EagleRockCEm Resource

From: Peter Rickards [nifty1@cableone.net]
Sent: Thursday, June 04, 2009 4:11 PM
To: EagleRockEIS Resource
Subject: Official scoping comments on Docket No. 70-7015, uranium enrichment plant in Blackfoot, Idaho
Attachments: moz-screenshot-7.jpg

Idaho Families For The Safest Energy

To the NRC and Areva,
RE: Official scoping comments on Docket No. 70-7015, uranium enrichment plant in Blackfoot, Idaho
All of these 6 scoping issues question whether the NRC and Areva can scientifically demonstrate the legal requirement that this plant will not expose any member of the public to more than 10 mrem in any given year, or if the fluoride gas toxicity health problems are presently understood and reported correctly. Please respond in detail in this EIS.
Sincerely, Dr Peter Rickards DPM Spokesman for IFFTSE 2672E 4000N Twin Falls, Idaho 83301 208-969-0682

1) Since there is no present official DU dump site, how can we determine the waste disposal will not expose the public to more than 10 mrem. Since Kuwait did manage to dump tons of DU contaminated waste at Grandview, Idaho, please explain how we can trust the dump site liners when the Grandview owner, Mr Romano, admits in NRC transcript that you really have NO IDEA how the liner will function in the thousands of years DU will remain radioactive. Found at http://www.nrc.gov/reading-rm/doc-collections/acnw/tr/2008/186-2-14.pdf
p 64 of 258 where USEI's Romano admits no one really knows if the plastic liner will work in the future.
We took
17 credit for the three foot thick clay liner meeting the
18 EPA specs, which is underneath the site. We did not
19 take any credit for the plastic liner. We did not
20 feel it would be appropriate to do so, **given the**
21 limited amount of knowledge of how plastic liners will
22 actually perform over the long term. We don't know
23 yet.

2) Previous impact statements have declared that HEPA filters will contain 99.97% of the alpha emitting uranium, and claims that little will be absorbed by inhalation, causing no harm. Please explain how this Zinser boy, that lived near the Fernald, Ohio uranium enrichment plant ended up with ten times the natural level of U-235 in his amputated leg, as this Time Magazine article from 1988 quotes the boy's Medical Doctor. Doesn't the fluoride gas act in synergy with uranium and drive it into the bone in excess of present calculations of "safety."

October 31, 1988

"They Lied to Us"

Unsafe, aging U.S. weapons plants are stirring fear and disillusion

BY ED MAGNUSON

In the rolling countryside of southwestern Ohio, the leaves have begun to turn to brilliant reds, ochers and yellows. But in the Cincinnati suburb of South Greenhills, some ten miles east of the Department of Energy's Fernald nuclear weapons plant, Charles Zinser, 38, was preoccupied, unmindful of the glorious surroundings. Zinser recalled how beginning in 1984 he had rented a vegetable garden near the plant. He often took his two young sons along as he worked. Two years later, both were found to have cancer. Samuel, then eight, had leukemia, and Louis, two, had part of a leg amputated.

Zinser contends that tests of his garden soil show it was contaminated with enriched uranium 235. And the doctor who tested his son's amputated leg told him it contained ten times more uranium than would be expected to accumulate naturally over a lifetime. "The doctor said Louis could have eaten dirt and not got that much," says Zinser. "He said the only way he could have got that much would have been to breathe it."

3) Please detail the environmental impact of sabotage to the fluoride gas supply from a disgruntled employee or terrorist.

4) Please detail response to all the complaints in the report from CDC's often contracted SENES group, on the understatement of fluoride toxicity at the Oak Ridge DOE uranium enrichment problems. The report is found at http://fluoridealert.org/uf6.thiessen.atsdr.pdf and here is a part of that report.

The comments below are offered to assist the ATSD
fluoride releases. Please note that these comments
constitute an exhaustive review of the report (or ever

(1) In its responses to various public comments, the
fluoride compounds "are primarily associated with a
state was interested in evaluating chronic exposures"
primarily associated with acute exposures—they are
health effects which the state was investigating" (
statements are not correct. In fact, the report from
reason for the exclusion of fluorine or various f
assessment. "Fluorine and fluoride compounds,"
fluorides," and "Chlorine trifluoride" were categoriz
was stated that the primary health effect is irritation
(ChemRisk 1993b). However, at least for fluorine a
correct.

