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Report from:

Dept.of Clin.Microbiology,Rigshospitalet University Hospital Copenhagen  
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**Micriobiological bacterial examination of the "Aqua Wall system"**

- Evaluation of possible health care risks

Conditions:

Department of Clinical Microbiology Rigshospitalet afsn.9301 was requested to examine possible overgrowth of contaminating bacteria including pathogenes as Legionella sp. in disinfected water from the Aqua Wall system.

Materials and Methods:

Two new Aqua Wall systems (A&B), was set up in the "routine clinical microbiological laboratory for isolation of human fecal enteric bacteria".

Cultures was performed from the water day 0 before disinfection . Disinfection of the water followed immediately after this culture.

Aqua-Wall system A was added chloramine to a final concentration of 0.1 % and system B was added chloramin to a final concentration of 0.05%.

Examination of bacterial growth in water was carried out in the period :4<sup>th</sup> of June to 3<sup>rd</sup> of Juli - 1998.

3 samples of 100 ml water from each system (A&B), was examined for growth on agar-plates enriched by a)serum and b)brain-heart-infusionmedium and selective Legionella agar plates from The State Serum Institute. All media was , incubated at 22<sup>o</sup> C and 37<sup>o</sup> C for 96 hours

The 100 ml water was filtrated through a sterilized Milliflex 100 ml Funnel, HAWG 0.45µm membrane cat.no. MXHAWG124, lot no. F7NM34432, and growth substrate was added according to the manufacturer.

Colony forming units was counted for each of the agarplates.



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**Results:**

Installation A and B, date 06-04.98  
Lab.Tech.Anette Gregersen

| Date            | Aquawall A 0.1%<br>Chloramine:<br>Legionella sp. | CFU/100ml:<br>Mean of a&b | Substrate | AquaWall B<br>(0.05% Chl) :<br>Legionella sp. | CFU/100 ml:<br>Mean of a&b |
|-----------------|--|---------------------------|-----------|---|----------------------------|
| 06-04-98 (zero) | Neg  | 50                        | a&b       | Neg   | 925                        |
| 06-08-98        | Neg  | 25                        | a&b       | Neg   | 5                          |
| 06-09-98        | Neg  | 0                         | a&b       | Neg   | 10                         |
| 06-10-98        | Neg  | 0                         | a&b       | Neg   | 0                          |
| 06-11-98        | Neg  | 0                         | a&b       | Neg   | 10                         |
| 06-12-98        | Neg  | 0                         | a&b       | Neg   | 0                          |
| 06-16-98        | Neg  | 25                        | a&b       | Neg   | 10                         |
| 06-18-98        | Neg  | 15                        | a&b       | Neg   | 20                         |
| 06-22-98        | Neg  | 0                         | a&b       | Neg   | 20                         |
| 06-24-98        | Neg  | 0                         | a&b       | Neg   | 10                         |
| 06-29-98        | Neg  | 0                         | a&b       | Neg   | 0                          |
| 07-03-98        | Neg  | 20                        | a&b       | Neg   | 0                          |

All isolates was examined in API –system for identification

**Conclusion:**

1. All samples remained negative for human pathogenic bacteria in the test period, including Legionella,- Pseudomonas aeruginosa- Aeromonas and Bacillus species
2. Only normal occurring Gram negative harmless waterlike Pseudomonas species was found in low concentrations
3. A conc. of 0.1 % chloramine as well as a conc of 0.05 % chloramine in the 40 ltr volume of water in the Aqua-Wall system was sufficient to disinfect the Aqua-Wall system for at least a period of 30 days (test-period).
4. No discolour of the Aqua-Wall system was observed using the disinfectant
5. No complaints regarding bad smell or dislike were registered amongst the laboratory technicians working in the lab, during the test period. On the contrary the 3-lab.technicians spontaneously claimed that the otherwise foul smell from the routine anaerobic and fecal samples and media was reduced during the test period.

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To Whom it may concern:

Rigshospitalet 14.07.98

Summary report on microbiological safety and use of Aqua Wall system

The Aqua Wall system has been tested for 30 days (June-July – 1998) at the laboratory for clinical microbiology at Rigshospitalet, University Hospital of Copenhagen.

- Regularly cultivations from the system during test-period showed no growth of pathogenic bacteria including *Legionella pneumophila* and other *Legionella species*.
- The number of colony forming bacteria per 100 ml water remained at a very low level during the period .
- The system can be used everywhere in privacy and Hospital settings without any hazards, provided service and use of disinfectant is carried out monthly.
- The Aqua Wall system improved indoor climate and evil smelling from the routine laboratory analysis, handled in the laboratory during the test period, was minimized and reduced. These observations was given spontaneously by the three laboratory technicians working daily in the lab where the Aqua Wall was installed.

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