SOW THE WIND: Toxic Air Pollution from the Savannah River Site

Annotated Bibliography of Data Sources

Alliance for Nuclear Accountability, *Danger Lurks Below: The Threat to Major Water Supplies from US Department of Energy Nuclear Weapons Plants*, April 2004, Page 105. Detailed the deficiencies in DOE environmental management programs at all US nuclear weapons sites. Reported SRS is located over the greatest water recharge area on the east coast. Prepared by Radioactive Waste Management Associates and supported by a grant from the Citizens Monitoring and Technical Assessment Fund. Released to the general public.

Duke Cogema Stone & Webster, *Mixed Oxide Fuel Fabrication Facility Environmental Report, Rev 1&2*, Figure 4-13, U. S. Department of Energy Contract DE-AC02-99-CH10888. Reported on environmental impacts of the proposed plutonium fuel factory at the Savannah River Site. Done by principal contractor for MFFF project. Provided annual and seasonal wind rose for direction and speed of wind at the Savannah River Site.

Georgia Department of Natural Resources Environmental Protection Division *Environmental Radiation Surveillance Report* 2000-2002, Published March 2004. Measured state radiation levels near nuclear reactors and Savannah River Site. Anticipates continued emissions of radioactive pollutants from the Savannah River Site by ongoing activities. Predicts the production of tritium will likely result in increased airborne H-3 releases to the off-site environment. Written by state environmental specialists with assistance from utilities, academia, SRS, WSRC, DOE and others. Public record generally available.

Mahoney, MJ and d'Entremont PD, *Interim Salt Processing Strategy Planning Baseline, Revision 0* (CBU-PED-2004-00027), August 27, 2004. Studied high-level radioactive waste tank processing at SRS. Cited in *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site* (DOE-WD-2005-001) that SRS has generated over 140 million gallons of highly radioactive liquid waste laced with a mixture of salts, acids, metals and solvents.

National Research Council of the National Academy of Science, *Long-Term Institutional Management of US DOE Legacy Waste Sites*, August 2000. Examined U.S. Department of Energy plan for transition from active waste site management and remediation to what the DOE terms "long-term stewardship." Argued that a broader and more systematic approach is needed.

The Radioactivist Campaign, *Under A Cloud-Fallout from the Savannah River Site*, Norm Buske, October 2003. Found evidence of releases of radioactivity into the environment which have contaminated areas outside of SRS. Supported by a grant from the Citizens Monitoring and Technical Assessment Fund. Authored by Norm Buske, The Radioactivist Campaign's research expert.

Risk Assessment Corporation, *The Savannah River Site Dose Reconstruction Project Phase II: Source Term Calculation and Ingestion Pathway Data Retrieval* (Report No. 1-CDC-SRS-1999-Final) Submitted to Centers for Disease Control and Prevention (Contract No. 200-95-0904), p. 4.1-28, p. 4.1-27**April 30, 2001.** Recorded historical evidence of radioactive and toxic emissions from SRS for the Centers for Disease Control. Studied releases, doses and risks to members of the public living offsite. Described history of nuclear and chemical operations at SRS. Compiled technical data not previously released to the public domain.

South Carolina Department of Health and Environmental Control; Savannah River Site Part 70 Air Quality Permit (No. TV-0080-0041); Final draft January 23, 2002. Issued by the SC DHEC Bureau of Air Quality under SC Pollution Control Act, Sections 48-1-50(5) and 48-1-110(a) and the 1976 Code of Laws of SC—Regulation 61-62. Required by Title V of the federal Clean Air Act and Amendments. Based on information submitted by the contractor: Westinghouse Savannah River Company for the US Department of Energy. Used by state air quality agency and facility operator to determine compliance with all applicable federal and state air quality standards. Contains detailed descriptions of operations. Stipulates applicable emission limits, specific emission requirements, monitoring and reporting requirements, and any additional conditions.

United States Department of Energy, *Savannah River Site Environmental Reports* 1998—2006 (Publication Nos. WSRC-TR-98-00312, WSRC-TR-99-00299, WSRC-TR-2004-00015, WSRC-TR-2005-00005 and WSRC-TR-2006-00007); Westinghouse Savannah River Company, Savannah River Site, Aiken, SC 29808. Published annually the Department of Energy at the Savannah River Site. Prepared by the facility's principal contractor Westinghouse Savannah River Company under US DOE guidance. Contains information about SRS environmental monitoring programs, dose estimates, waste management activities and research projects. Distributed to the Site Specific Advisory Board, federal, state and local officials, stakeholders and the general public.

