LABARATORIO DE ANALISES
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REPORT

Preliminary Laboratory Test of Vortex Water Machine Purification Unit.

INTRODUCTION

A Vortex Water Machine purification unit, which purifies water by an ozone/UV-process and activated carbon filtration, has been tested in a short time experiment.

The Laboratory test was conducted in February 1997, comprising three trials, with alteration in faecal contamination and different amount of particles in test water; the second trial took place 24 hours after the first one and the third 48 hours after the second one.

EXPERIMENTAL CONDITIONS

- Micro biological test water was prepared adding a suitable amount of seed containing coliforms, thermotolerant coliform bacteria, heterothrophic bacteria (CFU) and sulphite reducing spore forming clostridia to tap water (sodium thiossulfate was also added).

- Test water for physical chemical determinations was prepared adding suitable portions of humic coloured water to tap water. In order to investigate the oxidation of chloroganic substances, chlorofoam was also added.

DISCUSSION

The level of bacterial pollution to the water used in the experiment was higher than normally observed in superficial water.

These preliminary trials conducted in the Laboratory revealed that the number of total coliform bacteria was completely removed; thermotolerant coliforms were also removed.

No heterothrophic bacteria (CFU) were detected in the outlet water in all trials.

Sulphite reducing spore forming clostridia was incorporated as a target micro-organism, because the spores can survive in water over a much longer time than thermotolerant coliforms and they are resistant to high temperature (80°C); none of these species were detected in outlet water.

The concentration of humic matter in the test water is illustrated by the colour units and total organic carbon (TOC). The water treatment reduces the colour to values under the limit established at Portuguese law: the reduction of total organic carbon was in average 80%.

The initial concentration of chloroform derivatives was moderated and the concentration in the outlet water was close to the detection level; the reduction of chloroform level was over 99%.

Summary of University of Costa Rica Tests

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By this means I am pleased to inform you that your machine for water purification and filtration has demonstrated great efficiency in the removal of very heavy loads of different kinds of enteropathogenic bacteria, as well as of a bacterial stock associated with infections of the upper respiratory tract in children.

Similar results were obtained in all of the experiments performed with the equipment. The system produced water with optimal micro and macroscopical characteristics for human consumption.

Sincerely,

Dr. Marcela Vives
Clinical Chemical Microbiologist
Researcher, Infection-Nutrition Department
Institute for Health Research (INISA)
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Results:

Chart 1 summarizes the results of the previously described experiments. It can be observed that in all cases, high bacterial concentrations were used to contaminate the water to be purified and filtered (well above the concentration that can be found in regular tap water). The VS was able to reduce the bacterial load by 100% (to 0) with all of the bacteria used.

Chart 1
Vortex Microbiological Analysis
Vortex Water Purification System 1996-97 .A.

Bacteria	Initial Concentration (c.f.u[1]/ml)	Post-purif. Concentration (c.f.u./ml)	% of Reduction
E. Coli	$10x10^6$	0	100
S. flexneri	$16x10^4$	0	100
S. enteritidis	$82x10^5$	0	100
V. chloerea	$10x10^4$	0	100
H. influenzae	$10x10^4$	0	100
C. jejuni	$12x10^5$	0	100

[1] Colony forming units