ENVIROTEK LABORATORIES, INC.
7150 North Park Drive, Suite 410, Pennsauken, NJ 08109
PHONE 856-478-0010 www.enviroteklab.com
EPA ID # NJ01298 NJ DEP ID # 08012

H_2O TECHNOLOGY VOC SPIKED SOLUTION TEST REPORT

Report # 12-325-5-VOC (Purinize Mineral Solution)
Customer Name: H_2O Technologies, Inc.
Report Date: August 1st, 2012

EXECUTIVE SUMMARY

A water solution prepared with a VOC standard concentration of 20 µg/L of each organic volatile compound (VOC) was tested. Purinize was added to separate beakers at a concentration of 1 mL and 2 mL of Purinize per liter of VOC solution. The solutions were set in open beakers for 48 hours and tested after being filtered through the Purinize Mineral Water Filter System. The concentration of VOC's were below the method detection limit for each compound on each solution.

INTRODUCTION

A water solution prepared with a VOC standard concentration 20 mg/L of each organic volatile compound (VOC) was tested. Purinize was added to separate containers containing the VOC solution at a concentration of 1 mL of Purinize and 2 mL of Purinize per liter of VOC solution, respectively. The solutions were set in open containers for 48 hours; then tested after being filtered through the Purinize Mineral Water Filter System. The concentration of VOC's were below the method detection limit for each compound on each solution.

REAGENTS AND LAB EQUIPMENT

HP 5890/5972 GC/MS system with ChemStation data system.
Restek VMS GC column 60m, 0.25mm ID, 0.25um film.
Restek VOC standard solution 2,000 mg/L solution.
Purinize Filter system.
Purinize Mineral Solution.

PROCEDURE

A water solution was prepared using DI water and the Restek VOC standard solution to obtain a concentration of 20 ug/L of each VOC tested following the EPA method 524.2.
One mL of Purinize was added to one beaker containing one liter of the VOC solution, mixed well and let it stand for 48 hours in the open beaker.
Two ml of Purinize was added to a second beaker containing one liter of the VOC solution, mixed well and let it stand for 48 hours in the open beaker.
The solutions were filtered through the Purinize Mineral Water Filter System, the final filtered solutions were tested again for VOC's.
One beaker containing one liter of the VOC solution was set parallel to the other solutions and let it stand for 48 hours for a control sample without adding any Purinize and filtered through the Purinize Mineral Water Filter System. The results are summarized in the table below.

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RESULTS

The VOC concentrations are summarized in the following table:

