

The Microbial Killing Effect of Airborne Ozone

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Abstract.

Microorganisms of the indoor air and surfaces represent a concern, mainly in the pharmaceutical industry, healthcare facilities and food industry. Microorganisms exist all around us, both in the surrounding air and on the surfaces. They may cause respiratory infections and other diseases, contaminate food, drugs, medical equipment and other products. Today we deal with this problem by disinfecting or sterilizing surfaces, to ventilate and by filtrating the indoor air but without total success. Ozone has since the beginning of the 20th century successfully been used to purify drinking water. The knowledge of the effect of ozone in air against microorganisms is poor. The purpose of this degree project was to get a deeper knowledge of the effect of airborne ozone during different conditions against microorganisms. The study has shown a good effect of airborne ozone and the importance of the air humidity. It shows that an almost total killing effect of some microorganisms in high humidity can be achieved already at low concentrations of ozone. The experiments also show the sanitizing effect of ozone of a heavily contaminated chamber.

The overall conclusion of this work is that ozone is a potent decontaminating agent and has a good potential for use as an agent for disinfection and sterilization.

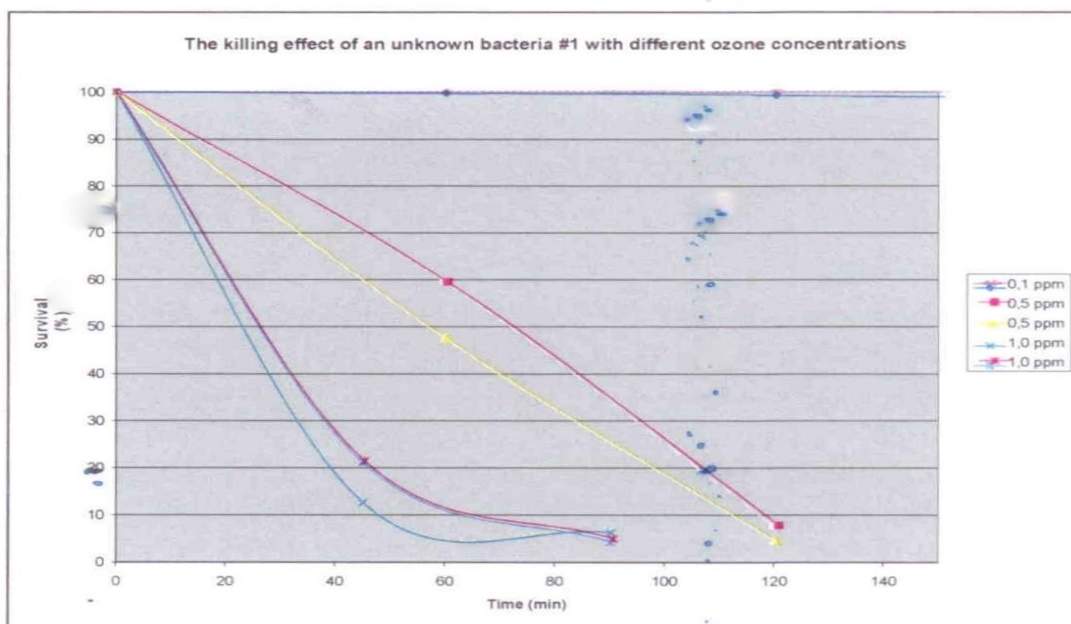


Figure 6.1.1. Reduction of the unknown bacteria #1 at different ozone concentrations