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MINBIOTICS™ SOLUTION WITH FILTRATION SYSTEM NSF PROTOCOL P231 TEST REPORT

Report # 17-29-(Minbiotics™ Solution with filtration system) Report

Date: 5/31/2019

EXECUTIVE SUMMARY

The Minbiotics™ mineral solution with the Minbiotics™ filtration system was tested for Microbiological Reduction following the NSF protocol P231.

INTRODUCTION

Tap water adjusted and spiked with bacteria (*Klebsiella terrigena*); virus (Poliovirus 1 and Rotavirus); and Cyst (*Giardia lamblia*) was treated with Minbiotics™ mineral solution for 24 hours then filtered through the Minbiotics™ filtration system and tested using Standard Methods for the Examination of Water.

REAGENTS, MATERIALS, AND LAB EQUIPMENT

AmScope Microscope MD-600, Barnstead Lab-Line Incubator.

Klebsiella terrigena (Bacteria), Poliovirus 1 (Virus), Rotavirus (Virus), *Giardia lamblia* (Cyst).

Sterile water, phosphate buffer.

Minbiotics™ Filtration System.

Minbiotics™ solution.

PROCEDURE

Flushed the filter system with approximately 1 gallon of sterile water. Prepared 2 liters of challenge water with *Klebsiella terrigena* at a concentration of $10^8/L$, Poliovirus at $10^7/L$, Rotavirus at $10^7/L$, and *Giardia lamblia* at $10^6/L$. Table 1 summarizes the Influent water properties. Added 4 mL of Minbiotics™ solution and let it sit for 24 hours. Then passed the 2 liters of influent water through the Minbiotics™ filtration system. Collected the effluent water and analyzed the filtered water for micro-organisms following the Standard Methods of Analysis of Water 21st Edition, methods SM 9222-D (bacteria); SM 9510-B (virus); SM9711-B (cyst). The results are summarized in Table 2 below.

RESULTS

Table 1
Influent Challenge Water Properties

Parameter	Influent Challenge Water	Target
pH	7.25	6.5 to 8.5
Temperature	20.5 °C	20 ± 5°C
TDS	350 mg/L	50 - 500 mg/L
Turbidity	5.0 NTU	0.1 to 5 Nephelometric Turbidity Units
TOC	4.5 mg/L	0.1 to 5.0 mg/L

Table 2
Minbiotics™ Solution Filtration System Test Results

Micro-organism Tested	Influent Water Concentration	Minbiotics™ Solution Filtered Water Concentration	% Reduction
<i>Klebsiella terrigena</i> (Bacteria)	$10^8/L$	50,000/L	99.95
Poliovirus 1 (Virus)	$10^7/L$	15,000/L	99.85
Rotavirus (Virus)	$10^7/L$	15,000/L	99.85
<i>Giardia lamblia</i> (Cyst)	$10^6/L$	10,000/L	99.0

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