

NUCLEAR PLANT IN SOUTHEASTERN UNITED STATES

Turning Liquid Waste into Solid Money Savings using QUIK-SOLID®

PROJECT BACKGROUND:

A nuclear plant located in southeastern United States had to dispose of approximately 7,000 gallons (26,488 L) of liquid sludge that resulted from aggressive preventive maintenance activities. The plant stored the watery sludge in B-25 boxes (90 ft each). The slightly contaminated waste consisted of free phase oil, grease, water, dirt and resin fines, and registered very low radioactivity levels. This waste presented two potential disposal problems. First was the liability associated with handling and transporting liquid wastes. The second problem was that liquid wastes are often more costly to dispose of than solid wastes. The disposal options for this waste were further complicated due to the oil and isotopic content. Personnel made several unsuccessful attempts, including evaporation and fluids separation, to reduce the volume of sludge. They finally determined that incineration was the best disposal technology available, though the costs to incinerate the waste were prohibitive.

THE SOLUTION:

CETCO's QUIK-SOLID® is a granular polymer that rapidly absorbs and retains large volumes of aqueous solutions, including low-level radioactive sludge, decontaminated wastewaters and contaminated soils with excess liquids. Having been successfully bench-tested in other applications, it was determined that QUIK-SOLID®'s superior quality and proven effectiveness could be readily adapted for this application. The plant was able to add QUIK-SOLID® to the waste in the existing B-25 boxes without any special mixing equipment. QUIK-SOLID® had a minimal effect on the sludge's overall weight and volume, and left the waste in a stable, gelatinous form that was safe to handle and transport. The sludge was then taken to GTS/Duratek, a low-level waste incineration facility where QUIK-SOLID® is approved as waste-solidifying agent. Each box required approximately two bags (88 lbs or 39.92 kg) of QUIK-SOLID® for solidification. The watery sludge was quickly transformed into a gelatinous solid that could be pumped with a positive displacement pump or safely shoveled out of the B-25 boxes into drums for survey or disposal. The solidified sludge was observed on-site for 60 days. In that time, only a small amount of free phase oil accumulated on the surface of each box. The oil did not pose a problem at the incineration facility.

CONCLUSION:

In the end, the 7,000 gallons (59,750 lbs or 27,102.6 kg) of watery sludge was solidified with approximately 1,400 lbs (635.04 kg) of QUIK-SOLID®. Shipping a solid eliminated the plant's liability that results from potential liquid waste spills during transport. Also, the plant paid lower handling and disposal costs for the solid. At the incineration facility, 30 percent (17,925 lbs or 8,130.79 kg) of the waste was deemed suitable for the GTS/Duratek "Green Is Clean Program," and disposed of via more conventional means at \$1.20/lb (\$0.54/kg). The remaining 41,825 lbs (18,971.82 kg) of solidified waste were sent to the incinerator at \$5.83/lb (\$2.64/kg). Had the 59,750 lbs of sludge remained in its original liquid state, incineration costs would have been \$12/lb (\$5.44/kg). QUIK-SOLID® saved the company more than \$500,000 in disposal costs.

CETCO provides a complete range of vapor mitigation and remediation products for soil, water, and sediment.