5) Please explain why uranium exposure has greater health effects, as witnessed in Gulf War veterans than is presently calculated by NRC safety standards. NRC has long claimed uranium would hurt your kidney before any radiological effects are seen, but these 2 pub med NIH studies contradict that. Please explain.
Mil Med. 2002 Feb;167(2 Suppl):117-9. Links

Health effects of embedded depleted uranium.

McClain DE, Benson KA, Dalton TK, Ejnik J, Emond CA, Hodge SJ, Kalinich JF, Landauer MR, Livengood DR, Miller AC, Pellmar TC, Stewart MD, Villa V, Xu J.

Armed Forces Radiobiology Research Institute, 8901 Wisconsin Avenue, Bethesda, MD 20889-5603, USA.

The health effects of embedded fragments of depleted uranium (DU) are being investigated to determine whether current surgical fragment-removal policies are appropriate for this metal. The authors studied rodents implanted with DU pellets as well as cultured human cells exposed to DU compounds. Results indicate that uranium from implanted DU fragments distributes to tissues distant from implantation sites, including bone, kidney, muscle, and liver. Despite levels of uranium in kidney that would be nephrotoxic after acute exposure, no histological or functional kidney toxicity was observed with embedded DU, indicating that the kidney adapts when exposed chronically. Nonetheless, further studies of the long-term health impact are needed. DU is mutagenic and transforms human osteoblastic cells into a tumorigenic phenotype. It alters neurophysiological parameters in rat hippocampus, crosses the placental barrier, and enters fetal tissue. Preliminary data also indicate decreased rodent litter size when animals are bred 6 months or longer after DU implantation.

: Mil Med. 2002 Feb;167(2 Suppl):123-4. Links

Health effects and biological monitoring results of Gulf War veterans exposed to depleted uranium.

McDiarmid MA, Hooper FJ, Squibb K, McPhaul K, Engelhardt SM, Kane R, DiPino R, Kabat M.

Department of Veterans Affairs Medical Center, 10 North Greene Street, Baltimore, MD 21201, USA.

A small group of Gulf War veterans have retained fragments of depleted uranium (DU) shrapnel, the long-term health consequences of which are undetermined. We evaluated the clinical health effects of DU exposure in Gulf War veterans compared with nonexposed Gulf War veterans. History and follow-up medical examinations were performed on 29 exposed veterans and 38 nonexposed veterans. Outcome measures used were urinary uranium determinations, clinical laboratory values, and psychiatric and neurocognitive assessment. Gulf War veterans with retained DU metal shrapnel fragments were found to be still excreting elevated levels of urinary uranium 7 years after first exposure to DU (range for exposed individuals is 0.01-30.7 micrograms/g creatinine vs. 0.01-0.05 microgram/g creatinine in the nonexposed). The persistence of the elevated urine uranium suggests ongoing mobilization of uranium from a storage depot, resulting in chronic systemic exposure. Adverse effects in the kidney, a presumed target organ, were not seen at the time of the study; however, other subtle effects were observed in the reproductive and central nervous systems of the DU-exposed veterans.

6) Since Uranium is an alpha emitter, please explain how the alpha recoil problem is addressed by NRC, since alpha emitters can leak through 4 HEPA filters in a row, in excess of the 99.97% filtering rate used presently?

"Alpha recoil " is a DOE term, for the ability of alpha emitters, like plutonium, to "creep " through 4 HEPA filters in a row! Nobody knows how much plutonium comes out of the last filter. We need to make the DOE reveal the plutonium releases for normal operations, in a lab.

