

APPENDICES A - E

APPENDIX A

The DEC and DOH should err on the side of caution and test the wastewater for all possible radionuclides and the Environmental Protection Agency's list of priority pollutant toxic chemicals, plus priority PFAS chemicals.

- The testing plan should be informed by the test results of such wastewater from other nuclear reactors. For instance, the Pilgrim reactor's wastewater test results found PFAS (Per and Per- and polyfluoroalkyl), PFOS (Perfluorooctanesulfonic acid), and other toxic chemicals.
- Testing for radionuclides should include tritium, uranium, krypton-85, cobalt-60, cesium-137, strontium 90, nickel-63, and carbon-14 so that there is a complete inventory of radionuclides in the spent fuel pools.
- Split sampling should be conducted wherein the state agencies take two samples and send the two samples to different laboratories. There should be a transparent chain of custody for all testing protocols.
- The testing protocol should include the following process recommended by national expert Arnie Gundersen. The water in the pool should be stirred up so it is circulating and includes the sediment at the bottom of the pool. This process is necessary for accurate test results.
- Dr. Marco Kaltofen of Boston Chemical Data, a leading national expert, recommends using Eberline Labs for fuel pool water tests.
- In the case of PFAS, the samples should be sent to a state certified laboratory, such as Wadsworth Laboratory, with the capability of a detection level of 2 PPT.

Appendix B

The Oak Ridge Cleanup: Protecting the Public or the Polluter? Charles Openchowski, a retired senior attorney in the Office of General Counsel of the U.S. Environmental Protection Agency. Copyright © 2023 Environmental Law Institute®, Washington, DC. Reprinted with permission from ELR®, <http://www.eli.org>

Some Relevant Excerpts

"21. Id. at 9. The RA Decision also pointed out that "[t]he CWA Legislative History at 1425 (Senate Report) states: '**(t)he use of any river, lake, stream or ocean as a waste treatment system is unacceptable' regardless of the measurable impact of the waste on the body of water in question,**" and the CWA Conference Report states that **the Act "specifically bans pollution dilution as an alternative to waste treatment."** Id. Despite this, DOE has indicated that it still intends to use dilution as part of its approach to the landfills' wastewater discharges. See Benjamin Pounds, Reactions Mixed on Proposed Landfill for Low Level Hazardous Waste, Oakridge (May 31, 2022), <https://news.yahoo.com/reactions-mixed-proposed-landfill-low-010010702.html>." Pg. 3

“...Finally, by its express terms, the carve-out in the definition of “pollutant” in 40 C.F.R. §122.2 for certain Atomic Energy Act-regulated radionuclides is explicitly limited in application to only 40 C.F.R. Parts 122, 123, and 124. **The plain language of EPA’s regulations does not extend this carve-out to other CWA regulations, such as 40 C.F.R. Part 125 (which addresses TBELs) and Part 131 (which includes water quality standards, use designation, and antidegradation provisions).**” Page 9

“...2. Antidegradation

As discussed above, the primary goal of the CWA is to “restore and maintain the chemical, physical and biological integrity of the Nation’s waters.”⁷¹ According to EPA’s long-standing policy position: “Under the Clean Water Act (CWA), once the existing uses of a water body have been established—by evaluating the water’s quality relative to uses already attained—a **State/Tribe must maintain the level of water quality that has been identified as being necessary to support those existing uses.**”⁷²

...” One of the key mechanisms to achieve this objective is the antidegradation policy. EPA CWA regulations in 40 C.F.R. §131 require a state to have an antidegradation provision in order to administer the CWA NPDES program.⁷³ EPA addressed antidegradation provisions in the context of ARARs in its preamble to the final NCP as follows:

EPA believes, however, that general goals, such as non-degradation laws, can be potential ARARs if they are promulgated, and therefore legally enforceable, and if they are directive in intent.

For example, in the preamble to the proposed NCP, EPA cited the example of a state anti-degradation statute that prohibits the degradation of surface water below a level of quality necessary to protect certain uses of the water body (53 FR 51438). If promulgated, such a requirement is clearly directive in nature and intent. State regulations that designate uses of a given water body and state water quality standards that establish maximum in-stream concentrations to protect those uses define how the antidegradation law will be implemented are, if promulgated, also potential ARARs.⁷⁴ Pgs. 9 and 10

DEC ORGANIZATION AND DELEGATION MEMORANDUM NO. 85-40

Water Quality Antidegradation Policy

September 9, 1985

Excerpts

“The DEC has a responsibility and obligation under federal law through the Clean Water Act (33 USC §§1251 et seq) to establish and implement a policy **which protects existing water quality from being degraded...**”

...Those waters protected for trout spawning purposes require compliance with extremely high water quality standards which prohibit degradation....**The water uses and the level of water quality necessary to protect such uses shall be maintained and protected.**”

NOTE: There is also an undated supplement to the original policy issued under DEC Commissioner John Cahill. It is titled, “Division of Water Technical and Operational Guidance Series 1.3.9 – Implementation of the NYSDEC Antidegradation Policy – Great Lakes Basin (Supplement to Antidegradation Policy).”

