Sulfide oxidation in a biofilter

Observed hydrogen sulfide uptake rates in a biofilter treating waste air from a pig farm were too high to be explained within conventional limits of sulfide solubility, diffusion in a biofilm and bacterial metabolism. Clone libraries of 16S and 18S rRNA genes from the biofilter found no sulfide oxidizing bacteria but several fungal families including Trichocomaceae. A positive correlation was found between the presence of mold and sulfide uptake. However there have been no reports on fungi metabolizing hydrogen sulfide. We hypothesize that the mold increases the air exposed surface, enabling higher hydrogen sulfide uptake followed by oxidation catalyzed by iron-containing enzymes such as cytochrome c oxidase in a process uncoupled from energy conservation.