

## عنوان مقاله:

Removal of Microorganisms by UVC Radiation From the Air of Hospital

## محل انتشار:

مهندسی بهداشت محیط, دوره 9, شماره 1 (سال: 1401)

تعداد صفحات اصل مقاله: 10

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## خلاصه مقاله:

Currently, UVC radiation is used in hospitals to eliminate microorganisms and reduce adverse health effects in operating rooms (ORs) and protective environment rooms (PERs). The purpose of this study was to investigate the effect of UVC irradiation on bioaerosols in ORs and PERs. This experimental study was performed in ORs and PERs in a hospital. Bioaerosols were evaluated according to the National Institute for Occupational Safety and Health (NIOSH) standard (No. ۰۸۰۰). The samples were collected from indoor air of rooms before irradiation and after UVC (۲۵۴ nm) irradiation for ۲۰ and ۴۸۰ minutes. The sample size of the study was determined to be ۴۳۲ (۲۱۶ fungi and ۲۱۶ bacteria). The difference between the mean concentration of bioaerosols in the UVC radiation at two intervals (۲۰ and ۴۸۰ minutes) was significant, which indicates a decrease in the concentration of bioaerosols by increasing the duration of UVC radiation. Some bacteria, such as group B Streptococcus, Lactobacillus, and Listeria, were entirely killed after ۲۰ minutes of irradiation; however, complete removal of the bacteria such as Staphylococcus pneumoniae and Staphylococcus saprophyticus was observed after ۴۸۰ minutes of UVC irradiation. Fungi, such as Alternaria, Stofelim, and Mucor had a ۱۰۰% reduction after ۲۰ minutes of UVC irradiation, and Rhizopus and Aspergillus fumigatus showed a ۱۰۰% decrease after ۴۸۰ minutes of UVC irradiation. Other isolated fungi such as Cladosporium, Penicillium, Aspergillus niger, Rhodotorula, and Alternaria showed a decrease of ۷۵%-۹۸.۷۸%. The ultraviolet (UV) sensitivity of bacterial and fungal bioaerosols depends strongly on their type. The results from this study may offer an important understanding of the control of indoor bioaerosols using UVC irradiation and help abate the environmental impacts of airborne microbes.

## کلمات کلیدی:

UVC radiation, Bio-aerosol, Hospital, Operating room, Protective environment room