Test Parameter	20 ppb VOC Solution	Control Filtered Solution (after 48 hrs)	1 mL Purinize Filtered Solution (after 48 hrs)	2 mL Purinize Filtered Solution (after 48 hrs)
Acetone	19.24 ug/L	2.35 ug/L	<0.5 ug/L	<0.5 ug/L
Acrylonitrile	19.90 ug/L	1.25 ug/L	<0.5 ug/L	<0.5 ug/L
Allyl chloride	17.58 ug/L	1.85 ug/L	<0.5 ug/L	<0.5 ug/L
Benzene	19.10 ug/L	1.55 ug/L	<0.5 ug/L	<0.5 ug/L
Bromobenzene	18.65 ug/L	1.85 ug/L	<0.5 ug/L	<0.5 ug/L
Bromochloromethane	18.24 ug/L	1.51 ug/L	<0.5 ug/L	<0.5 ug/L
Bromodichloromethane	18.25 ug/L	3.52 ug/L	<0.5 ug/L	<0.5 ug/L
Bromoform	19.35 ug/L	3.38 ug/L	<0.5 ug/L	<0.5 ug/L
Bromomethane	18.84 ug/L	2.35 ug/L	<0.5 ug/L	<0.5 ug/L
2-Butanone	19.89 ug/L	1.62 ug/L	<0.5 ug/L	<0.5 ug/L
n-Butylbenzene	18.71 ug/L	1.35 ug/L	<0.5 ug/L	<0.5 ug/L
sec-Butylbenzene	17.52 ug/L	2.25 ug/L	<0.5 ug/L	<0.5 ug/L
tert-Butylbenzene	18.88 ug/L	1.52 ug/L	<0.5 ug/L	<0.5 ug/L
Carbon disulfide	18.82 ug/L	1.55 ug/L	<0.5 ug/L	<0.5 ug/L
Carbon tetrachloride	19.15 ug/L	1.52 ug/L	<0.5 ug/L	<0.5 ug/L
Chloroacetonitrile	19.57 ug/L	1.85 ug/L	<0.5 ug/L	<0.5 ug/L
Chlorobenzene	19.33 ug/L	1.35 ug/L	<0.5 ug/L	<0.5 ug/L
1-Chlorobutane	19.25 ug/L	1.65 ug/L	<0.5 ug/L	<0.5 ug/L
Chloroethane	18.71 ug/L	1.75 ug/L	<0.5 ug/L	<0.5 ug/L
Chloroform	19.16 ug/L	1.95 ug/L	<0.5 ug/L	<0.5 ug/L
Chloromethane	19.88 ug/L	0.72 ug/L	<0.5 ug/L	<0.5 ug/L
2-Chlorotoluene	19.18 ug/L	1.49 ug/L	<0.5 ug/L	<0.5 ug/L
4-Chlorotoluene	19.55 ug/L	0.58 ug/L	<0.5 ug/L	<0.5 ug/L
Dibromochloromethane	19.18 ug/L	0.58 ug/L	<0.5 ug/L	<0.5 ug/L
1,2-Dibromo-3-chloropropane	18.94 ug/L	2.18 ug/L	<0.5 ug/L	<0.5 ug/L
1,2-Dibromoethane	19.22 ug/L	0.85 ug/L	<0.5 ug/L	<0.5 ug/L
Dibromomethane	19.73 ug/L	1.45 ug/L	<0.5 ug/L	<0.5 ug/L
1,2-Dichlorobenzene	19.47 ug/L	1.47 ug/L	<0.5 ug/L	<0.5 ug/L
1,3-Dichlorobenzene	19.18 ug/L	0.58 ug/L	<0.5 ug/L	<0.5 ug/L
1,4-Dichlorobenzene	18.63 ug/L	0.96ug/L	<0.5 ug/L	<0.5 ug/L
trans-1,4-Dichloro-2-butene	19.45 ug/L	1.50 ug/L	<0.5 ug/L	<0.5 ug/L
Dichlorodifluoromethane	19.50 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
1,1-Dichloroethane	18.32 ug/L	0.52 ug/L	<0.5 ug/L	<0.5 ug/L
1,2-Dichloroethane	19.26 ug/L	0.53 ug/L	<0.5 ug/L	<0.5 ug/L
1,1-Dichloroethene	19.20 ug/L	0.85 ug/L	<0.5 ug/L	<0.5 ug/L
cis-1,2-Dichloroethene	18.19 ug/L	0.55 ug/L	<0.5 ug/L	<0.5 ug/L
trans-1,2-Dichloroethene	18.40 ug/L	0.86 ug/L	<0.5 ug/L	<0.5 ug/L
1,2-Dichloropropane	19.25 ug/L	0.76 ug/L	<0.5 ug/L	<0.5 ug/L
1,3-Dichloropropane	19.10 ug/L	0.80 ug/L	<0.5 ug/L	<0.5 ug/L
2,2-Dichloropropane	19.07 ug/L	0.65 ug/L	<0.5 ug/L	<0.5 ug/L
1,1-Dichloropropene	19.65 ug/L	0.58 ug/L	<0.5 ug/L	<0.5 ug/L
1,1-Dichloropropanone	19.91 ug/L	1.25 ug/L	<0.5 ug/L	<0.5 ug/L
cis-1,3-Dichloropropene	19.28 ug/L	0.84 ug/L	<0.5 ug/L	<0.5 ug/L
trans-1,3-Dichloropropene	19.75 ug/L	0.68 ug/L	<0.5 ug/L	<0.5 ug/L
Diethyl ether	19.75 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
Ethylbenzene	19.70 ug/L	0.60 ug/L	<0.5 ug/L	<0.5 ug/L
Ethyl methacrylate	18.08 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
Hexachlorobutadiene	19.80 ug/L	0.53 ug/L	<0.5 ug/L	<0.5 ug/L
Hexachlorobutadiene	18.36 ug/L	0.74 ug/L	<0.5 ug/L	<0.5 ug/L
Hexachloroethane	19.36 ug/L	0.66 ug/L	<0.5 ug/L	<0.5 ug/L
2-Hexanone	19.20 ug/L	0.60 ug/L	<0.5 ug/L	<0.5 ug/L
Isopropylbenzene	19.00 ug/L	0.20 ug/L	<0.5 ug/L	<0.5 ug/L
4-Isopropyltoluene	19.05 ug/L	0.59 ug/L	<0.5 ug/L	<0.5 ug/L
Methacrylonitrile	19.20 ug/L	0.95 ug/L	<0.5 ug/L	<0.5 ug/L
Methylacrylate	18.60 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L

