

Michigan County Seeing Good Results in Using Septic Waste at Landfill



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Smiths Creek Landfill in St. Clair County, Mich., has been utilizing a unique approach to managing municipal solid waste (MSW) by using human fecal waste from residential septic tanks to eliminate waste and create energy, and hoping to change the way MSW is managed in the U.S.

Together with legislative, regulatory, and industry partners, in 2008 St. Clair County launched a full-scale bioreactor landfill Research, Development, and Demonstration Project (RDDP). Leveraging the environmental engineering expertise of the county's consultant CTI and Associates Inc., the county launched the RDDP to become the first septage bioreactor landfill in the United States.



CTI and Associates Inc. based in Novi, Mich., determined that injecting septic waste into the landfill would significantly speed up the decomposition of the waste, allowing the landfill to remain in service for much longer.

"The addition of residential septage to the waste mass has resulted in the accelerated degradation of the organic fraction of the waste, which in turn has led to increased biogas production and accelerated waste settlement," says Matthew Williams, landfill and resource recovery manager for Smiths Creek

Landfill. "These changes allow more landfill gas to be captured and converted to renewable energy, and make it more economical to reclaim the recovered airspace as additional waste volume."

Williams continues that in the long term, the waste mass in the landfill is stabilized much faster than in traditionally-operated landfills, thus reducing future risk to the environment. This process will significantly reduce the costs associated with long-term post-closure care activities.

"Treating the septage within the landfill reduces the likelihood of contamination of County surface waters through land application," says Williams. "Many smaller-sized waste disposal facilities in the US with smaller volume of waste receipt do not opt for active gas collection. The septage bioreactor methodology would expedite gas generation and potentially support financial investment for gas to energy recovery at those facilities."

By using the landfill gas to generate renewable energy, St. Clair County is turning methane into power while reducing the community's dependence on outside sources of fuel, according to CTI's website. The septage bioreactor RDDP is producing nearly 40 percent of the landfill gas for the entire facility. Due to the additional landfill gas from the RDDP, the landfill's overall gas quantity and quality will be sufficient to support two electric generators generating up to 3.2 megawatts (MW) or electricity more than enough energy to power 1,900 homes, the website says.

According to a 2013 publication from the Michigan Department of Environmental Quality, the facility had "accepted an average of 4,000 gallons per day of residential septage, but has an overall capacity to receive up to 23,000 gallons per day." At that time, more than 4.2 million gallons of septic waste had been processed through the bioreactor.

Concerns have been raised from the public about odors while managing the septage and facility operators have expressed concern regarding worker's health and safety.

"The project at Smiths Creek Landfill has clearly demonstrated these issues are effectively managed and minimized," says Williams.

Current Michigan State Senator Phil Pavlov and former State Representative Dan Acciavatti sponsored legislation that allowed Smiths Creek Landfill to use human waste from septic tanks to enhance the solid waste decomposition process.

"It made sense," said Pavlov in a statement. "All you had to do was look at the science."

Pavlov said he is pleased with the results. "It was a sound approach," he said. "There was an economic development tool in play. The water would get cleaner. A strong community benefit was important. It was the right thing to do."