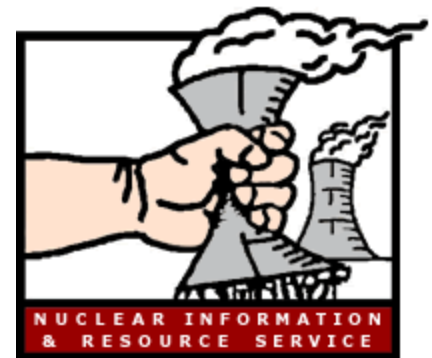


Nuclear Power and Water

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Anyone for “clean” nuclear power?



If the toxic radiation emitted daily from every nuclear reactor and other commercial nuclear facilities were the color and texture of oil, or smelled like natural gas, or came out as black soot, no one would ever again confuse nuclear power with “clean.”

Nuclear reactors are water hogs...

- Reactors with once-through cooling (without cooling towers) use 500,000 gallons and more per minute.
- Examples: 504,000 gpm at Millstone Unit 2 (CT); 918,000 gpm at Millstone Unit 3 (CT); 460,000 gpm at Oyster Creek (NJ); 311,000 at Pilgrim (MA); and 1,100,000 gpm at each of the two Salem reactors (NJ).

...even with cooling towers

- Reactors with cooling towers (closed loop systems): 20,000 gallons per minute from rivers, lakes, oceans.
- Example: Susquehanna 1 & 2 use, at full power, up to 21,000 gpm in “make-up” water from river to compensate for cooling tower “drift” plus 7,600 gpm for cooling tower basis chemistry control.



More water will be lost as steam from the possible four reactors at Plant Vogtle than is used by all residents of Atlanta (470,688), Augusta (190,782) and Savannah (128,453) combined.

Nuclear reactors are water hogs...

- **2009 VA Tech study: Nuclear uses far more water than other energy technologies--twice the amount per MBTU of fossil fuel average; 10x the use of solar thermal.**
- **Water will be growing issue. 36 states are projected to face water shortages in next 10 years (GAO, DOE)**

And they use water even when not running

- **Service Water Systems for reactors operate 365/7/24**
- **Actual service water system flow rates:**
- **37,000 gpm in winter and 52,000 gpm in summer at Hope Creek (NJ); 24,000 gpm at Millstone Unit 2 (CT); 30,000 gpm at Millstone Unit 3 (CT); and 13,500 gpm at Pilgrim (MA).**

Licensed to Kill

The routine operation of many atomic power plants unnecessarily kills marine wildlife and ocean habitat.

Example: A 2005 study, for example, of impacts from 11 coastal power plants in Southern California estimated that the San Onofre nuclear plant impinged nearly 3.5 million fish in 2003 alone – about 32 times more fish than the other 10 plants combined. Untold numbers of fish larvae and other life entrained in the water do not survive journeys through nuclear power plants. The more water the plants use, the more aquatic life we lose. (Got Water, UCS, 2007)

No assessment has ever been conducted as to the effects on water supplies, especially drinking water supplies, of the kind of major reactor construction endeavor including nuclear power in a “clean energy standard” would seek to encourage.

Water: A Leverage Point Against Aging Nukes

- Unlike for most safety-related issues, States have considerable authority over water use and permits.
- Oyster Creek (NJ): being forced to close by the State 10 years early (2019) because utility doesn't want to put up a state-mandated cooling tower to minimize damage to Barnegat Bay

Water: A Leverage Point Against Aging Nukes, continued

- **Indian Point (NY).** While State is fighting relicensing of Indian Point before NRC, it is also attempting to require construction of cooling towers—which would be a prohibitive cost.
- **Water permit to take from Connecticut River is also an issue at Vermont Yankee.**

Nukes, water & climate: a hot and growing problem

- **NRC technical specifications are reactor-specific, but all include a limit on water intake temperature.**
- **As world (and our water) warms, reactors increasingly are forced to shut down because of these limits.**

Nukes, water & climate: a hot and growing problem, continued

- This has typically been a problem for reactors located on rivers or with small cooling ponds (Browns Ferry, AL; Byron, IL)
- But last summer, Millstone-3 (CT) was forced to shut for several days because of warm water in Long Island Sound
- Twice in past decade, major shutdowns among French reactors during heat waves (when they're most needed!) because of water temperature limits.

And now a moment for a completely different issue....

DANGER!

**RADIOACTIVE WASTE
TRANSPORT ROUTE**



**STOP A MOBILE CHERNOBYL
NO FUKUSHIMA FREEWAYS
CLICK HERE, ACT NOW**

Congress will consider new radwaste legislation this year

- Expected to include “centralized interim storage.”
- Would set into motion transport of tens of thousands of casks of high-level nuclear waste on highways, railways and seaways.
- All to encourage more radwaste generation.
- Even Heritage Foundation says it’s a “shoddy fix” that would do nothing to solve the waste problem.

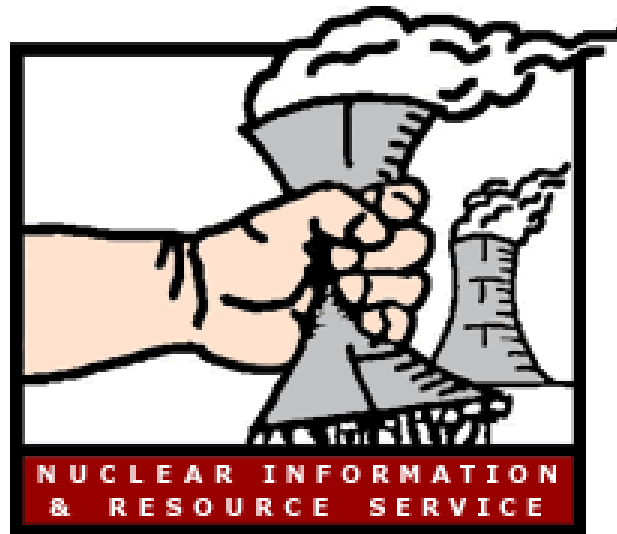
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