ODOR CONTROL TECHNOLOGY SUMMARY

Technology: ACTIVATED SLUDGE DIFFUSION

Description:

Activated sludge diffusion is a relatively common technology that involves collecting odorous air, directing it to the suction side of aeration blowers, and diffusing it into activated sludge basins. The odors are removed by a combination of mechanisms including absorption, adsorption, condensation, and biological oxidation in the basins.

The process is relatively simple to implement in new designs or where blowers and diffusers already exist.

There are a number of plants in the U.S. using this process with excellent results with moderate to high strength odors. Typical odor removal efficiencies are reported in the 95 – 99% range, with hydrogen sulfide removal efficiencies exceeding 99%.

FRP Fan with inlet filters and moisture trap

Advantages include low capital and operating costs (if blowers and diffusers already exist), no chemical handling or storage, no spent media disposal, and the process can

handle wide fluctuations in hydrogen sulfide and other reduced sulfur compound loadings.

Disadvantages include potential corrosion of unprotected steel blower inlet filters and piping, and a build-up of a "tar-like" substance on internal components of the blowers was reported at one plant. These disadvantages can be minimized or eliminated through use of inlet components constructed from corrosion resistant materials such as FRP or stainless steel. The "tar-like" substance can be removed by routine steam cleaning or use of a grease-cutting solvent. Most plants have not had any problems with corrosion of blowers despite many years of service.

Applicable Treatment Processes:

All liquid treatment plant processes, sludge thickening, sludge dewatering.

Typical Design Criteria:

Air flow:	must ensure air flow does not exceed demand of aeration tanks

Major Design Considerations:

a. Minimize treated volumes

Volumes can be minimized by covering individual sources, as opposed to treating entire room volumes, etc.

b. Materials

Utilize corrosion-resistant materials such as FRP or stainless steel for blower inlet components. Blowers should be installed with inlet filters and moisture traps may be necessary.

c. Diffusers

Fine bubble diffusers will provide higher odor removal efficiencies than coarse bubble diffusers, particularly with high hydrogen sulfide loadings.