The DOE has known of this problem since the 1970's, but has chosen to ignore it. I have 2 papers from DOE on this. One is from WJ McDowell, from Oak Ridge. For the 14th ERDA Air Cleaning Conference, he writes a paper called " Penetration of HEPA filters By Alpha Recoil Aerosols." He says "Tests at Oak Ridge National Laboratory have confirmed that alpha-emitting particulate matter does penetrate High-efficiency filter media, such as that used by HEPA filters...Filter retention efficiencies

drastically lower than the 99.9% quoted for ordinary particulate matter were observed with Pb-212, Es-253, and Pu-238 sources, indicating that the phenomenon is common to all of these..."

It seems as if the alpha particle, from the radioactive decay, literally knocks the particles loose. As it creeps through any filters that is in it's way, the DOE thinks that smaller pieces of the plutonium particles, break off the original particle, increasing the joy of downwinders.

Another DOE paper comes from Arthur H Biermann, at Lawrence Livermore, from Dec,11,1991. His paper is called,"Alpha migration through Air Filters: A Numerical simulation." He says ," It is obvious from the review of the literature that evidence exists of the migration of alpha radionuclide species through high efficiency filter media."

Both papers have many DOE references, and both call for quantifying the true releases , in lab experiments. The experiments are do-able, but, so far, the DOE ain't gonna do it.

I have asked for Dr Liu, at the University of Minn. to be commissioned to study these issues. He uses a "total capture" technique for downstream particle counting. This is key to true efficiency detection ,or lack of. The present laser counter can detect down to 0.1 microns.

Dr Liu can go to 0.007 micron. Seems the minimal efficiency size goes down from 0.3 micron, each time particle size detection ability increases...

The FL Horn experiment I mentioned replicates a criticality, and has Pu under the electron microscope. It ranges, on day one, from 0.1 to

LESS THAN 0.005 micron, a bottomless scale! The Pu particles slowly aggregate, but much was still floating for THREE DAYS on the brownian motion of the air molecules, in this closed cell experiment. We need to quantify normal and accident filtering truefully, for the first

time in nuclear history, and we should use this panel to do it.

The DOE Beirmann paper mentions, as a theory, that the bigger pieces of Pu, that get caught in the first filter, may break off smaller pieces via this alpha recoil. That throws another flaw in the true dose to the

public during normal operations, over 30 years. This effects all nuclear facilities,

past and present.

While the DOE ignores this, a recent study was conducted in the UK. Y. Yamada et al published "Re-entrainment of 239PuO2 particles captured on HEPA filter fibres." (Radiation Protection Dosimetry Vol 82 No 1, pp25-29,1999). While I will present what I think are the shortcomings of the

Yamada study, they clearly acknowledge the true efficiency of Pu filtering has NOT been quantified before. However, Yamada reported two different

resuspension rates. The higher, dust loaded rate was a staggering resuspension

of 1 particle per hundred per hour!

Firstly, it is significant that the Yamada study on the re-entrainment of PuO2, detected a PER HOUR rate of Pu resuspension. There is not supposed to be a PER HOUR rate of resuspension, of any kind. The DOE permit applications state that 99.97% efficiency is the MINIMUM, PERIOD.
This qualifies them to claim that the 10 mrem limit to public exposure will not be exceeded. This appears to be drastically contradicted by the continual plutonium resuspension rates, especially at higher dust loading , which replicates historical use of filters left in place for decades. Note p.28 states," For example, the dispersion rate at twice dust loading was calculated to have increased by 13 times. It was confirmed that re-entrainment was strongly affected by dust loading."

My main criticism is that the experiment only lasted 20 days. The paper , ironically, does site and acknowledge, the 1976 McDowell paper I love. That McDowell paper notes that regular testing missed the alpha creep because of the short duration of their testing. McDowell left his test up for one year.

The Yamada test , however, seems to have enough sensitivity to detect alpha creep, at all flows, even in this limited 20 day experiment.

I question their conclusion #1, which dismisses the lower rate of re-entrainment. They conclude, " Therefore, it was concluded that plutonium particles captured on fiber filters near the front surface hardly penetrate the filter."

