Health Research Institute Laboratories

Report Number S0004600- 20190129
Report Date 2019-01-29

Certificate of Analysis

Test Item: Echo Water Filter
Client: Paul Barattiero
Test description: Effectiveness of glyphosate herbicide removal

Sample Numbers: S0004600, 4601, 4602
Receipt Date: 2019-01-24
Test Date: 2019-01-28

Samples:		**Results:**		
Sample ID#	**Sample Description**		**Glyphosate (ng/ml)**	**AMPA (ng/ml)**
S0004600	distilled water spiked with 1 ng/ml of glyphosate pumped through filter inlet	BEFORE FILTRATION:	1.025	1.043
S0004601	water after filtration step	AFTER FILTRATION:	Not Detected	Not Detected
		% REDUCTION:	**99.3%+**	**99.3%+**
S0004602	water after filtration and hydrogen steps	AFTER FILTRATION PLUS HYDROGEN:	Trace	0.146
		% REDUCTION:	**97.6%+**	**86.0%**

Methods

Sample Analysis: HRI TM #8 "Glyphosate and AMPA Detection by LC-MS/MS"

Sample preparation employed a modification of the method described in Chamkasem, Narong, Cynthia Morris, and Tiffany Harmon. 2016. "Direct Determination of Glyphosate, Glufosinate, and AMPA in Milk by Liquid Chromatography/tandem Mass Spectrometry." *Journal of Regulatory Science* 3 (2): 20–26.

LC-MS/MS analysis employed a modification of the method described in Jensen, Pamela K., Chad E. Wujcik, Michelle K. McGuire, and Mark A. McGuire. 2016. "Validation of Reliable and Selective Methods for Direct Determination of Glyphosate and Aminomethylphosphonic Acid in Milk and Urine Using LC-MS/MS." Journal of Environmental Science and Health, Part B 51 (4): 254–59. doi:10.1080/03601234.2015.1120619.

Glyphosate	LOQ = 0.025 ppb,	LOD = 0.007 ppb	Terms: "Trace" is between LOD and LOQ
AMPA	LOQ = 0.025 ppb,	LOD = 0.014 ppb	"Not Detected" is less than LOD

ng/ml may also be expressed as parts per billion (ppb)

Not Detected indicates the result was less than the lowest possible amount of glyphosate detectable by the laboratory's instruments equal to 0.007 ng/ml. A level of 1 ng/ml was selected for input to the filter to simulate real-world conditions based upon actual measurements of municipal water supplies and wells known to contain glyphosate.

Released on Behalf of HRI Laboratories by

Dr. John Fagan, Sr. Scientist
P.O. Box 370
Fairfield, IA 52556
+1 641-552-6258