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Technical Note: 100 % Ozone-treatment System of Bath Water

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Abstract

A 100 % ozone-treatment system was very effective for disinfection of bath water. Almost no bacteria were detected after the ozone-treatment. The quality of ozonized water was sufficiently good. This system is an excellent eco-design model. The amount of consumed water and fuel were calculated to be *ca.* one-fortieth and one-forth compared with those of a usual 10 % ozone-treatment system, respectively. No remarkable difference was calculated for consumed electrical power between them.

Key Words

Ozone; Bath Water; Disinfection; *Legionella;* Eco-design Model;

Introduction

The accident caused by *legionella* in bath water is a serious social problem in our country. The formation of trihalomethane by chlorine-treatment is an important problem to be solved. It is also very important to save energy to operate the equipment. A 100 % ozone-treatment system (100 % system), in which whole water is ozonized in a short time, can solve these problems. In the case of a usual ozone-treatment system for bath and swimming pool water, only 10 % of water is ozonized. It is reasonable that the 100 % system is more effective than the 10 % ozone-treatment system (10 % system) to purify water. We report herein the 100 % system of bath water.

Results and Discussion

100 % Ozone-treatment System

The flowchart of 100 % system is shown in Figure 1. Bath water is filtered to remove hair and large suspensions by filtering apparatus 1 and filtered again to remove small size suspensions by filtering apparatus 2. Then, ozone is introduced into water by way of an ejector and then mixed. Ozone reacts with water in a reacting tower. Waste ozone is decomposed by heating to be converted into oxygen gas. Then, metal ions are removed by an activation apparatus. Finally, the ozone-treated water is returned to the bath by way of heat exchange apparatus.