I believe their dismissal misses the red flags I see. In a mere 20 day experiment, it is noteworthy that ANY plutonium gained full penetration of this filter, at this low rate. As McDowell notes, a longer time frame reveals more alpha creep. This 20 day experiment is unrealistic, since no where in the DOE are HEPA filters changed every 20 days. This low rate, short run, underestimates the true, long term penetration by alpha emitters.

I noted Yamada's reference 4, the Fliescher study , that supports the probable fragmentation of smaller plutonium particles, from the larger
original plutonium particles. This is the Bierman paper's theory , as well.

This clearly calls for Dr Liu's ultrasmall, ultrasensitive "total capture" technique, to capture ALL sizes of particles, to be done over an extensive period of time, that replicates actual normal use. How else are we going to determine the true efficiency, of this documented alpha creep problem?

Three important points come to mind. 1)Do the other beta and gamma emitters, that are impacted on the filter, with the alpha emitters, also leave the filters undetected? Does that not require further testing?

2) Do more radioactive alpha emitters, like the Pu-238, have even higher rates of resuspension? Does this not call for more testing?

3) Since this Yamada paper confirms alpha creep, why have the DOE downstream monitors not detect any whispering of this plutonium, through the filters? The CDC swears that the monitoring proves their is no alpha creep "footprint" on the monitors, declaring their faith in the

monitors. I believe the phrase , "below detectable limits", applies to the downstream monitors, and their inability to reveal the true exposure to the public, of inhalable alpha emitters.

The second issue is the recent discoveries by DOE revealing plutonium transport in water is much easier than previously believed. This is also being ignored by the DOE.

The nuclear facilities at the Idaho National Engineering and Environmental Laboratory have left a legacy of radionuclides, including plutonium, in shallow land burial. These burial pits have been flooded, and sit over the Snake River Plain Aquifer. Now, the Department of Energy, with the blessing of the State of Idaho, and the Environmental Protection Agency, have approved a new shallow land burial pit, which although it will have 2 plastic liners and monitors, will also have billions of plutonium particles which remain radioactive for about 240,000 years. Some plutonium particle clean up projects may simply leave the plutonium buried, but cover it with more dirt and plastic, called "capping."

The RWMC has a buried mixture of TRU and alpha low level. I hope the NAS will address ALL of the plutonium particle waste, not just the official TRU.

The standard of 100 nanocuries per gram of waste material was created in 1984. By raising the definition of TRU tenfold, the DOE reclassified almost half the waste to low level, allowing the leaving or reburial on site. Maybe coincidently, it also saved WIPP from being overfilled before it opened. I have transcripts from the meeting that changed the standard. The reason given to justify the change was a calculation that the 100 nano standard would give an acceptable dose of 500 mrem from animal intrusion and resuspension

This definetly ignores the water pathway in Idaho. More important, it ignores the total quantity of plutonium which will be left over our water.

For example, the Pit 9 ROD reburies it's one acre at a seemingly low limit of 10 nanocuries per gram. At my request, they finally estimated that represents 3-4 lbs of plutonium. DOE has always refused to estimate the number of inhalable plutonium particles in a pound of Rocky Flats waste, but I believe billions is a low guess. It is important to think through the final waste legacy, since we have 88 acres of buried Rocky Flats waste.
It is estimated that 2700-3200 pounds of plutonium lay in these burial sites,but the real amount is unknown.

The new ICDF dump uses the 10 nano curie standard, but for 8 acres this time.Using the Pit 9 estimate, that's another 24-32 pounds of plutonium

particles.
How much plutonium would you recommend to rebury over our water? What if it was your water, and your pregnant wife?

The final WIPP EIS chooses to leave ALL the buried waste in Idaho. It alsochooses to leave half the above ground waste that is below 100 nano.

The 1995 EIS for INEEL says they may open a 200 acre low level alpha dump on site, and may bring in all the DOE waste, not just ours.

These decisions to open a new plutonium dump, or cap plutonium where it has leaked, are only required to try to calculate radiation doses the public, in a thousand year time frame, if it is below 100 nano/gram.

Unfortunately, as mentioned , the plutonium particles, which are potentially deadly and cancer causing, if inhaled and embedded in your lungs, remain
radioactive for over 240,00 years.

