

ENVIROCARE OF UTAH: WHAT THE FUTURE HOLDS FOR WASTE DISPOSAL

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ABSTRACT

Envirocare of Utah, Inc. began accepting waste materials for disposal in 1988. Given the role of the federal government in managing radioactive waste, it is not surprising that Envirocare has received a major portion of accepted materials from the US Department of Energy, the US Environmental Protection Agency and the Department of Defense. This paper reviews recent license and procedural changes at the Envirocare facility and explores how these changes impact known government waste generators. The major changes discussed are; (1) special nuclear material receipt and management, (2) PCB acceptance and disposal, (3) waste treatment technologies, and (4) large debris acceptance. Reviews of future waste disposal trends and past project experiences are used to illustrate disposal trends.

HISTORY AND LOCATION

Envirocare of Utah, Inc. has been in operation since 1988. Located approximately 75 miles west of Salt Lake City, the South Clive, Utah facility serves government and commercial customers for the treatment, storage and disposal of radioactive waste. The facility is licensed to accept naturally occurring radioactive material (NORM), low activity radioactive waste, mixed waste, and U and Th uranium and thorium by-product mill tailings. Technologies designed to treat waste for RCRA constituents have been developed and licensed at the facility. Current treatment capabilities include chemical stabilization, polymer macroencapsulation, and polymer microencapsulation.

Waste Acceptance Criteria for the Clive facility are based on licenses and permits received from the State of Utah (a Nuclear Regulatory Commission agreement state), the Nuclear Regulatory Commission, and the Environmental Protection Agency. With close proximity to a major interstate in addition to rail access, waste is received by a variety of packaging and transportation means. Highway shipments consist of bulk shipments such as roll-off containers as well as packaged waste including drums, boxes, crates, and sea vans. Waste shipments via rail are also received bulk in gondola rail cars and intermodal containers. Containerized shipments by rail can also be arranged.

The environment and location of the facility is well suited for waste disposal. Located in an area designated by Tooele County as a hazardous industries zone, the closest population center is approximately 40 miles from the facility. Natural clay soils provide materials for disposal cell liners and covers as well as offering low-permeability for environmental protection. South Clive, Utah is an area without potable water, receives annual average precipitation of less than six

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inches per year, and has an evapotranspiration rate (rate of evaporation) in excess of 60 inches per year. Given that the evapotranspiration rate is ten times greater than yearly precipitation, Clive, Utah is a suitable site for waste disposal.

Waste disposal occurs in three separate areas: the mixed waste facility, low level facility, and 11e.(2) facility. Above-ground disposal cells accept soils, metal, wood, concrete, ash, resins, sludges, plastics, dry active waste and other debris. Each cell is constructed with a liner and cover system designed to provide long-term environmental protection.

PAST EXPERIENCE AND FUTURE TRENDS

A majority of the historical waste receipts at the Envirocare facility have been the products of large soil remediation projects. More than 25 Formerly Utilized Sites Remedial Action Program (FUSRAP) sites have shipped waste to Envirocare in addition to many Environmental Protection Agency and commercial decontamination and decommissioning projects. The majority of the waste streams generated from these projects have primarily consisted of soils with less than ten percent of the waste stream made-up of debris such as wood, metal and concrete. This debris makeup fit well with Envirocare's license and construction plans in that the waste materials contained appropriate relative amounts of soil and debris and could therefore, be placed into the cell and compacted without the addition of 'fill material'. Until recent changes, debris in waste streams shipped was ten inches or less in a one dimension and no greater than eight feet in any dimension.

With the goal of several DOE sites to be closed and remediated within the next decade in addition to the life of many nuclear power plants reaching an end, decommissioning projects are increasing at a rapid pace. The result of this trend means less soil and more debris for disposal. Projects that consist solely of radioactively contaminated building debris are now more common. Large pieces of contaminated equipment that do not meet the traditional dimension requirements held at Envirocare also need a permanent disposal location. With building and reactor decommissioning also comes the need for more and better ways of dealing with issues such as PCBs, increased contamination levels, and special nuclear material.

EXPANDED SERVICES TO MEET FUTURE NEEDS

Envirocare, in cooperation with waste generators and facility regulators, has worked to find ways to address the needs demonstrated by these new waste disposal trends. The expanded services developed to support these future waste projects fall into four specific areas: special nuclear material, PCB acceptance and disposal, large debris disposal and remote sampling.

Special Nuclear Material

In May 1999 Envirocare of Utah, Inc. received an exemption from the 350 gram possession limit for Special Nuclear Material (SNM). In granting the exemption, the NRC cleared the way for Envirocare, under specified conditions, to possess SNM in greater mass quantities than specified

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in 10 CFR part 150 without obtaining an NRC license pursuant to 10 CFR part 70. The NRC also declared that the exemption was approved based on its determination that it would “not endanger life or property of the common defense and security and are otherwise in the public interest” and “will have no significant impacts on the quality of human environment.”

