

Case Study

Disinfection of Hospital Laundry Using Ozone:

Microbiological Evaluation Infection Control & Hospital Epidemiology



To the Editor:

We investigated a hospital laundry system that uses ozone gas as a disinfection agent. Ozone is a powerful oxidizing agent that has been used as a chemical disinfectant for water treatment in Europe since 1893.^{1,2} The use of ozone has increased in medicine lately due to the number of microorganisms resistant to chlorine.³

The process used for washing highly contaminated hospital linen can be summarized as follows: (1) execution of one washing cycle with conventional chemical products (humidification and pre-wash), (2) one washing cycle with ozone (4 mg/L) for 15 minutes, and (3) a softening cycle. Water samples were collected using sterile 20-mL syringes. Pre-wash samples were taken after 2 minutes of agitation without any additives. Post-wash samples were collected similarly, following the final cycle with ozonized water. The samples were evaluated for the most probable number of total coliforms and *Escherichia coli* using the chromatogenic defined substrate test method (Colilert; Idexx Laboratories, Westbrook, ME).

The most probable numbers ((+ or -) SD) per 100 mL of *E coli* and of total coliforms were 1.3 (+ or -) 0.3 x 10⁴ and 3.74 (+ or -) 1.8 x 10⁵ pre-wash, and were reduced to 0.1 (+ or -) 0.1 and 1.24 (+ or -) 1.13, respectively, post-wash (each P < .0001). Thus, despite intense contamination of the rinsing water, ozone at 4 mg/L proved able to control the tested microorganisms.

Some studies have shown that many species, ie, *E coli*, *Streptococcus*, and *Bacillus*, can be inactivated by 30 seconds of exposure to an aqueous solution of ozone (0.2 mg/L).⁴ In the current study, we demonstrated that ozone used in a laundry processing system reduced by five logs the total number of coliforms and *E coli* present in hospital laundry rinsing water. However, comparative studies testing different conventional disinfectant agents are still necessary to establish the efficacy of ozone as a laundry disinfectant agent.

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