

Watershed Sources of Organic Matter Utility Survey
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Background

The results reported herein come from a mail survey conducted by the Department of Civil and Environmental Engineering, University of Massachusetts-Amherst, in conjunction with the American Water Works Association Research Foundation. The survey took place as part of a larger research project on the variability of natural organic matter (NOM) and biodegradable dissolved organic matter (BDOM) in watersheds. The goal of the survey was to identify a core group of 10-15 utilities that could be studied in-depth over a period of several years. To do this, several hundred large utilities were contacted. These facilities were known to use a surface water source and to serve more than 50,000 people.

Methods

A two-page questionnaire was designed to gather information on the types of data that utilities had on BDOM and DBP precursors in their source water, how many years they had been collecting those data, and if they would be willing to share this information with the University. On October 3, 2003, the questionnaire was mailed to 553 utilities throughout the country. A cover letter accompanied the questionnaire, which explained the purpose of the survey, ensured the confidentiality of the respondent, and encouraged respondents to contact the principal investigator with questions. A second survey and cover letter was mailed to non-respondents on October 29, 2003. On November 18th, a third survey was mailed to those who had still not responded, with a cover letter that further encouraged their participation. A total of 248 surveys were returned, yielding a response rate of 44.8%.

Results

Question 1. The approximate total water production rate at your utility is _____MGD.

MGD	Number of Respondents	Percent
≤10	35	14.2
10 >≤ 20	66	26.7
20 >≤ 30	39	15.8
30 >≤ 40	21	8.5
40 >≤ 50	16	6.5
50 >≤ 60	9	3.6
60 >≤ 70	7	2.8
70 >≤ 80	8	3.2
80 >≤ 90	13	5.3
90 >≤ 100	3	1.2
*****	*****	*****
100 >> 600	23	9.3
1250 >> 9200	7	2.8
Total	247	100.0

Question 2. The fraction of water coming from surface supplies at your utility is: _____%.

%	Number of Respondents	Percent
≤25	13	5.3
25 >= 50	4	1.6
50 >= 75	21	8.5
75 >= 100	208	84.6
Total	246	100.0
=====	=====	=====
100	166	67.5

Question 4. Aside from data reported to EPA as part of the ICR, have any total organic halide (TOX) measurements been made on your *treated* water?

Response	Number of Respondents	Percent
Yes	42	17.4
No	200	82.6
Total	242	100.0

Question 5. Does your utility have data on Disinfection By-product (DBP) precursor levels for any of your *raw waters*?

Response	Number of Respondents	Percent
Yes	100	41.8
No	139	58.2
Total	239	100.0

Question 6. Which DBPs were measured as part of a precursor test?

Results below are shown only for those responding from the 100 utilities answering “yes” to Question #5.

Trihalomethane (THM) precursors

Response	Number of Respondents	Percent
Yes	82	93.2
No	6	6.8
Total	88	100.0

Haloacetic acid (HAA) precursors

Response	Number of Respondents	Percent
Yes	55	72.4
No	21	27.6
Total	76	100.0

Total Organic Halide (TOX) precursors

Response	Number of Respondents	Percent
Yes	21	32.8
No	43	67.2
Total	64	100.0

Twenty-two respondents listed one of five other DBPs that were measured as part of a precursor test.

Question 7. What year were *any* of these DBP data *first* collected on raw water at your utility?

Results below are shown only for those responding from the 100 utilities answering “yes” to Question #5.

Year	Number of Respondents	Percent
<1975	3	3.4
1976-80	9	10.2
1981-85	6	6.8
1986-90	11	12.5
1991-95	18	20.5
1996-00	29	33.0
>2001	12	13.6
Total	88	100.0

Question 8. Has *your utility* collected DBP precursor or other Natural Organic Matter (NOM)-related data (e.g., TOC, DOC, UV absorbance) in surface water samples collected within your watershed(s)?

Response	Number of Respondents	Percent
Yes	144	59.8
No	97	40.2
Total	241	100.0

Question 9. Have any studies been done by *other groups* on DBP precursors or other NOM_related data in surface water samples collected within your watershed(s)?

Response	Number of Respondents	Percent
Yes	80	35.4
No	146	64.6
Total	226	100.0

Question 10. Have hydrologic studies been carried out in your watershed(s)?

