:[4]

> Section (6) The term "processing site" means–
> (A) any site, including the mill, containing residual radioactive materials at which all or substantially all of the uranium was produced for sale to any Federal agency prior to January 1, 1971 under a contract with any Federal agency, except in the case of a site at or near Slick Rock, Colorado, unless–
> (i) such site was owned or controlled as of January 1, 1978, or is thereafter owned or controlled by any Federal agency, or
> (ii) a license (issued by the Commission or its predecessor agency under the Atomic Energy Act of 1954 or by a State as permitted under section 274 of such Act) for the production at such site **of any uranium or thorium product derived from ores** is in effect on January 1, 1978, or is issued or renewed after such date; and
> ***
> (7) The term "residual radioactive material" means–
> (A) waste (which the Secretary determines to be radioactive) in the form of tailings resulting from the processing of ores for the extraction of uranium and other valuable constituents of the ores;
> ***
> (8) The term "tailings" means the remaining portion of a metal- bearing ore after some or all of such metal, such as uranium, has been extracted. [Emphasis added.]

3.2. The AEA, Section 11,[5] contains definitions for the regulation of uranium mills and uranium milling that were licensed and active as of 1978 or after:

> Section 11e.(2): The term "byproduct material" means–
> ***
> (2) the tailings or wastes **produced by the extraction or concentration of uranium or thorium** from any ore processed primarily for its source material content;
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[3] https://www.nrc.gov/docs/ML1327/ML13274A489.pdf

[4] 42 U.S.C. Section 7911 to 7925.

[5] 42 U.S.C. Section 2014.

> Section 11z.: The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time. [Emphasis added.]

3.3. NRC defines "source material" at 10 C.F.R § 40.4:

> (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material.

3.4. NRC defines "unrefined and unprocessed ore" at 10 C.F.R 40.4:

> "*Unrefined and unprocessed ore* means ore in its natural form prior to any processing, such as grinding, roasting or beneficiating, or refining. Processing does not include sieving or encapsulation of ore or preparation of samples for laboratory analysis.

3.5. Specifically, there is an NRC regulation that provides exemptions from licensing requirements for "unimportant quantities of source material," if certain conditions are met. The relevant section at 10 C.F.R. § 40.13(b) states:

> § 40.13 Unimportant quantities of source material.
> ***
> (b) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the act to the extent that such person receives, possesses, uses, or transfers **unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore.** [Emphasis added.]

This NRC and Agreement State regulation clearly requires a specific license, under the Atomic Energy Act, to refine or process unrefined and unprocessed ore.

3.6. The Judicial Administration, Department of Justice, regulations applicable to Claims Under the Radiation Exposure Compensation Act, Eligibility Criteria for Claims by Ore Transporters, contains relevant definitions.

These definitions apply to uranium mining and milling operations that produced ore for the federal government's atomic weapons program. The definitions apply to the individuals who worked in uranium mines and mills (or their families) and are seeking compensation for the damage to their health and well being (including death) caused by

such work.

> 28 C.F.R. 79.61 - Definitions.
> ***
> Uranium mill means any milling operation involving the processing of uranium ore or vanadium-uranium ore, including carbonate plants and acid leach plants. The term applies to ore-buying stations where ore was weighed and sampled prior to delivery to a mill for processing; **"upgrader" or "concentrator" facilities located at the mill or at a remote location where uranium or vanadium-uranium ore was processed prior to delivery to a mill;** and pilot plants where uranium ore or vanadium-uranium ore was processed. [Emphasis added.]
> ***
> Uranium mine means any underground excavation, including "dog holes," as well as open-pit, strip, rim, surface, or other aboveground mines, where uranium ore or vanadium-uranium ore was mined or otherwise extracted.

4. UPGRADING AND CONCENTRATING URANIUM

4.1. WUC and their subsidiaries and predecessor company plan to use the kinetic separation, or "ablation," process to upgrade uranium ore at mine sites. WUC has provided a number of documents that describe the kinetic separation process to the NRC and the State of Colorado.

