ENVIRONMENTAL CONSULTING CASE STUDY

Solving Landfill Odour Complaints Through Survey Analysis

CHALLENGE

Community complaints were filed regarding the odour and health impacts associated with a large body of water contaminated by landfill leachate.

SOLUTION

Our team assessed existing odour data from locations surrounding the waste management facility as well as onsite and conducted an odour survey program.

RESULT

Based on the odour surveys, the odour source, its cause, and contributing factors were identified, guiding management strategies to reduce impacts on the community.

Community complaints were filed regarding the odour and health impacts associated with a large body of water contaminated by landfill leachate. Air monitoring has also shown elevated concentrations of hydrogen sulfide in the community. Thus, an odour investigation into relation to activities at the solid waste disposal facility was required. As local experts, Trinity Consultants Australia was contracted to provide odour services throughout the investigation.

Our team assessed existing odour data from locations surrounding the waste management facility as well as onsite. Existing data analysed included hydrogen sulfide measurements on site, volatile organic compounds (VOC) measurements on site, pond water and sediment analysis, and waste types disposed of at the landfill. Other data analysed included community and staff statements, associated complaints or observations, and meteorological data from the site weather station. Additionally, the consultants conducted an odour survey program to analyse the current situation, and potential sources off-site were also assessed to provide further evidence in verifying the source of the odour experienced by the community.

The odour survey methods were based on the dynamic plume method of BS EN 16841-2:2016. The odour survey team completed an olfactometry screening according to AS/NZS 4323.3 criteria before successfully completing post-screening using the St. Croix Sensory odour sensitivity test. During each survey assessors tracked odour detection, type, intensity and hedonic tone. Monitoring of wind, H_2S, samples of volatile organics for analysis at a NATA accredited lab, while volatile sulfur compound samples were analysed by another laboratory.

Based on the odour surveys conducted, the data was assessed, along with the knowledge and experience of Trinity staff, and the odour source, its cause, and contributing factors were identified. Key factors were rainfall, surface capping, the transport of sulfides and organic compounds in both liquid and gaseous media, and chemical transformations. These findings contributed to the necessary odour management to reduce the odour impact in the affected area communities.

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