Hudson River Designated Uses

Article 10 Lower Hudson River Drainage Basin Series

- [Part 855 Rondout River, Rondout Creek and Wallkill River Drainage Basin](#)
- [Part 856 Sparkill Creek Drainage Basin](#)
- [Part 857 Wappinger Creek Drainage Basin](#)
- [Part 858 Lower Hudson River \(Main Stream\)](#)
- [Part 859 Saw Mill River Drainage Basin](#)
- [Part 860 Ramapo River and Mahwah River Drainage Basins](#)
- [Part 861 Lower Esopus Creek Drainage Basin](#)
- [Part 862 Drainage Basins of Streams Entering the Hudson River in Orange, Ulster, Dutchess and Putnam Counties](#)
- [Part 863 Drainage Basins of Streams Entering the Hudson River in Albany, Columbia, Greene and Rensselaer Counties](#)
- [Part 864 Lower Hudson River Drainage Basin from Mouth to Northern Westchester-rockland County Lines](#)
- [Part 865 Hackensack River-Saddle River and Greenwood Lake-Sterling Lake Drainage Basins](#)

- [Article 19 Upper Hudson River Drainage Basin Series](#)

- [Part 940 Hoosic River Drainage Basin](#)
- [Part 941 Upper Hudson River Drainage Basin](#)

Some Fresh Surface Water Designation Definitions

701.5 Class AA fresh surface waters.

(a) The best usages of Class AA waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish and wildlife propagation and survival.

701.6 Class A fresh surface waters.

(a) The best usages of Class A waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish and wildlife propagation and survival.

701.7 Class B fresh surface waters.

The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival.

701.8 Class C fresh surface waters.

The best usage of Class C waters is fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I06849fe0b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I06849fe0b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

Hudson River Federal and State Protection Policies

The **Hudson River Valley National Heritage Area** was designated by Congress to recognize the importance of the history and the resources of the Hudson River Valley to the nation. Yet despite being surrounded by one of the most concentrated human populations in North America, the Hudson River estuary incorporates over 2,000 acres of tidal freshwater wetlands and many more acres of brackish tidal wetlands.

The Hudson River Valley National Heritage Area includes 250 communities in ten counties bordering the Hudson River for 154 miles of tidal estuary. This area is approximately three million acres of Hudson Highlands, Catskill Mountains, rolling farmland and compact villages, small cities and hamlets. The region extends from the confluence of the Mohawk and Hudson Rivers, south to the northern border of New York City.

[Hudson River Valley National Heritage Area | Hudson River Valley Greenway \(ny.gov\)](#)

The Estuary Program

The most familiar part of the Hudson, running from Albany to New York City, is an estuary - a long arm of the sea subject to tides and the upriver press of salty ocean water. The [estuary](#) is home to a diverse array of plants and animals that depend on its productive waters for essential activities such as spawning and wintering.

Much of DEC's work on the estuary is coordinated by the [Hudson River Estuary Program](#). The Estuary Program is built on partnerships with many other federal, state, and local programs. The Program works to conserve and restore the Hudson's extraordinary natural heritage, scenery, and mystique. This is done through projects founded in science and carried out in ways that support the Valley's citizens. Specific means of achieving these objectives are detailed in the goals and targets of the [Estuary Program's Action Agenda](#), the latest refinement of the Estuary Action Plan, first released in May 1996. The Agenda is updated approximately every five years.

Appendix C

Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, White House (Jan. 20, 2021)

Executive Order No. 13990 states:

“Section 1. Policy. Our Nation has an abiding commitment to empower our workers and communities; promote and protect our public health and the environment; and conserve our national treasures and monuments, places that secure our national memory. Where the Federal Government has failed to meet that commitment in the past, it must advance environmental justice. In carrying out this charge, the Federal Government must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making. It is, therefore, the policy of my Administration to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore

and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.

To that end, this order directs all executive departments and agencies (agencies) to immediately review and, as appropriate and consistent with applicable law, take action to address the promulgation of Federal regulations and other actions during the last 4 years that conflict with these important national objectives, and to immediately commence work to confront the climate crisis.”

<https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>

Appendix D

The NRC License Termination Rule (LTR) policy has a radiological standard for “unrestricted use” of 25 millirems per year, which is based on a cancer risk of 1 in 500 people.ⁱ This means the exposure to all remaining radioactive materials after remediation is estimated to result in one in 500 people contracting cancer.

