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.