

TECHNOLOGY SHEET

BIOCATALYTIC TREATMENT OF ODORS

PRD TECH, Inc., 1776 Mentor Avenue; Suite 400-A, Cincinnati, OH 45212, U.S.A.

Tel: (513) 673 3583; Fax: (513) 984 5710; Email: rgovind837@aol.com

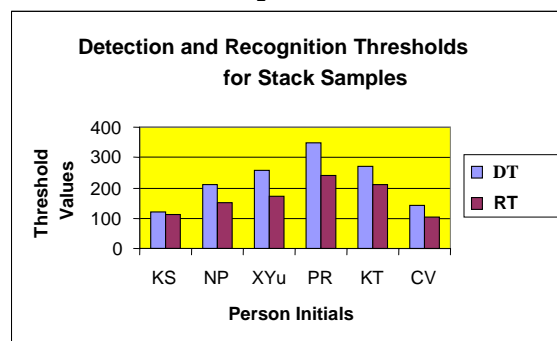
Biofiltration has been shown to be an effective technology for odor control and has been successfully applied in many industrial and municipal installations. Biofiltration is generally conducted using either naturally bioactive support media, such as peat, compost, soil, wood chips, etc., referred to as a “biofilter” or synthetic support media, known as a “biotrickling filter”. Compost biofilters suffer from large cross-sectional areas, requiring very large footprints, shallow depths of compost (usually limited to about 1-2 m), gas bypassing, clogging of the compost due to biological growth, and eventual consumption of the available nitrogen and phosphorus in the compost media, requiring partial or total media replacement.

Synthetic media biotrickling filters are significantly smaller in size, cheaper to install and operate, can handle high concentrations of organic and/or hydrogen sulfide, and are significantly more effective in odor control than compost biofilters. PRD Tech, Inc. has pioneered the use of biotrickling filters for odor control, with the development of a high surface area support media which is specially treated to allow active microorganisms (bacteria) to attach to the surface to form highly effective biofilms. The operating costs for biotrickling filters are significantly lower than chemical oxidation.

Biocatalysts are effective in accelerating the biodegradation rates in biotrickling filters, resulting in smaller size, reduced gas retention times, and ability to handle higher contaminant loading. Recently PRD Tech has tested a new biocatalyst, known as “**BIO-SPEEDUP**”, which has been demonstrated to significantly reduce odor levels to non-detect (human nose) levels.

The **BIO-SPEEDUP** was tested at a sludge treatment facility where heat treatment was being used to dewater the sludge, before thickening, centrifuging and eventual landfilling. Significant odorous compounds were being formed during sludge heat treatment, and the raw and treated sludge storage tanks were the main sources. Headspace air from these tanks were treated in PRD Tech’s Biotrickling filters using the **BIO-SPEEDUP** to accelerate the biotreatment rates in the Biotrickling filters. The Detection and Recognition Thresholds, analyzed by human odor panel, are shown in Figure 1.

Figure 1. Detection and Recognition Thresholds for Stack Samples.



In comparison, Detection and recognition Thresholds for the inlet gas samples (entering biotrickling filter) were: DT = 100,300, RT = 95,600.

Table 1 summarizes the results of gas samples taken from two stacks, which were exhausting treated gas from two biotrickling filters, using the **BIO-SPEEDUP**, each biotrickling filter operating at a gas flow rate of 30,000 cfm.

Table 1. Summary of Detection and Recognition Threshold Values from Stack Samples taken over a 5 week time period.

Sample Set Number	STACK “D”	STACK “E”
Set # 1	DT = 175 RT = 150	DT = 192 RT = 134
Set # 2	DT = 98 RT = 36	DT = 512 RT = 207
Set # 3	DT = 122 RT = 46	DT = 119 RT = 44
Set # 4	DT = 92 RT = 34	DT = 73 RT = 27
Set # 5	DT = 59 RT = 21	DT = 168 RT = 64

BIO-SPEEDUP can be used to treat organic and inorganic odors from wastewater treatment plants, anaerobic digesters, lift stations, and other sludge handling operations. Biotrickling filters are compact, with low gas-phase pressure drop, and are capable of delivering high treatment efficiencies at very cost-effective investment and operating costs.