

**Top Ten Talking Points
on the Environmental Devastation
Caused by Reprocessing High-Level Radioactive Waste**

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FRANCE

1. Areva's La Hague reprocessing plant has annually discharged 100,000,000 gallons of radioactive liquid wastes into the English Channel via an underwater pipeline.(1) The sediments at the foot of this pipe would be considered intermediate level radioactive waste under British laws and regulations, requiring deep geologic disposal. Despite this, they are allowed to remain on the seafloor, eroding and carried away by the ocean's currents. Nearby beaches have been closed to public access due to radioactive contamination. Elevated rates of leukemia have been detected in neighboring populations. Radioactivity from La Hague has been detected as far away as waters in the Canadian Arctic.(2) Additionally, in the late 1960s, the French reprocessing plant at Marcoule dumped nearly 50,000 waste barrels into the sea off the coasts of Spain and Brittany.(3)
2. Areva's radioactive gaseous discharges to the atmosphere are even larger than its liquid waste releases. These gaseous discharges include krypton-85 (11-year half life) and carbon-14 (5,736-year half life). These radioactive gaseous discharges blow downwind, resulting in global, collective doses to human beings for millennia to come. Taken together, La Hague's liquid and gaseous radioactivity discharges will cause a fatal cancer toll of 3,250 lives over the next 100,000 years.(4)
3. Rather than solve France's radioactive waste dilemma, reprocessing complicates it. Multiple radioactive waste streams are generated, most of which lack permanent, safe, sound disposal solutions. 75% of long-lived intermediate-level radioactive waste resulting from reprocessing, and all long-lived low-level radioactive waste are currently stored under inappropriate conditions. High-level radioactive waste represents less than 1% of total reprocessing waste volume, but risk major releases while in liquid form;

nearly a third of high-level radioactive waste are currently stored in such risky forms.(5)
Reprocessed uranium stored in the Champagne region of France has begun leaking into the aquifer used to irrigate vineyards in this world-famous region.(6)

4. In the 1990s, many hundreds of high-level radioactive waste shipments to La Hague – one-quarter to one-third of all shipments – involved transport containers that were externally contaminated in excess of “allowable” radiation doses. A large number emitted 500 times more radiation than allowed by law and regulation. One shipment emitted 3,000 times the allowable radiation dose. Such contaminated shipments not only put workers at risk, but also unsuspecting members of the public who came in contact with such shipments.(7)
5. Reprocessing risks to workers – and by extension, the public – seem to be increasing. The French General Confederation of Labor trade union warned in 2007 that “...the request for drastic cost reductions in reprocessing-recycling, would not be without consequences on safety, security and working conditions.”(8)

UNITED KINGDOM

6. British reprocessing at Sellafield has discharged 1,000 pounds of plutonium into the Irish Sea. Plutonium has been detected in children’s teeth hundreds of miles downstream, with decreasing concentration over distance, indicating that Sellafield (not global fallout from atmospheric nuclear weapons testing) is the likely culprit.(9)
7. According to a 2001 report published by the European Parliament's Scientific and Technological Options Assessment (STOA), 80% of the collective radiation dose of the entire French nuclear power industry, and 90% of the radioactive emissions and discharges from the British nuclear power program, come from commercial waste reprocessing. The collective radiation dose from 70 years of "routine" (that is, accident-free) operations of the French and British reprocessing plants would be equivalent to the collective radiation dose from the Chernobyl nuclear catastrophe.(10)

UNITED STATES

8. The West Valley, New York reprocessing plant near Buffalo operated for only six years (from 1966 to 1972), but caused so much radioactive contamination of the surrounding environment that it will cost \$5.2 billion in Year 1996 dollars (\$6.8 billion in Year 2007

dollars) to clean up. If not cleaned up, the radioactive contamination on-site will erode into adjacent waterways and flow downstream into Lake Erie and Lake Ontario over the next millenium.(11) During its operations, West Valley had among the highest worker exposures, and worst water contamination, in the U.S. nuclear power industry. West Valley suffered so many accidents (including fires), technical glitches and failures that only one year's worth of projected reprocessing "throughput" was accomplished in six years of operations.(12)

9. Reprocessing at Hanford, Washington, Idaho National Lab, and Savannah River Site, South Carolina resulted in so much radioactive contamination that it will cost tens to hundreds of billions of dollars to clean up. The U.S. Department of Energy plans on abandoning high-level radioactive waste sludge resulting from reprocessing in underground storage tanks, deeming them too difficult or expensive to remove. But this risks severe radioactive contamination of the Columbia River, Snake River Aquifer, Savannah River, and Tuscaloosa Aquifer. This could make these major rivers and aquifers unfit for human drinking water, and make associated fisheries unfit for human consumption.(13)
10. Reprocessing does not solve or reduce the radioactive waste problem. On the contrary, it complicates it. Reprocessing generates numerous new, difficult to manage radioactive waste streams.(14) Liquid high-level radioactive wastes must be re-solidified into glass logs, a process that has encountered technical difficulties at such sites as Hanford, Washington, leading to skyrocketing costs.(15) Once vitrified, the high-level radioactive waste glass logs require a deep geologic repository, something no country on Earth has yet opened. Even then, fears persist that the intense radioactivity and thermal heat of the waste will degrade the glass, leading to its release into the environment over time.(16)