United States Department of Energy, Savannah River Operations Office, *1996 Baseline Environmental Management Report* , Posted 08/19/1996, downloaded September 2005 at http://web.em.doe.gov/bemr96/scarol.html Catalogued the massive cleanup necessary for the nation's defense sites. Published baseline information on polluted areas which estimated that SRS had over 1,000 facilities which were potentially contaminated with hazardous and radioactive materials. Estimated total cost of Savannah River Site characterization, remediation, maintenance, deactivation and disposition from 1996 through 2050 would exceed $48 billion. No longer available on DOE website.

United States Department of Energy; Savannah River Site Part 70 Air Permit Application; Prepared for USDOE by Westinghouse Savannah River Company (Control Contract No. DE-AC09-89SR18035); Volumes I—XVIII Prepared by WSRC for DOE pursuant to federal Clean Air Act Title V. Lists all air emission sources at SRS including major, minor and insignificant sources. Catalogs specific information for each source including elevation, geographic coordinates, stack height and diameter, exit velocity and temperature, and quantities of pollutants emitted.

United States Department of Energy, *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site* (DOE-WD-2005-001), February 28, 2005. Issued pursuant to Section 3116 of the Ronald Reagan National Defense Authorization Act for Fiscal Year 2005. Authorized the Department of Energy and the Nuclear Regulatory Commission to approve disposal of radioactive salt waste at SRS utilizing Caustic Side Solvent Extraction and Salt Waste Processing Facility. Declared that high-level radioactive waste resulting from re-processing would now be designated "incidental" waste and that above ground storage or burial in a deep repository is no longer required. Applies to such wastes only in South Carolina and Idaho.

United States Department of Energy, Savannah River Operations Office, *Savannah River Site End State Vision Document,* July 26, 2005, p. 50, 52, 56, 63, 65, 73. Incorporated comments and documents into a guide for future decision-making for so-called end states; i.e., goals of environmental remediation and management programs at SRS. Includes a comprehensive overview of current conditions at SRS. Compiled information from SRS stakeholders including South Carolina Dept. of Health and Environmental Control, US EPA, Dept. of Energy and the public. Written in technical language but understandable to the general reader.

United States Geological Survey, *Groundwater Levels, Predevelopment Groundwater Flow, and Stream Aquifer Relations in the Vicinity of the Savannah River Site, Georgia and South Carolina,* (97-4197) Water Resources Investigations Report, Clarke JS and West TW, 1997, Page 104. Surveyed 5,147 square mile Central Savannah River Area in an extensive aquifer study. Prepared in cooperation with the US DOE, Georgia Dept. Natural Resources, Georgia Geological Survey. Found underground water flows from SRS into Georgia.

United States Geological Survey, *Ground-Water Flow Study in the Vicinity of the Savannah River Site, South Carolina and Georgia* (Fact Sheet FS-178-95), John S. Clarke, August 1995, downloaded April 2006 from USGS Atlanta, GA website at http://ga.water.usgs.gov/publications/fs178_95/fs178_95.html Studied underground water migration to determine if trans-flow of contamination from SRS could cross Savannah River to reach Georgia. Initiated testing. Listed variety of radionuclides, heavy metals and toxic chemicals known to leak from various facilities at SRS.

Westinghouse Savannah River Company, *D-Area Drip Irrigation-Phytoremediation Project: SRTC Final Report* (WSRC-TR-2002-00080) Wilde EW et al, January 2003, Prepared for the US Department of Energy under Contract No. DE-AC09-96SR18500. Reported on D-Area chlorinated organic solvent contamination of soil and groundwater and tested methods of clean-up. Intended for scientific community and DOE agencies involved in environmental remediation. Provided evidence regarding the extent of solvent contamination at SRS.

Westinghouse Savannah River Company, *Land Use Control Assurance Plan for the SRS* (WSRC-RP-98-4125), Updated January 12, 2002 Revision.1.1, Page 3. Detailed plan for prospective uses of SRS. Included complete maps of SRS watersheds, marked with industrial areas both nuclear and non-nuclear.

Westinghouse Savannah River Company, *Determination of Uranium and Mercury Speciation in High Level Waste Tank 8F and 11H Sludge* (WSRC-TR-2001-00428, Rev. 0) Duff MC et al, 9/24/01. Used synchrotron-based X-ray absorption spectroscopy and other techniques to characterize metal speciation in waste tank sludge. Reported that HLW sludge samples are embedded in polystyrene (vinyl benzene) for transport. Indicated gas generation from samples persisted for 60 days.