

**December 7, 2015**

## **Nuclear Glossary for Entergy Task Force**

The following terms and their acronyms are found in many documents pertaining to nuclear power plant operations and reactor decommissioning.

### **Organizations**

- DOE** U.S. Department of Energy.
- EPA** U.S. Environmental Protection Agency.
- FEMA** Federal Emergency Management Agency.
- NEI** Nuclear Energy Institute: nuclear industry lobbying group, representing industry interests to the Nuclear Regulatory Commission and Congress.
- NDCAP** Nuclear Decommissioning Citizens Advisory Panel: 19-member group formed by Vermont Legislature in 2014 to address decommissioning and restoration issues at the Vermont Yankee site.
- NRC** U.S. Nuclear Regulatory Commission.

### **Legislation**

- CERCLA** Comprehensive Environmental Response, Compensation, and Liability Act: law passed in 1980 authorizing EPA to identify and compel responsible parties to clean up sites contaminated with hazardous substances, or undertake the process on its own. Authorizes states to create their own versions of the law for local use. Does not apply to sites contaminated with non-hazardous waste (see RCRA), and EPA defers to NRC decision-making regarding the decommissioning of nuclear sites (see **Regulation**).
- NPDES** National Pollutant Discharge Elimination System: permit program introduced by the Clean Water Act of 1972. Regulates the discharge of pollutants to surface waters from point sources, such as industrial facilities. Managed by the EPA, states with sufficient programs are authorized to perform all permitting, administrative, and enforcement acts on behalf of the federal government.
- NWPA** National Waste Policy Act: law passed in 1982 to establish a comprehensive national program for the safe, permanent disposal of highly radioactive wastes. Directed the DOE to site, construct, operate, and close a repository for spent nuclear fuel and high-level radioactive waste; directed the EPA to set public health and safety standards for the release of materials from the

repository; directed the NRC to provide regulations for repository construction, operation, and closure. Required generators of spent fuel and wastes to pay for disposal costs, and required utilities to fund the program through a fee on nuclear-generated energy.

**RCRA** Resource Conservation and Recovery Act: law passed in 1976 governing the disposal of solid and hazardous waste. Relevant programs address Hazardous Waste (RCRA Subtitle C); Non-Hazardous Solid Waste (RCRA Subtitle D); and Underground Storage Tanks (RCRA Subtitle I). EPA oversight is transferred to states with programs meeting or exceeding federal regulatory minimums.

**TSCA** Toxic Substances Control Act: law passed in 1976 directing the EPA to protect public and environmental health. Specifically targeted the production, importation, use, remediation, and disposal of PCBs (see **Substances**), it has been expanded to issues related to asbestos, lead paint, radon, and other substances. States can preempt TSCA with more robustly-restrictive programs.

## Regulations

**CFR** Code of Federal Regulations: publication containing the permanent rules and regulations of federal agencies in the US. Parts 0 - 199 of Section 10 pertains to the NRC.

**GEIS** Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NUREG-0586): publication of the NRC, last updated in 2002, that establishes the general range of impacts associated with decommissioning on a number of issues, including socioeconomics.

**MARSSIM** Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575): a 1997 guidance document produced by the NRC, DOE, EPA, and Department of Defense to provide contractors and regulators with a single manual for ensuring that radioactive contaminants have been cleaned up to levels acceptable to all agencies.

## Decommissioning Methods

**DECON** A method of decommissioning in which plant components with radioactive contamination are removed from a site and disposed of at an appropriate low-level waste disposal facility, or decontaminated on-site. Often takes 5-10 years.

**ENTOMB** A method of decommissioning in which plant components with radioactive contamination are encased in concrete or a similar material, until the

radioactivity levels decay to acceptable levels. Not practical for large commercial reactors.

**SAFSTOR** A method of decommissioning in which an entire plant facility is left intact and maintained for subsequent decontamination in future years. Allows for natural decay of radiation, accrual of decommissioning funds, and development of new technologies. May take up to 60 years.

## **Decommissioning Documents**

**HSA** Historical Site Assessment: an iterative process of documenting historic radioactive materials spills or leaks to determine their environmental impacts. Process is defined by the MARSSIM manual, and often includes testing for non-radiological hazardous waste, as well.

**LTP** License Termination Plan: a document submitted for NRC approval at least two years before the expected license termination date. Includes a site characterization; description of remaining work; plans for site remediation; detailed plans for final radiation survey; updated estimate of remaining decommissioning costs; and any new or significant environmental changes. NRC holds one public meeting near the facility to discuss the LTP.

**PSDAR** Post Shutdown Decommissioning Activities Report: a document submitted to the NRC by the plant, before or within two years of permanent reactor shutdown. Includes a description and schedule for the planned decommissioning activities; an estimate of the expected costs; and sufficient evidence to demonstrate that the environmental impacts associated with the decommissioning activities are within established guidelines of an environmental impacts statement. Major decommissioning operations can begin 90 days after NRC receives PSDAR. NRC does not approve of or certify the contents of the PSDAR. NRC holds one public meeting near the facility to discuss the PSDAR.

## **Additional Terminology**

**ALARA** As Low As Reasonably Achievable: principle guiding plant owner programs for managing levels of radiation exposure in the workplace for plant personnel exposure.

**D&D** Decontamination and Decommissioning

**EPZ** Emergency Planning Zone: 10-mile radius around nuclear power plants characterized by substantial radiological incident response programs. FEMA oversees state and local preparedness, and the NRC oversees preparedness at the plant.

- ISFSI** Independent Spent Fuel Storage Installation: a complex designed for the storage of spent nuclear fuel. Consists of “dry casks,” in which spent fuel rods are placed in a steel vessel, bolted or welded shut and filled with inert gas, and then encased in additional steel or concrete to form a standalone cask. Plant operators are required to build, operate, and maintain ISFSIs until a permanent geologic repository or alternative solution is identified.
- NDT** Nuclear Decommissioning Trust: a fund required of every nuclear power plant to meet the costs of reactor decommissioning. Funds are collected from consumers through a fee, and are not the property of the plant owner. Pilgrim’s fund of approximately \$870 million is well above the NRC requirement, but short of the recent cost estimates of over \$1 billion for Vermont Yankee and Zion.

### **Contaminants: Non-radioactive**

- PCB** Polychlorinated Biphenyl Compounds: environmental contaminant and known carcinogen explicitly regulated by the TSCA of 1976, under the jurisdiction of the EPA. Widely used in industrial fluids, it was banned in 1979.
- PCE** Tetrachloroethylene: environmental contaminant and likely carcinogen. Commonly used in dry cleaning and degreasing. Subject to state oversight.

### **Contaminants: Radioactive**

- GTCC** Greater Than Class C Waste: the most hazardous of the four classes of low-level radioactive waste. Although it is not spent fuel, it is sufficiently radioactive to require ISFSI storage until permanent geologic repository is determined.
- HLW/HLRW** High-Level Radioactive Waste: highly radioactive materials, such as spent fuel discharged from a nuclear reactor. Stored on site in a spent fuel pool for at least one year before being transferred to ISFSI storage until permanent geological repository is determined.
- LLW/LLRW** Low-Level Radioactive Waste: any item with an elevated level of radioactivity resulting from day-to-day operations at a power plant. Along with GTCC, there are three other categories. Class A and Class B wastes pose no hazards to individuals exposed after 100 years, and Class C wastes pose no hazards to individuals exposed after 500 years.