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 Date: Wed, Feb 9, 2000 5:03 PM
 Subject: Fw: Science Magazine: study shakes nuclear waste storage assumptions

Many years ago, the AEC estimated that it would take about 100 years for plutonium from the Hanford, Washington site to migrate into the Columbia R., so it was not to worry about. It took about 5 years. Now we know why. And we also know why we can't trust the official "experts" when they say it's safe to recycle nuclear waste into the public domain, and when they say that "a little bit of radiation is good for you" (hormesis theory), and when they set radiation standards without regard to vulnerable populations and to the difference between radiation externally received and that ingested.

DOCKET NUMBER
 PROPOSED RULE 20
 (64FR35090)

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 > Date: Wednesday, February 09, 2000 7:04 PM
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 >
 > New Scientific Studies Shake the Foundations of Accepted Nuclear Waste
 > Disposal Assumptions
 >
 > New research reported in Science Magazine finds that plutonium reacts
 > differently than previously assumed when exposed to air and water, and
 > becomes very soluble in water. The fact that plutonium can, over time,
 > transition to a chemical form that will rapidly move into the biosphere
 > calls into question the viability of burial as a disposal method.
 >
 > Plutonium is present in all nuclear waste that originates from a nuclear

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- > reactor. Current U.S. policy for nuclear waste disposition is burial.
- > For "low-level" wastes, this is in shallow trenches near the surface. The
- > plan for highly concentrated radioactive wastes is geologic burial
- > at Yucca Mountain, as exemplified in the current S. 1287 Amendments to
- > the Nuclear Waste Policy Act.
- >
- > The report in Science Magazine (Vol 287 # 5451, 14 January 2000), by
- > chemists Haschke, Allen, & Morales overturns long-held assumptions about
- > what may happen when plutonium is buried. A commentary in the same issue
- > of the magazine, entitled "Towards the End of PuO₂'s Supremacy?"
- > discusses implications for long-term storage of plutonium dioxide: "It
- > has ... been assumed for more than 50 years that PuO₂ is the highest
- > plutonium oxide which can be prepared. This oxide ... was believed to be
- > stable over a wide temperature range.... For both civilian and military
- > applications, the stability of PuO₂ was a key factor underlying the
- > industrial strategy ... The new results ... have great consequences for
- > the underground disposal of plutonium wastes. 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 PuO₂ into PuO_{2+x} in which more
- > than 25% of the plutonium ions exist as Pu(VI), an ion that is far more
- > water soluble ..."
- >
- > "This new information demonstrates the folly of current U.S. nuclear
- > waste policy," said Michael Mariotte, executive director of the Nuclear
- > Information and Resource Service (NIRS). "This policy has been marked by
- > incorrect assumptions, inadequate information and politically-based dump
- > siting. It is clear that the leaky, earthquake-prone Yucca Mountain,
- > Nevada site is unsuitable for long-term atomic waste storage. What is
- > becoming increasingly clear is that the scientific community still
- > doesn't know enough about radioactive waste to even offer a solution."
- >
- > "Pursuing a half-baked 'disposal' strategy for the sole interests of the
- > nuclear power industry-as embodied in the nuclear waste legislation (S.
- > 1287) to be considered on the floor of the Senate next week-puts the cart
- > before the horse and sets the stage for a potential catastrophe for
- > people and the environment," said Mary Olson, radioactive waste
- > specialist in NIRS' Southeast office. "It's time for the government to
- > admit we just don't yet have enough information to handle a huge
- > centralized stockpile of high-level atomic waste. Pretending we do would
- > be the greatest folly of all."
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