The cancer risk calculation follows the EPA’s conversion methodology and is from the National Academy of Sciences.ⁱⁱ The calculations are as follows according to Dan Hirsch, a national expert, founder of the Committee to Bridge the Gap, and former Director of the Program on Environmental and Nuclear Policy at the University of California, Santa Cruz.ⁱⁱⁱ

Use a 1.16 cancers X 10⁻³ cancers per person conversion factor.

25 million or .025 rem X 70 years exposure X 1.16 X 10⁻³ = 2.03 X 10⁻³. The inverse is 1 in 493 people cancer risk, rounded up to 1 in 500 cancer risk.

This is 2,000 times higher than New York State’s statutory 1 in a million-cancer risk for toxic chemical soil cleanup standards.

The EPA has stated in 1997 testimony, a 2000 letter, and a 2014 memorandum that the NRC LTR policy is not protective. EPA requires a risk range of 1 in a million (10⁻⁶) to 1 in 10,000 (10⁻⁴) cancer incidence risk. For instance, an EPA official stated: [The NRC policy] “would not adequately protect either the health of our citizens or our nation’s natural resources ... To put it bluntly, radiation should not be treated as a privileged pollutant. You and I should not be exposed to higher risks from radiation sites than we would be from sites which contained any other environmental pollutant.”^{iv}

New York State’s statutory and regulatory policies for toxic air pollution and toxic waste site remediation are based on a 1 in a million-cancer risk level, as well as protection of drinking water, surface water and air (including indoor air), sensitive populations, including children, and ecological resources, including fish and wildlife. This 10⁻⁶ policy is explicitly stated in the NYS 2003 Brownfield Cleanup Program & State Superfund statute (Article 27, Title 14).

“... All remedial programs shall be protective of public health and the environment including but not limited to groundwater according to its classification pursuant to section 17-0301 of this chapter; drinking water, surface water and air (including indoor air); sensitive populations, including children; and ecological resources, including fish and wildlife ... the target risk of residual contamination at a site shall not exceed an excess cancer risk of one in one million for carcinogenic end points ...”^v

The DEC Air Guide 1 also sets Annual Guideline Concentrations for permit emissions at the 10⁻⁶ level.^{vi} **The NRC LTR cancer risk of 1 in 500 people is a public health policy travesty and is in direct conflict with our State’s policies.**

Appendix E

Ban On Shallow Land Burial Law & Reactor Above Ground Storage Legislation

In the late 1980s, New York State passed a law that banned shallow land burial of “low-level” radioactive waste (LLRW), banned the disposal of LLRW at the leaking West Valley nuclear waste site and established a Commission to site a “low-level” radioactive waste disposal facility. At the time, federal law required all states to develop LLRW disposal plans.

During this multi-year process, Senator Lack and Assemblymember Luster introduced legislation requiring the State to construct an above ground storage LLRW monitored and retrievable building in the “buffer zone” area of a state-owned reactor. This bill was strongly supported by many state legislators and organizations.

A lawsuit led by New York State counties was heard by the U.S. Supreme Court which ruled that states were not responsible for the management of privately generated waste from nuclear reactors and other facilities.

State Funded Study Found Storage/Off-site Disposal of West Valley Nuclear Waste Poses Least Risk to Population, and Lowest Economic, Societal and Project Cost

A study by Synapse Energy Economics and a team of scientists evaluated two cleanup alternatives presented in a federal report for the West Valley nuclear waste site, located 30 miles south of Buffalo, NY.

The West Valley Nuclear Waste Site was the country's only commercial nuclear reprocessing facility and it failed, leaving behind buried massive tanks, holes and trenches of hazardous and radioactive waste.

The study, funded by the Legislature, found that waste excavation and on-site above ground storage monitored and retrievable storage facility (for 73 years), followed by off-site disposal of the waste is less expensive than continually managing a leaking buried waste landfill. Over a 1000-year timeframe, the excavation and above ground storage option presented the least risk to a large population and the lowest economic, societal and project cost. ¹

ⁱ PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION, § 20.1402 Radiological criteria for unrestricted use. <https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html>

ⁱⁱ EPA 402-R-11-001 April 2011, [EPA Radiogenic Cancer Risk Models and Projections for the U.S. Population](#)

ⁱⁱⁱ [Committee to Bridge the Gap – Bridging the Gap Between Nuclear Danger and A Safe, Sustainable Future](#)

^{iv} Statement on the Nuclear Regulatory Commission’s Rule on Radiological Criteria for License Termination, April 21, 1997, Ramona Trovato, EPA Director, Office of Radiation and Indoor Air.

^v Environmental Conservation Law, § 27-1415. Remedial program requirements.

[Laws of New York \(state.ny.us\)](http://www.state.ny.us)

^{vi} DEC Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants. Air Guide 1, Guidelines for the Control of Toxic Ambient Air Contaminants <http://www.dec.ny.gov/chemical/30681.html>