Much of the Snake River Plain Aquifer is pumped to the surface for irrigation or sprinkle irrigation, which would make the plutonium available for resuspension and inhalation.

We have been told for years that plutonium is an actinide, that binds to clay and rocks, immobilizing the plutonium, protecting the aquifer.We have been told, even in the unlined plutonium trenches originally used until 1970, that the aquifer was protected by the sorption property of plutonium, and the insolubility of plutonium.

These statements and decisions by the DOE , EPA , and State, have unfortunately ignored two recent , contradictory DOE studies, that both show how easily plutonium moves with water. Understanding these important contradictions is key to protecting Idaho's water supply and public health for centuries to come.

These two separate studies actually reveal a double trouble scenario, because both the soluble forms , and the insoluble forms of plutonium can move with water.

The A. B. Kersting study , was done at the Nevada Test Site(1). This study found that insoluble plutonium had migrated 1.3 km (roughly one mile) bound to clay as a colloid and was suspended and floating in this sluggish aquifer, 30 years after being introduced to the
underground environment.

This is a profound, and dangerous discovery, that should change our nearsightedness about plutonium over our aquifer.

These plutonium colloids ranged in size from greater than one micron, down to 0.007 microns. The DOE acknowledges that inhalation of plutonium is the most dangerous pathway of human exposure. Plutonium colloids in our aquifer would be available for inhalation from the common use of sprinkle irrigation, and even canal irrigation that later dries, allowing newly surfaced plutonium to be resuspended in the wind.

The fact that these are insoluble particles of plutonium, means that each particle contains millions of plutonium atoms. That makes inhalation more dangerous because , while the single strike alpha disintegration of a single radon gas atom is dangerous, an embedded

plutonium
particle provides a point of perpetual radiation and alpha destruction.

The Kersting paper notes the old thinking of the DOE, siting the McDowell-Boyer paper. They say , "It has been argued that plutonium introduced into the subsurface environment is relatively immobile owing to its low solubility in ground water and strong sorption onto
rocks." Kersting notes there are two previous studies of field observations contradicting that premise (2, 3).

I have heard the DOE, CDC, State, and ATSDR verbally dismiss the Kersting study as "due to the bomb testing." However , Kersting addresses the issue, stating that in the 40 years of bomb testing, previous testing only found that "radionuclides were detected at a maximum of a few hundred metres from the original detonation site. "Having isolated the specific isotope ratio of the Benham bomb test debris, there is no doubt of its origin. The Kersting team concludes , "The possibility that the Pu from the Benham test site was blasted and deposited greater than 1.3 km away, in two distinct aquifers separated by 300 m vertically and 30 m horizontally seems highly unlikely."

Most importantly, Kersting concludes," Pu transport models that only take into account sorption and solubility may therefore underestimate the extent to which this species is able to migrate in ground water."

That is one reason why I say that the DOE, EPA, and State are ignoring their own contradictory studies. The modeling for Idaho's future does not include the Kersting study on colloid transport of insoluble plutonium. While we open new shallow burial sites, and leave other plutonium where it lies, underestimating this plutonium transport is not acceptable.

The second study I will refer to, is from DOE's Los Alamos lab, by John M. Haschke (4). While Kersting showed the mobility of insoluble plutonium, Haschke revealed that Pu in our environment can change oxidation states in the presence of airborne water vapor and become
very soluble in water, enhancing mobility. This discovery contradicts the present textbooks, according Dr Madic (5) , who wrote the accompanying "Perspective" , when the Haschke study was published in Science. Textbook knowledge had only found Pu02 in the environment, in oxidation states III and IV. Madic writes how this must affect how we view everything, from the new plutonium laden MOX nuclear reactors, to nuclear storage. Madic states," Until now, it was assumed that plutonium would not be very mobile in the underground geological environment because of the insolubility of Pu(IV) compounds. But Haschke et al. demonstrate that water can oxidize Pu02 into Pu02+x, in which more
than 25% of the plutonium can exist as Pu(VI), an ion that is far more soluble, and thus mobile, than Pu(IV). This new property will have important implications for the long term storage of plutonium."

