

## **BIOLOGICAL WASTE AIR PURIFICATION SYSTEMS IN LIVESTOCK OPERATIONS - REQUIREMENTS AND LIMITATIONS**

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Waste air purification systems are common devices used to treat contaminated gases released by many industrial processes. Physical based gas purification systems (i.e. cyclones, thermal and catalytic combustion) are well known techniques for reducing environmentally harmful agents such as particulate matter and noxious gases. In contrast to these working principles, biological waste air purification systems such as biofiltration and bioscrubbing are using the metabolizing capacities of microorganisms to reduce primarily odorous substances from the waste air. Due to enhanced environmental protection demands in Germany, owners of livestock operations have to increasingly install such biological waste air purification systems. Depending on the chosen technique, the reduction efficiencies could be quite different. This is especially important if reductions are equally required for odour, ammonia and dust. Therefore, the combination of different purification principles are favoured. However, on the other hand due to the microbiological character of the mentioned purification systems it cannot be fully excluded that harmful microorganisms are released from such devices into the ambient air. In field studies temporarily occurring cumulations of bacteria, bacterial products and fungi were detected after air treatments. For example, for proinflammatory effective endotoxins, an enrichment of nearly 180 % was observed in individual clean gases. This presentation will give an overview about the recent developments of biological waste air purification systems in Germany and will exemplary show which general limitations and unsolved questions are linked with such techniques.