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Test Parameter	20 ppb VOC Fresh Solution	Control Solution (after 48 hrs)	1 mL Purinize Filtered Solution (after 48 hrs)	2 mL Purinize Filtered Solution (after 48 hrs)
Methylene chloride	19.04 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
Methyl iodide	18.72 ug/L	0.85 ug/L	<0.5 ug/L	<0.5 ug/L
Methylmethacrylate	18.87 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
4-Methyl-2-pentanone	18.68 ug/L	0.61 ug/L	<0.5 ug/L	<0.5 ug/L
Methyl-t-butyl ether	18.57 ug/L	0.85 ug/L	<0.5 ug/L	<0.5 ug/L
Naphthalene	19.24 ug/L	1.35 ug/L	<0.5 ug/L	<0.5 ug/L
Nitrobenzene	19.85 ug/L	1.50 ug/L	<0.5 ug/L	<0.5 ug/L
2-Nitropropane	19.83 ug/L	0.68 ug/L	<0.5 ug/L	<0.5 ug/L
Pentachloroethane	18.70 ug/L	0.49 ug/L	<0.5 ug/L	<0.5 ug/L
Propionitrile	19.95 ug/L	0.60 ug/L	<0.5 ug/L	<0.5 ug/L
n-Propylbenzene	19.15 ug/L	1.20 ug/L	<0.5 ug/L	<0.5 ug/L
Styrene	18.90 ug/L	1.22 ug/L	<0.5 ug/L	<0.5 ug/L
1,1,1,2-Tetrachloroethane	19.55 ug/L	0.55 ug/L	<0.5 ug/L	<0.5 ug/L
1,1,2,2-Tetrachloroethane	19.73 ug/L	1.42 ug/L	<0.5 ug/L	<0.5 ug/L
Tetrachloroethene	18.66 ug/L	1.35 ug/L	<0.5 ug/L	<0.5 ug/L
Tetrahydrofuran	19.15 ug/L	0.72 ug/L	<0.5 ug/L	<0.5 ug/L
Toluene	18.57 ug/L	0.88 ug/L	<0.5 ug/L	<0.5 ug/L
1,2,3-Trichlorobenzene	18.80 ug/L	1.44 ug/L	<0.5 ug/L	<0.5 ug/L
1,2,4-Trichlorobenzene	18.54 ug/L	0.63 ug/L	<0.5 ug/L	<0.5 ug/L
1,1,1-Trichloroethane	19.50 ug/L	0.68 ug/L	<0.5 ug/L	<0.5 ug/L
1,1,2-Trichloroethane	19.95 ug/L	0.51 ug/L	<0.5 ug/L	<0.5 ug/L
Trichloroethene	19.33 ug/L	1.44 ug/L	<0.5 ug/L	<0.5 ug/L
Trichlorofluoromethane	19.50 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
1,2,3-Trichloropropane	19.65 ug/L	1.35 ug/L	<0.5 ug/L	<0.5 ug/L
1,2,4-Trimethylbenzene	19.85 ug/L	1.49 ug/L	<0.5 ug/L	<0.5 ug/L
1,3,5-Trimethylbenzene	19.22 ug/L	3.50 ug/L	<0.5 ug/L	<0.5 ug/L
Vinyl chloride	19.50 ug/L	<0.5 ug/L	<0.5 ug/L	<0.5 ug/L
o-Xylene	19.73 ug/L	1.87 ug/L	<0.5 ug/L	<0.5 ug/L
m-Xylene	19.11 ug/L	1.08 ug/L	<0.5 ug/L	<0.5 ug/L
p-Xylene	19.90 ug/L	1.38 ug/L	<0.5 ug/L	<0.5 ug/L

CONCLUSION

The Purinize Mineral Solution is effective when used to filter the volatile organic compounds through the Purinize Mineral Water Filtration System.

Jaime A. Young
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Lab Director