Response	Number of Respondents	Percent
Yes, by my utility	30	14.0
Yes, by other groups	139	65.0
No	45	21.0
Total	214	100.0

Question 11. Have storm events in your watershed(s) ever been specially monitored *by your utility* in terms of the following?

Response	WATER QUALITY		FLOW		SYSTEM RESPONSE	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Yes	95	39.4	80	33.8	39	17.6
No	146	60.6	157	66.2	183	82.4
Total	241	100.0	237	100.0	222	100.0

Question 12. Have storm events in your watershed(s) ever been specially monitored *by other groups* in terms of the following?

Response	WATER QUALITY		FLOW		SYSTEM RESPONSE	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Yes	89	40.3	86	39.6	46	24.0
No	132	59.7	131	60.4	146	76.0
Total	221	100.0	217	100.0	192	100.0

Question 13. To what extent would the following issues be of interest to you?

DBP control

Response	Number of Respondents	Percent
Not at all interested	11	4.5
Somewhat interested	21	8.6
Modestly interested	35	14.3
Very interested	92	37.7
Extremely interested	85	34.8
Total	244	100.0

Watershed management for control of organics

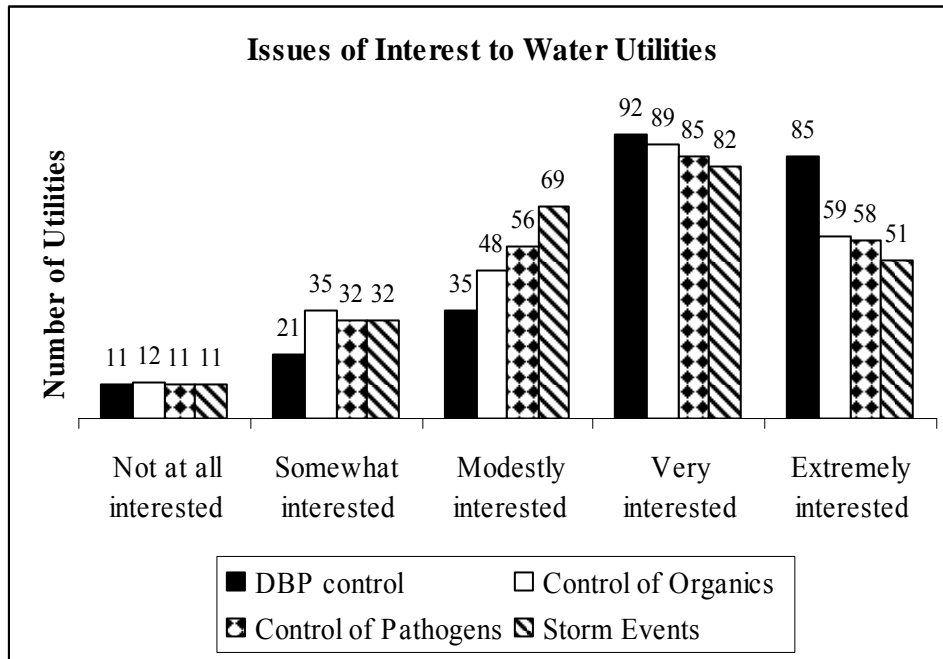
Response	Number of Respondents	Percent
Not at all interested	12	4.9
Somewhat interested	35	14.4
Modestly interested	48	19.8
Very interested	89	36.6
Extremely interested	59	24.3
Total	243	100.0

Watershed management for control of pathogens

Response	Number of Respondents	Percent
Not at all interested	11	4.5
Somewhat interested	32	13.2
Modestly interested	56	23.1
Very interested	85	35.1
Extremely interested	58	24.0
Total	242	100.0

Role of storm events in water quality

Response	Number of Respondents	Percent
Not at all interested	11	4.5
Somewhat interested	32	13.1
Modestly interested	69	28.2
Very interested	82	33.5
Extremely interested	51	20.8
Total	245	100.0



Question 14. Would your utility be willing to share existing water quality data with the University of Massachusetts?

Response	Number of Respondents	Percent
Yes	219	90.5
No	23	9.5
Total	242	100.0

Question 15. Would your utility be willing to collect additional water quality data as part of an AWWARF sponsored project?

Response	Number of Respondents	Percent
Yes	197	84.2
No	37	15.8
Total	234	100.0