Test Analysis Summary:

Summary May 21, 2001

Summary of Spectrum Labs test of The PurestOne™ filter cartridge

Gentlemen,

I am pleased to offer you this report on my analysis of the tests performed by Spectrum Labs of St. Paul, Minnesota on The PurestOne™ sub-micron water filter cartridge. Based on the following data submitted by Spectrum Labs on 3/29/01, I believe that the filter cartridge is excellent for purifying water from municipal water supplies if the cartridge is changed annually. All of the following data was taken after 300 gallons of water flowed through the cartridges at a nominal flow rate of .75 gals/min. The results for the tests up to the 750-gallon point also look quite good. Each test was performed on a new, unused cartridge following the very rigorous Environmental Protection Agency (EPA) protocols. Each test was performed separately, except for the metals tests that were performed together. It is well to note that the EPA protocols require that the contaminate used in each test be at a very high level – ten to thousands of times higher than that routinely found in municipal water supplies.

The results:

	ppb input (parts per billion)	ppb output	% Reduction
Chloroform (THM's)	330	< 0.5	> 99%
Chlorine	2200	< 10	> 99%
Lead	110	< 0.38	> 99%
Mercury	6.7	0.74	89%
Polychlorinated Biphenyls (PCB's)	15	< 0.5	> 97%
Trichloroethene (TCE)	370	< 0.5	> 99%
Turbidity	12*	0.42*	97%

The Chloroform results are the most important for several reasons; Chloroform and related compounds, collectively termed Trihalomethanes (THM's), are found in high concentrations in almost all municipal water supplies — further, THM's are known carcinogens. Also, the NSF (National Sanitation Foundation) allows the results for Chloroform to apply to 40 other VOC's (Volatile Organic Compounds) that may be found in water supplies. The Lead result is next in importance since lead is often extracted from the solder in plumbing systems. The Turbidity results follow in importance since it tells us that large parasitic organisms (e.g. Cryptosporidium parvum oocyst and Giardia lamblia will not pass through the filter. *The numbers associated with the Turbidity test are in NTU units, which are a measure of the cloudiness of the water due to suspended fine particles — typical municipal water supplies have NTU values less than 1.0. The Chlorine tests show that the purified water will have that pleasant "chlorine free" taste after 300 gallons have passed through the filter. In fact, at the 750 gallon point the chlorine reduction was better than 99%.

The remaining tests cover some typical industrial pollutants found in municipal supplies — in the Minneapolis and St. Paul water supplies these are found in very low concentrations (< .01 ppb for Mercury and < .1 ppb for Trichloroethene). I consider the 89% removal efficiency for Mercury to be quite adequate for municipal water supplies — the test results tell us that if the upper limit for Mercury quoted above (.01 ppb) actually occurred in the water supply then the filter would lower this value to < .0011 ppb. A final note: the values given by the "less than" mark < arise because the very sensitive instruments used at Spectrum Labs simply can not measure any concentrations less than these values. The full report from Spectrum Labs is available for your inspection.

Signed:

Howard J. Hickman, Ph. D.

Please note that contaminant levels in the test water are intentionally and artificially high so that the maximum capabilities of the The PurestOne™ system can be determined. Filter life is dependant on the amount of contaminants removed. The actual number of gallons of water processed before filter replacement is necessary will therefore be substantially higher than the test indicates. As a general guideline, annual replacement of the filter is recommended to assure maximum contaminant reduction. The PurestOne™ Full Test Report in PDF format is available by request.