References:

- (1) Arjun Makhijani, *Carbon-Free, Nuclear-Free: A Roadmap for U.S. Energy Policy* Michigan book tour, October 3-4, 2008.
- (2) Kevin Kamps, "Muddying the Waters: COGEMA's Hidden Environmental Crimes," NIRS Nuclear Monitor newsletter, March-April 2000, viewable at <http://www.nirs.org/mononline/cogemamonitor.htm>; see also "Leukemia near La Hague, France" in Annie Makhijani, Linda Gunter, and Arjun Makhijani, *COGEMA: Above the Law? Concerns about the French Parent Company of a U.S. Corporation*

- Set to Process Plutonium in South Carolina*, Institute for Energy and Environmental Research and Safe Energy Communication Council, May 7, 2002, viewable at www.beyondnuclear.org under "The French Connection" section.
- (3) Mycle Schneider and Yves Marignac, "Spent Nuclear Fuel Reprocessing in France," International Panel on Fissile Materials, April 2008, viewable at http://www.fissilematerials.org/ipfm/site_down/rr04.pdf
 - (4) Ibid.
 - (5) Ibid.
 - (6) Shaun Burnie, "French Nuclear Reprocessing – Failure at Home, Coup d'Etat in the United States," May 2007, viewable at: <http://www.citizen.org/documents/Burnie%20paper%20on%20French%20reprocessing.pdf>
 - (7) Mycle Schneider, "Transport Special," Plutonium Investigation No. 6/7, June 1998, viewable at <http://www.wise-paris.org/> under "Bulletins."
 - (8) Mycle Schneider and Yves Marignac, "Spent Nuclear Fuel Reprocessing in France," International Panel on Fissile Materials, April 2008, viewable at http://www.fissilematerials.org/ipfm/site_down/rr04.pdf
 - (9) "Plutonium in Children's Teeth," Cumbrians Opposed to a Radioactive Environment press release, Dec. 11, 2003, <http://www.corecumbria.co.uk/>.
 - (10) Mycle Schneider, Xavier Coeytaux, Yacine B. Faid, Ian Fairlie, David Lowry, Yves Marignac, Emmaneul Rouy, David Sumner, Gordon Thompson, "Possible toxic effects from the nuclear reprocessing plants at Sellafield (UK) and Cap de La Hague (France)," STOA Report, European Parliament, November 2001, viewable at www.wise-paris.org/english/reports/STOAFinalStudyEN.pdf.
 - (11) Table 5-9, "Summary of Closure Costs for Implementing Alternative I (Removal)," pg. 5-35, U.S. Department of Energy and New York State Energy Research and Development Authority, *Draft Environmental Impact Statement for Completion of the West Valley Demonstration Project and Closure or Long-Term Management of Facilities at the Western New York Nuclear Service Center*, January 1996.
 - (12) Diane D'Arrigo, Radioactive Waste Project Director, Nuclear Information and Resource Service, November, 2008. See <http://www.nirs.org/radwaste/decommissioning/decommissioninghome.htm>.
 - (13) See, for example, Arjun Makhijani and Michele Boyd, "Nuclear Dumps by the Riverside: Threats to the Savannah River from Radioactive Contamination at the Savannah River Site (SRS)," Institute for Energy and Environmental Research, 2004, viewable at <http://www.ieer.org/pubs/index.html> under "IEER Technical Reports"; see also "Danger Lurks Below: The Threat to Major Water Supplies from US

- Department of Energy Nuclear Weapons Plants,” Alliance for Nuclear Accountability, viewable at <http://www.ananuclear.org/Issues/EnvironmentalCleanup/tabid/76/Default.aspx>
- (14) See Chapter VI., Waste Generation, and Figure 3, “Waste and materials generated in the nuclear fuel chain,” in Mycle Schneider and Yves Marignac, “Spent Nuclear Fuel Reprocessing in France,” International Panel on Fissile Materials, April 2008, viewable at http://www.fissilematerials.org/ipfm/site_down/rr04.pdf. See also the Center for Arms Control and Non-Proliferation’s “Graph Representing Department of Energy/Argonne National Laboratory’s proposal for reprocessing and transmuting nuclear waste as part of the Global Nuclear Energy Partnership (2007 iteration), viewable at <http://www.beyondnuclear.org/High-Level Radioactive W.html>
- (15) Lesley Stahl, “Lethal and Leaking,” 60 Minutes, CBS News, April 30, 2006, viewable at http://www.cbsnews.com/video/watch/?id=1561703n%3fsource=search_video
- (16) Arjun Makhijani, Glass in the Rocks: Some Issues Concerning the Disposal of Radioactive Borosilicate Glass in a Yucca Mountain Repository,” Takoma Park, MD: IEER, Jan. 29, 1991.