The purpose of the separation process, which would take place at a uranium mine or location where uranium ore has been stockpiled, is to separate the uranium from the sandstone particles in the ore after the ore has been removed from its place in nature by a mining process. Kinetic separation increases the percentage of uranium contained in the final product that will be shipped to a licensed uranium mill for further processing.

The type of processing described by WUC is a process historically referred to as upgrading, or concentrating. A facility that upgrades or concentrates the uranium is referred to as an "upgrader" or "concentrator."

The process described by WUC is a process that greatly increased the amount of uranium in the final product (WUC hopes for 95% recovery in the final product) and leaves solid and liquid waste products that must be disposed of.

4.2. An Upgrader, similar in many ways to the proposed ablation or kinetic separation process, is described in Patent US 3062458 A.[6] The Patent was filed September 9, 1957, granted, and published November 6, 1962. Some of the objects of the invention sound pretty familiar:

> An object of this invention is to provide means for mechanically

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[6] http://www.google.com/patents/US3062458

> extracting minerals from the ore gangue without the aid of chemical leaching.
>
> Another object of the present invention is to provide an ore upgrader for mechanically abrading mineral deposits adhered to the surfaces of ore granules so as to free the mineral deposits for separation from the gangue.
>
> Another object of this invention is to provide an apparatus for subjecting ore granules to ballistic interaction so as to abrade minerals deposited on the surfaces of these granules to thereby free the minerals from the granules.

Kinetic separation is not a new process, but a variation on an old process used to upgrade uranium ore. The only difference appears to be the use of water in the WUC process.

4.3. Historical Uranium Upgraders, or Concentrators

Under Title I of UMTRCA, the US Department of Energy (DOE) remediated 22 inactive uranium-ore processing sites under the Uranium Mill Tailings Remedial Action Project in accordance with standards promulgated by the EPA at 40 C.F.R. Part 192. At least 3 of the uranium mills remediated under Title I were upgraders. The concentrated uranium product produced by these upgraders was shipped to licensed uranium mills for further processing. The upgrading operations were licensed by the AEC, and were remediated under a program specifically designed by Congress for remediation of inactive and abandoned uranium mills and mill tailings. The DOE was not authorized to remediate any uranium mines under UMTRCA, only uranium mills and mill tailings.

4.4. Upgrader Sites Remediated Under Title I of UMTRCA

4.4.1. DOE information regarding Slick Rock, Colorado, site:[7]

> Union Carbide's mill at Slick Rock West began operation in 1957 using a uranium-vanadium upgrading technique to process ore mined from the surrounding area. The upgraded material was shipped to the Union Carbide mill at Rifle, Colorado, for further processing. The Slick Rock West mill closed in 1961. Milling operations at the at the Slick Rock West mill also created radioactive tailings. In 1995, about 671,000 cubic yards of these contaminated materials were relocated to the Slick Rock disposal site.

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[7] Slick Rock, Colorado Processing Site Fact Sheet.
http://www.lm.doe.gov/Slick_Rock/Processing/Documents.aspx

4.4.2. DOE information regarding Green River, Utah, site:[8]

> The Green River disposal site is about 0.5 mile east of the Green River and 1.5 miles southeast of the city of Green River, Utah. The site consists of an engineered disposal cell and surrounding property where a former uranium mill and tailings pile were located.
>
> Union Carbide Corporation constructed the uranium mill in 1957 and operated the facility from March 1958 through January 1961.
>
> The mill operated as an upgrading facility for uranium ore. During its 3 years of operation, the mill processed 183,000 tons of ore and generated an estimated 114,000 cubic yards of radioactive tailings, a predominantly sandy material, that covered about 9 acres to an average depth of 7 feet.

4.4.3. DOE information regarding Spook, Wyoming, site:[9]

> The Spook disposal site is a former uranium-ore upgrading facility in Converse County, Wyoming, about 32 miles north of Glenrock. The site is located on approximately 13.5 acres, surrounded by large, privately owned sheep and cattle ranches. Wyoming Mining and Milling Company operated the facility from 1962 until 1965 to upgrade uranium ore to a concentrated slurry precipitate before shipment to the Western Nuclear mill at Jeffrey City, Wyoming. The upgrading operations created process-related waste and radioactive mill tailings, a predominantly sandy material.

