

Aesthetic Impact Mitigation at a Sugar Spill Site in a Residential Setting in Louisiana

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Norfolk Southern Railway Company (NSRC) ships a variety of products ranging from perishable goods to hazardous materials. A release does not always involve regulated materials as evidenced by sugar spills that occurred in New Orleans, Louisiana over several months. The degradation of perishable materials with a high organic content can result in aesthetic impact to the environment. Aesthetic impact can include pungent odors and visually unpleasing conditions. Odor impact can be affected by ambient weather, wind direction, atmospheric conditions, amount of material, and sub-surface spill conditions. A novel and cost-effective solution for aesthetic impact mitigation and odor control is presented.

In Louisiana, sugar was released from railcars near a rail yard located near a residential community. The fermentation of the sugar resulted in an unpleasant odor, which was reported to the Louisiana Department of Environment Quality (LDEQ). Once LDEQ notified Norfolk Southern (NS) of the odor complaint, NS mobilized their emergency response contractor to inspect and characterize the material. The treatment options were then evaluated. Mechanical removal (excavation) was not feasible due to the presence of mainline tracks. The sugar was characterized to have a high specific gravity (greater than water) and high kinetic viscosity. As a result, the sugar existed as sub-aerially exposed and odoriferous syrup. A sample of the fermented sugar was collected and a bench scale test was conducted to evaluate treatability options, including use of steam and hot water.

The testing was conducted in order to evaluate the ability to separate the sugar from the surface soil without creating further odor. A hot water flush and an environmental-friendly surfactant were tested in the field to see if the hot water alone was as effective as the surfactant. The hot water flush was determined to be as effective as the surfactant and did not effervesce like the surfactant, which could have potentially caused additional aesthetic issues with surrounding property owners.

A full scale hot water flush treatment was implemented. Several passes of the hot water flush were conducted until the viscosity was sufficiently reduced and the odor was eliminated. No further odor complaints have been reported to LDEQ.