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NIOSH 0800

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CSR

CFU/m<sup>3</sup>

CSR

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ICU

CFU/m<sup>3</sup>

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.....

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CFU/m<sup>3</sup> ACGIH

CFU/m<sup>3</sup> ACGIH









ICU / CFU/m<sup>3</sup>  
/ (CFU/m<sup>3</sup> L

yy / (CFU/m<sup>3</sup> L  
" / (CFU/m<sup>3</sup>)

NIOSH  
yy "

( yy CFU/ m<sup>3</sup> L  
ICU : "

yy- y CFU/m<sup>3</sup>  
ICU CSR

CSR yy-  
"fl ) ICU

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fl L  
: L  
" : "fl"

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fl L  
: L  
" : "fl"

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fl L  
: L  
" : "fl"

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fl L  
: L  
" : "fl"

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fl L  
: L  
" : "fl"

CFU/m<sup>3</sup>  
yy- CFU/m<sup>3</sup> yy-

"fP=yy/yy L  
fl L

Scheffe  
ICU

" fP=yy/yy )  
ACGIH fl L

fl yy CFU/m<sup>3</sup>  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

fl L  
: L  
" : "

ICU CFU  
"

ICU CFU  
"

ICU CFU  
"

ICU CFU  
"

ICU CFU  
"

ICU CFU  
"



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در سال ۱۳۹۱ با کد ۴۵۷۹ است که با حمایت دانشگاه علوم پزشکی و خدمات بهداشتی تهران انجام شده است.



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## Evaluation of Bioaerosol in a Hospital in Tehran

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### Abstract

**Background and Objectives:** Microorganisms are the agents that can cause disruption in the biochemical and physiological reactions through mechanisms such as infection, allergy or toxic properties in the case of entering human body and if the body's immune system be unable to destroy and eliminate biological agents, illness and even death will occur. This study evaluates air pollution(aerosol and bioaerosol) in different parts of a hospital in Tehran.

**Materials and Methods:** We assessed and evaluated bioaerosols by applying 0800 NIOSH method using Bacterial sampler and specific cultures for bacteria and fungi separately in ICU (intensive care unit), Pathology laboratory, Operating room, Recovery, and CSR (Central Service Room) of a hospital.

**Results:** The assessment showed that the average density of bacteria in the hospital studied was in the range of 1226.88 - 294.47 CFU/m<sup>3</sup>; the highest density was observed in the CSR and the lowest density measured was in the operating room. The bacteria identified included gram-positive bacillus (50.6%), Staphylococcus epidermis (20.29%), Staphylococcus Saprophyticus (2.6%), Staphylococcus aureus (7.03%), other Staphylococcus (5.9%) and Micrococcus (13.43%). Moreover, it was found that the average density of fungi was in the range of 0-188.45 CFU/m<sup>3</sup>; the maximum density in ICU and the minimum density in operating room and recovery room. The fungi identified included Aspergillus flavus (31.65%), Aspergillus fomicatus (25.17%), Aspergillus niger (15.82%), and penicillium (27.33%) .

**Conclusion:** Comparison of bacteria density in different parts of the hospital with the recommended limits of ACGIH (500 CFU/m<sup>3</sup>) showed that density exceeded the limits in all units except in operating room whereas, density of fungi was less than the recommended limits of ACGIH (100CFU/m<sup>3</sup>) in all units of hospital.

**Keywords:** Bioaerosol density, Hospital, Fungi

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