4.4.4. In sum, historically, uranium upgraders were licensed as uranium milling operations. The upgrading operation produced wastes and tailings that were, under Title I, defined as "residual radioactive material."[10] These upgrading sites and tailings were remediated under the AEA provisions for the remediation of inactive uranium mills under Title I of UMTRCA.

4.5. Applicable Definitions

4.5.1. Definition of concentration

The Uranium Mill Tailings Radiation Control Act of 1978, Title II, Sec. 201

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[8] Green River, Utah, Disposal Sites Fact Sheet.
http://www.lm.doe.gov/Green_River/Documents.aspx

[9] Spook, Wyoming, Disposal Site.
http://www.lm.doe.gov/spook/Documents.aspx#fs

[10] The term "residual radioactive material" means – (A) waste (which the Secretary determines to be radioactive) in the form of tailings resulting from the processing of ores for the extraction of uranium and other valuable constituents of the ores. . . .

amended Section 11e.(2) of the Atomic Energy Act of 1954, to read: The term "byproduct material" means . . . (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.

The mining term "Concentrator" is defined as: a milling plant that produces a concentrate of the valuable minerals or metals. Further treatment is required to recover the pure metal.[11] Concentrate in mining is defined as a process "to separate (metal or ore) from rock, sand, etc., so as to improve the quality of the valuable portion" and "to remove rock or sand from (an ore) to make it purer" [12]

Therefore, the kinetic uranium recovery process described in the White Paper is clearly a process that specifically involves the concentration of uranium from the ore primarily for its source material content. It follows that the wastes produced by this concentration process meet the statutory and regulatory definition of 11e.(2) byproduct material.

4.5.2. Department of Justice Definitions

The U.S. Department of Justice definitions pertaining to compensation of uranium workers (or their families) that suffered from adverse health impacts, including death, clearly state that uranium upgraders and concentrators—such as the ones at Spook, Green River, and Slick Rock—were milling operations. The definition of milling includes: "upgrader" or "concentrator" facilities located at the mill or at a remote location where uranium or vanadium-uranium ore was processed prior to delivery to a mill. The uranium extraction process described by WUC is a process to concentrate the uranium prior to further processing at a mill. It is a process to upgrade the percentage of uranium in the material that will be shipped to the mill. The historic upgrading processes produced tailings—the same kind of tailings produced by the Ablation concentration, or upgrading, process.

4.5.3. NRC Definition of Ore Crushing

The information developed by WUC on the kinetic separation process describes a process that commences with the crushing of the uranium ore. In a July 13, 1977, internal NRC legal memo,[13] signed by an attorney with the Office of Executive Legal Director (OELD), the NRC clearly states that the crushing of ore meets the definition of "processing." The OELD memo states:

> 10 CFR 40.13(b) exempts from licensing unrefined and unprocessed ore (excepting export). 10 CFR 40.4(k) defines "unrefined and unprocessed ore" as ore in its natural form prior to any processing, such as grinding,

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[11] Glossary of Mining Terms - https://www.sec.gov/Archives/edgar/data/1165780/000116578003000001/glossary.htm

[12] https://www.dictionary.com/browse/concentrator

[13] https://www.colorado.gov/pacific/sites/default/files/HM_rad-ablation-HPPOS%20184-1977-NRC-fonnerltrcrushing.pdf

> roasting or beneficating,[14] or refining. "Processing" in this definition includes both physical and chemical procedures that alter the ore from the condition it was in just after removal from its place of deposit in nature.

The OELD memo makes clear that the exemption from licensing that applies to the transportation and handling of unprocessed ore, applies to "ore whose gross appearance and chemical state has not been altered from the point of mining." The kinetic separation process described in the White Paper alters the gross appearance and chemical state of the uranium ore.

The memo provides a justification for that finding, based on health and safety considerations. The memo states: "The assumption is that any processing or refining may alter the radiological environment associated with the source material enough so that the health and safety of workers and others is a matter of legitimate regulatory concern." The memo concludes that "crushing of ore is obviously a form of processing subject to licensing by definition in 10 CFR 40.4(k)."

