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To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: Water Quality Program Update for 2014
Date: January 5, 2015
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2014 Ground Water Sampling Project

Water samples from 47 domestic wells were collected during the statewide groundwater monitoring project, in March and April, 2014. Samples were sent to the Montana Analytical Laboratory where the Montana universal method was used to analyze for 96 pesticides. Pesticides were detected in 32 wells with a total of 81 detections for 23 analytes. Please refer to the attached table for a list of analytes detected. The number of detections per well is shown below.

Wells	Number of detects/well
10	1
10	2
4	3
5	4
1	5
1	6
1	8

All detections were below human health guidelines and benchmarks, except for one well that exceeded the Maine maximum exposure guideline (MEG) by 1.089+ parts per billion (ppb) and EPA maximum contaminant level (MCL) by 0.089+ ppb for atrazine and its four metabolites. Three other analytes were also detected in this well. The well of concern was retested in the fall and values fell below the MEG and MCL. Potential resolutions are being explored to address the source of contamination and to remove contaminants from the water.

Sediment and Stormwater Sampling

An Environmental Risk Advisory Committee was convened and met on April 18, 2014. Based on the recommendations of the committee and budget constraints, 20 marine/semi-marine sites were selected for paired sediment and stormwater sampling, extending from Kittery to Cobscook Bay State Park. A delay in contract approval resulted in a delay in sampling. No stormwater samples were collected due to a lack of significant, regional rainfalls after the contract was approved. Sediment was sampled between mid-August and early September.

Sediment samples were sent to the Southwest Research Institute (SwRI), in Texas, for analysis of fipronil, fipronil metabolites, methoprene, piperonyl butoxide (PBO), and 21 pyrethrins and pyrethroids. Duplicate samples were sent to Montana Analytical Laboratory for analysis of PBO, pyrethrins, and pyrethroids. Montana was not able to analyze sediment for fipronil or methoprene. Samples were also sent to the University of Maine Analytical Laboratory for analysis of total organic carbon and particle size.

SwRI reported no detections for methoprene, PBO, pyrethrins, and pyrethroids, but the reporting limits were high, with a range of 12-76 ppb. However, the reporting limits for fipronil and three of its metabolites were in the sub-ppb range (0.081-0.20 ppb) and there were no detections.

Montana Analytical Laboratory reporting limits for 14 pyrethrins and pyrethroids were 0.045-0.45 ppb. Bifenthrin was detected in 12 of 21 samples (12 of 20 sites) with detections ranging 0.091-1.0 ppb (reporting limit 0.045 ppb). Cypermethrin was detected in one sample at 5.0 ppb (reporting limit 0.20 ppb). The 12 sites with detections occurred between Blue Hill and Kittery.

Bifenthrin and cypermethrin detections by site are shown below. Reporting limits and results have not yet been normalized for organic carbon so results are not comparable from site to site.

Site	Bifenthrin (ppb)	Cypermethrin (ppb)
Kittery	0.088	
Biddeford	0.76	5.0
S. Portland	1.0	
Portland	0.32	
Yarmouth	0.56	
Freeport	0.091	
Bath	0.054	
Bath (duplicates)	0.066	
Boothbay Harbor	0.26	
Camden	0.060	
Ellsworth	0.42	
Blue Hill	0.26	

2014 Maine BPC Statewide Groundwater Results

Analyte	Number of Wells Sampled	Number of Samples	Number of Samples with Detects	Range of Detections (ppb)	Reporting Limit (ppb)	ME 2012 MEG (ppb)	EPA or State MCL (ppb)	EPA HAL (ppb)	EPA HHBP Lifetime (ppb)
2,4-D	47	50	1	Q	0.0045	70	70		252
Alachlor (ESA)	47	50	2	Q	0.011	6	2		
Atrazine	47	50	6	Q -0.079	0.0022	2	3		
Bromocil	47	50	1	0.0047	0.0041	70		70	
Clothianidin	47	50	1	0.032	0.016				686
Deethyl atrazine	47	50	7	0.0028 - 3.0	0.0017				
Deethyl deisopropyl atrazine	47	50	1	Q	0.10				
Deisopropryl-atrazine	47	50	2	Q - 0.010	0.010				
Flumetsulam	47	50	1	Q	0.010				7000
Hydroxy-atrazine (HA)	47	50	2	Q - 0.010	0.0040				70
Hexazinone	47	50	3	Q - 0.50	0.0015	200		400	
Imazapyr	47	50	2	0.0035 - 0.0042	0.0035				17500
Imidicloprid	47	50	7	Q - 0.033	0.0018	400			399
Mecoprop (MCPP)	47	50	1	0.0061	0.0022				280
Metalaxyl (mefenoxam)	47	50	13	Q - 0.038	0.0035	400			
Metolachlor	47	50	1	0.0100	0.0068	100		70	
Metolachlor ESA	47	50	14	Q - 5.2	0.0025				
Metolachlor OA	47	50	3	Q	0.021				
Oxamyl	47	50	2	0.052 - 0.096	0.010	200	200		
Prometon	47	50	3	0.001 - 0.0079	0.0010	100		400	
Simazine	47	50	1	0.004	0.0026	4	4		
Terbacil	47	50	2	Q	0.0024	90		90	
Thiamethoxam	47	50	5	Q - 3.8	0.0099				84

HHBP = Lifetime, non-cancer; Human Health Benchmarks for Pesticides for which no MCLs or Health Advisory Levels established.

Q = Present at less than reporting limit