So when will the DOE, EPA , State, and ATSDR apply this information to protect our water and our health ? We need above

ground, inspectable and retrievable storage for the billions of plutonium particles dumped over our water. To ignore these studies is inexcusable.

There is one more paper I will quote, from Dr Runde. I went to the Wolfgang Runde article called "The Chemical Interaction of Plutonium in the Environment." It is from a Los Alamos conference on plutonium transport. That can be referenced at http://lib-www.lanl.gov/pubs/number26.htm

Runde acknowledges the colloid transport was fast, and concludes, "What is clear is that transport models to date have underestimated the extent of colloidal transport on plutonium mobility."

Let me put his conclusion in context, and quote Dr Runde to a fuller extent.

Dr Runde, on page 408 (or 17 of 20 on the computer download) says, " We are also trying to better understand the sorption/desorption reactions of actinides with colloids and the actinides' resulting transport characteristics. This area of environmental migration received attention with the discovery of plutonium in a borehole at the Nevada Test Site (Kersting et al. 1999). The plutonium had evidently migrated 1.3 kilometers in only 30 years."

Runde continues," As discussed in the article by Maureen McGraw, we now believe that colloid transport was responsible for this remarkably fast movement of plutonium through the water saturated rock. It is not clear, however, whether the transport was facilitated by intrinsic plutonium colloids or natural (clay or zeolite) colloids. What is clear is that transport models to date have underestimated the extent of colloidal transport on plutonium mobility."

The only reference to the uniqueness of bomb testing is the initial time it takes to reach plutonium exposure to water. Runde notes that the underground explosion allowed the plutonium to be left in water, while a waste repository would differ, because the "radionuclides would be isolated, at least initially, from the hydrogeologic environment.".(p 490)

Runde also mentions a new concern for Pu migration, and that is microbes acting as " mobile colloids. " While they may act as a barrier, they may aid transport. Runde says, "As such, they act as mobile or even self propelled colloids. (p 409, 18/20).

That is another reason we should simply re-barrel the plutonium waste, instead of shallow burial.

Runde concludes, " More sophisticated models are needed to account for all the potential migration paths away from an actinide source. Theoretical and experimental scientists will be challenged for years by demands of
developing these models.(p 410, 19/20)

Gee , I look forward to when they finish the job. Why would we want to rebury plutonium over our water before they understand plutonium transport in water?

I look forward to your reply.

Sincerely, Dr Peter Rickards DPM
2672 E 4000 N, TF, ID 83301

1)A.B. Kersting et al. , Lawrence Livermore National Laboratory, Nature, vol 397 Jan 7, 1999, p56-59.
2)McDowell-Boyer , Environmental Science Technol. , 26 , 586-595 (1992)
3)Ryan et al, Physiochem. Eng. Aspects, 107 , 1-56 (1996)
4)JM Haschke et al. ,Science 287, Jan 14 2000
5)C Madic, Science 287 , Jan14, 2000

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The comments below are offered to assist the ATSDR in improving its assessment of Oak Rid fluoride releases. Please note that these comments deal only with fluoride issues and do r constitute an exhaustive review of the report (or even of the fluoride issues themselves).

(1) In its responses to various public comments, the 2008 ATSDR report states that fluorine a fluoride compounds "are primarily associated with acute (short-term) health effects, whereas t state was interested in evaluating chronic exposures" (p. 138, response to comment 29) and "a primarily associated with acute exposures—they are not generally related to chronic, long-te health effects which the state was investigating" (p. 139, response to comment 30). The statements are not correct. In fact, the report from the Feasibility Study did not give a speci reason for the exclusion of fluorine or various fluoride compounds from any quantitati assessment. "Fluorine and fluoride compounds," "Hydrofluoric acid," Fluorine and vario fluorides," and "Chlorine trifluoride" were categorized as "acids/bases" for which collectively was stated that the primary health effect is irritation, commonly associated with acute exposu (ChemRisk 1993b). However, at least for fluorine and fluoride chemicals, this statement is r correct.