4.5.4. The NRC need go no further in examining the question of whether kinetic separation of uranium ore is uranium milling and subject to licensing under the AEA and NRC regulations applicable to uranium milling and 11e.(2) byproduct material.

5. OTHER CONSIDERATIONS

5.1. A process similar to the kinetic separation process described by WUC was patented as an upgrader in 1962. On September 16, 2015, WUC acquired BRM, which included a 100% interest in a 25-year license for Ablation and related patents from Ablation Technologies, LLC. According to WUC, the Ablation intellectual property is worth $9,488,051.[15]

It is doubtful that the type of ore sorting or blasting that occurs during mining at conventional uranium mines is patented, is licensed by a private entity, involves valuable intellectual property, or is subject to other legal restrictions or requirements. Nor does ore sorting or blasting involve the complex equipment and processes described by WUC for kinetic separation processing. The kinetic separation, or ablation, process that has been described by WUC in various submittals describes a complex process that includes a crusher, hopper, mix tank, ablation tanks, conveyors, orival water filters, centrifuges, filter presses, sack filling station, and truck loading.

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[14] Definition of "benefication": "In the mining industry beneficiation or benefication in extractive metallurgy, is any process which removes the gangue minerals from ore to produce a higher grade product (concentrate), and a waste stream (tailings). Some beneficiation processes are froth flotation and gravity separation."
https://en.wikipedia.org/wiki/Beneficiation

[15] http://www.sedar.com/GetFile.do?lang=EN&docClass=5&issuerNo=00026200&issuerType=03&projectNo=02490562&docId=3929505

5.2. Kinetic separation is not a just a sorting process, it is a process that results in both physical and chemical changes in the ore. The application of water under high pressure creates chemical changes in the ore. Based on the description of the kinetic separation process, the cementation, grain size, and mineralogy are significantly altered. The grain size is altered during crushing, cementation is broken, the mineralogy is altered, and other changes occur.

In addition to alteration of the physical characteristics, the chemical characteristics will be altered by exposure to the oxygenated water and the chemicals contained in the mine water used in the separation process. The chemical characteristics will be changed due to exposure to air during the grinding and crushing of the ore, which creates more surface area for chemical reactions and release of radon gas. The radon gas quickly decays into highly radioactive particles. The radon progeny may be released into the air and attach to dust particles or dissolved in the slurry or waste product or waste water. All these physical and chemical processes result in products that have different physical and chemical characteristics than the original ore.

The White Paper does not include any documentation comparing, with detailed specificity, the chemical composition of the ore prior to Ablation with the chemical composition of the concentrated product after kinetic separation. Whether or not the changes are chemical in addition to being physical is irrelevant. The complex kinetic separation process is a still a milling process that is specifically designed to extract, or concentrate, uranium from the ore.

5.3. WUC proposes to transport the uranium concentrate to a conventional uranium mill for further processing. The concentrate will contain concentrated amounts of uranium, uranium progeny, and chemical constituents. Therefore, the tailings (11e.(2) byproduct material) that will be disposed of at the mill after the uranium is removed will have concentrated amounts of radium and other radiological and non-radiological constituents. If, as WUC suggests, all ore is initially processed at a mine rather than at a mill and only the concentrate is shipped to the mill, the high concentration of radium and other constituents would have even more serious regulatory implications.

If the concentrate is to be processed at a licensed uranium mill, then it is necessary that the mill's environmental analysis evaluate the environmental impacts of disposing of highly concentrated 11e.(2) byproduct material in the tailings impoundment.

5.4. WUC Uranium Mining and Milling Experience

WUC and its subsidiary, Piñon Ridge Mining, own several uranium mines in Colorado and Utah. WUC has never operated these mines, which are on standby. There is no evidence that WUC has ever carried out an active uranium mining operation. Nor, has the company been engaged in any uranium milling operations. WUC has never owned or operated a uranium mill.

The company's lack of uranium mining and milling experience may be one of the sources of their misunderstandings of the uranium mining and milling processes and the regulation of those processes under federal and state statutes and regulations.

Please give full consideration of these comments.

Sincerely,

/s/

Sarah Fields
Program Director

cc: Douglas Mandeville, NRC