The NRC requires that customers certify that SNM waste sent to Envirocare meets five conditions based on the generator’s process knowledge, physical observations, and/or testing. The conditions are categorized as: SNM isotope concentration limits, spatial distribution requirements, bulk chemical limits, unusual moderator limits, and soluble uranium limits. These classifications were established to promote increased emphasis on the need for generators to know the range and variability of the SNM concentration in their waste.

The SNM Exemption has allowed Envirocare to process more shipments in a shorter amount of time. Prior to the Exemption, waste generators were forced to send virtually all SNM shipments via highway (trucks). Added benefits to the customer were seen in reduced life-cycle project costs as a result of rail transport.

PCB Acceptance and Disposal

In October 1999 Envirocare began accepting for disposal all Polychlorinated Biphenyls (PCBs) deregulated under the PCB Mega-Rule. These new EPA PCB rules provide greater flexibility in PCB waste disposal options enabling expanded radioactive PCB acceptance and disposal capabilities. Envirocare sought approval from the State of Utah to implement the EPA changes at the Clive Facility. The result is Envirocare can now dispose of low level radioactive PCB contaminated materials in the company’s low level radioactive waste cell, while Subtitle C remediation (mixed PCB radioactive waste) will be disposed in Envirocare’s mixed waste cell. Recent enactment of new EPA PCB rules that provide greater flexibility in PCB waste disposal options has enabled these expanded radioactive PCB acceptance and disposal capabilities. Envirocare sought approval from the State of Utah to implement the EPA changes at the Clive facility. Although the DOE was the first to utilize this new service, it is expected to be widely used by nuclear power station decommissioning projects.

Envirocare is the only licensed facility that can accept PCB waste regulated for disposal under 40 CFR 761 that also contains source, special nuclear, or by-product material subject to the regulations under the Atomic Energy Act of 1954, as amended, or naturally occurring or accelerator produced radioactive material. The EPA requires that generators with such materials consider both its PCB properties and its radioactive properties. Such waste may be received and disposed in the Envirocare low level cell, providing that the materials meet the requirements of Envirocare’s Radioactive Material License. Typical PCB/radioactive waste in this category is wire or cable plastic insulation; radio, computer or television casings; laminate furniture; applied dried paints, varnishes, waxes and other coatings or sealants; caulking and other non-liquid PCB bulk product from shredding of appliances from which PCB small capacitors have been removed. PCB remediation waste encompasses soil and gravel, dredged materials, sludges, and concrete and/or wood floors or structural elements.

Large Debris Disposal

Envirocare has begun to accept large equipment and debris labeled “over-size debris” at the Envirocare facility. In the past, Envirocare was only able to dispose of debris which was greater than 10”x8’x8’ on a limited basis in the mixed waste cell, such as solidified monoliths.

Recent service expansions now include the ability to accept large equipment such as pumps, generators, tanks, concrete blocks, etc. for disposal in the low-level cell. With the weight and dimensions of a given piece of oversize debris, each project is specifically engineered for placement in the disposal cell. Final disposal is accomplished with a grouting procedure using a flowable fill technology called Controlled Low Strength Material (CLSM). To date, Envirocare has received large debris objects weighing up to 100,000 pounds.

Remote/Point of Generation Sampling

For those types of waste which require particular worker-protective training and procedures, Envirocare can now send personnel who are specially trained to the site of waste generation to participate in a procedure called Remote Sampling. Envirocare must sample incoming waste to verify that it conforms to the waste’s Preshipment characterization. Remote sampling provides an alternate to sampling at the disposal site on receipt and can significantly improve the timeliness of waste disposal. This process was first successfully accomplished in fall 1999.

In this process, waste is accepted prior to leaving a generator’s site and serves to identify and manage unique waste before they are delivered to the Clive facility. In this manner, unexpected disposal delays are eliminated. Remote sampling also reduces the time associated with Preshipment waste sampling by involving personnel of both the generator and disposal facility. Additionally, the process maintains the principles of ALARA by eliminating double handling of waste and minimizing the attendant risk of exposure to the environment.

CONCLUSION

Radioactive waste disposal needs are undergoing continual change. Envirocare continues to evaluate and reevaluate needs and demands of the market. As new and more complex disposal problems are encountered, Envirocare will continue to make changes to existing Waste Acceptance Criteria and methods of operation. It is Envirocare’s mission to remain a leader in an ever-changing industry. As evidenced by the four major changes outlined herein, Envirocare has, and will continue to, see opportunity in a rapidly changing market.