

THE STUDY OF THE STERILIZATION AND CLEANING OF THE INDOOR AIR IN HOSPITAL/CLINIC ROOMS BY USING THE ELECTRON WIND GENERATOR

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Exposure to aerosols may be especially hazardous in the clinics and hospitals. Hence, it is very important to clean the air in such buildings, especially in the surgery rooms. The purpose of the reported study was to estimate the decrease in the concentration of particulate and biological aerosol in the selected rooms due to the work of the electron wind generator (EWG). It is an air movement and air purification device using a sophisticated combination of electrode topology and specially designed high voltage power supply. The best results were obtained in small rooms, e.g. in a 3-person hospital sick room. In such rooms, with only sporadically opened windows, the concentration of bacterial aerosol after two hours dropped by half and after 10-26 hours of EWG operation, reached 15% of the initial level. The concentration of fungal aerosol after a few hours of the purifier dropped to 30-20% of the initial level. In hospital rooms with a volume of 77 m³ it is possible to reduce the concentration of bacterial aerosol by up to 70% and fungal aerosol by half. However, in the hospital operating room with a cubic capacity of 150 m³ and having efficiently working ventilation system, the effect of the EWG device on microbiological air quality is low. The EWG purifier reduces the concentration of all species of bacteria present in the tested rooms, but particularly sensitive to sterilization with this device seems to be Gram-positive spores. The EEC purifier also reduces the concentration of airborne dust particles (PM₅)-in the case of a small room with a volume of 30-40 m³, by half. Currently, our work is aimed at reducing both the strong sparking occurring after a few hours of operation of this device and ozone emission.

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