

Ocular surface and microorganisms in office work: is there a possible hazard ?

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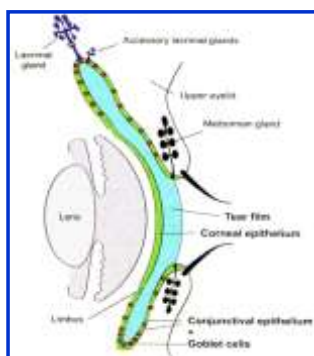
TEAR FILM LAYERS

- mucous (inner)
- watery (intermediate)
- lipidic (external)

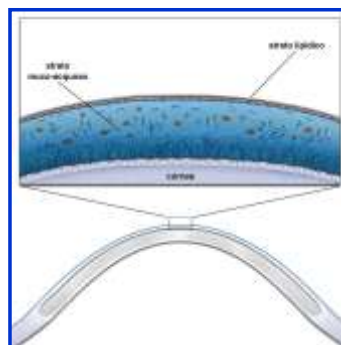
FUNCTIONS

- antimicrobial
- hydrating
- flushing action
- optical
- oxygen uptake
- lubricant

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Immune diseases causing tear film alterations:

- Sjogren syndrome
- Rheumathoid arthritis
- Lupus eritematosus
- Hashimoto tyroiditis
- Cushing disease
- Seasonal allergies

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Treatments causing tear film alterations:

- busulfan
- azathioprine
- metothrexate
- prednisolone
- ciclophosphamide

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- QUANTITATIVE TEAR FILM TESTS:**
- Schirmer tests I and II
 - Jones test
 - Tear film turnover
 - Mucous layer test
 - Lipid layer test

- QUALITATIVE TEAR FILM TESTS:**
- Break Up Time (B.U.T.)
 - Non Invasive BUT (N.I.B.U.T)
 - Tear osmolarity
 - Tear Ph
 - Tear dilution test
 - Tear evaporation test
 - Lactoferrin concentration test
 - Lysozime concentration test

According to an on-site investigation reported in literature, bacteria and fungi were found on both:

- PC workstations
- Operators' conjunctival sac

Microbial contamination in a CAD/CAM office

WORKSTATION C.F.U.	PATHOGENIC SPECIES	
n° 4 (worst)		
✓ body >1000	Aspergillus sp.,	Candida alb., Staphylococcus aureus
✓ keyboard 600	Enterobacter cloacae,	Candida sp., Staphylococcus aureus
✓ screen 450	Aspergillus flavus,	Fusarium sp., Staphylococcus aureus
n° 3 (best)		
✓ body 200	-----	
✓ keyboard 120	-----	
✓ screen 150	Candida sp.	

In work environments like:

- hospitals
- farms
- laboratories
- abattoirs
- garbage collection
- water depuration services
- food industry

OCULAR INFECTION RISK COULD BE VERY HIGH





- “Cold and flu viroses can survive on surfaces for up to 72 hours”
- “An office can become an incubator”

Dr. Charles Gerba
Microbiologist
University of Arizona

“The superhighways for bacteria are hands and the surfaces we touch”

Prof. Sally Bloomfield -
UK

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CONCLUSIONS

1. In every-day life ocular infections are very common and many of them could have an occupational origin
2. Occupational physicians, industrial hygienists and ophthalmologists, as well as employers and employees, seem not to be aware of the risk

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3. Risk assessment routines should include ocular infection hazard in highly exposed populations
4. Operators affected by diseases causing tear film alteration should be considered as hypersusceptible
5. Research and on-site investigations on prevalence and severity of work-related ocular infections in high-risk situations is needed

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