1,4-Dioxane Sampling Update Brookhaven National Laboratory Community Advisory Council February 8, 2018

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a passion for discovery



1,4-Dioxane Sampling Update

- 1,4-Dioxane is a volatile organic compound that has been widely used as a stabilizer for 1,1,1-trichloroethane (TCA)
- No federal maximum contaminant level (MCL) or specific New York State standard has been established for 1,4-dioxane in drinking water. Currently considered an unspecified organic contaminant for which the standard is 50 µg/L
- In 2016, NYSDEC/NYSDOH formally suggested that BNL analyze for 1,4-dioxane within site plume core wells that have or had TCA
- Briefed CAC in March 2017 on groundwater samples collected in January 2017
 - Detected 1,4-dioxane in 17 of 22 on and off-site monitoring wells sampled
 - Concentrations ranged from 0.18 μg/L to 18.6 μg/L
 - Samples were analyzed via EPA Method 522 (low detection limit)
 - Data was included in the 2016 Groundwater Status Report

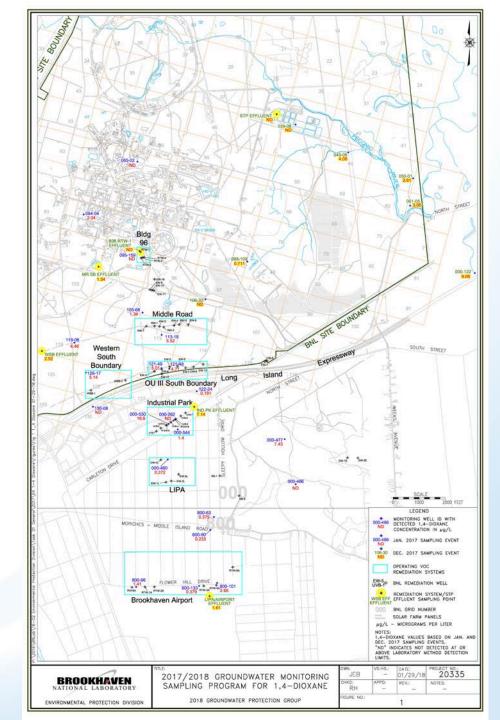
1,4-Dioxane Sampling Update

- In response to a September 2017 request by the Suffolk County Department of Health Services (SCDHS), BNL obtained additional baseline data on the distribution of 1,4-dioxane by sampling seven additional groundwater monitoring wells and the effluent from 5 currently operating groundwater treatment systems, and the Sewage Treatment Plant
- Samples were collected in early December 2017 from 13 locations



1,4-Dioxane Sampling Results

- Was not detected in Sewage Treatment Plant effluent sample
- Five of seven monitoring wells had detections up to 9.08 µg/L
- Four of five groundwater treatment system effluent samples had detections up to 7.14 µg/L
- All concentrations were below the current NYS standard for non-specific organic contaminants of 50 µg/L

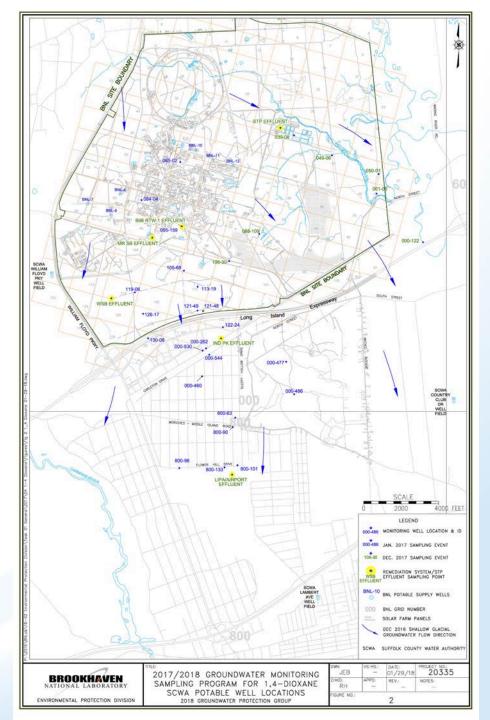


1,4-Dioxane Sampling Update

- Drinking Water Supply Well Testing:
 - BNL's drinking water supply wells were tested by SCDHS from 2015 through 2017 and no 1,4-dioxane was detected
 - SCWA testing of drinking water supply wells in the vicinity of the Lab also did not detect 1,4-dioxane
- The new monitoring results were reviewed with the regulators on February 1st
 - Results will be included in the 2017 Groundwater Status Report
- BNL will continue to monitor regulatory status on this emerging contaminant of concern, and keep the CAC informed



1,4-Dioxane Sampling Results



Brookhaven Science Associates

Backup Slides



Brookhaven Science Associates

January and December 2017 1,4-Dioxane Sampling Data

065-02 OU III Central 1/19/2017 60 ND 084-04 OU III Central 1/19/2017 150 2.04 095-159 OU III Middle Road 1/20/2017 250 1.34 113-19 OU III Middle Road 1/20/2017 230 5.52 121-48 OU III South Boundary 1/20/2017 228 4.71 121-49 OU III South Boundary 1/20/2017 228 4.71 121-49 OU III Mudstrial Park East 1/19/2017 275.5 0.011 122-24 OU III Western South Boundary 1/20/2017 140 5.14 130-08 OU III Western South Boundary 1/20/2017 140 5.14 130-08 OU III North Street East 1/18/2017 170 7.43 000-466 OU III Industrial Park 1/19/2017 180.5 ND 000-530 OU III Industrial Park 1/19/2017 210 18.6 000-544 OU III Industrial Park 1/18/2017 225 0.375 800-101 OI III Air				Depth	1,4-Dioxane
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088-109 Current Landfill 12/5/2017 13.5 0.711 106-30 Former Landfill 12/5/2017 36.5 ND NA Sewage Treatment Plant (STP) Effluent 12/6/2017 NA ND NA OU III MR/SB Effluent 12/6/2017 NA 1.54 NA OU III MR/SB Effluent 12/6/2017 NA ND NA OU III MR/SB Effluent 12/6/2017 NA ND NA OU III Building 96 RTW-1 Effluent 12/6/2017 NA ND NA OU III Building 96 RTW-1 Effluent 12/5/2017 NA 2.52 NA OU III INdustrial Park EW-8/9 Effluent 12/5/2017 NA 7.14 NA OU III LIPA/Airport Effluent 1/17/2018 NA 1.61 µg/L Micrograms per liter. Image: Comparison of the set below land surface. Image: Comparison of the set below land surface. Image: Comparison of the set below land surface.	061-05	OUV	12/5/2017	200	3.95
106-30 Former Landfill 12/5/2017 36.5 ND NA Sewage Treatment Plant (STP) Effluent 12/6/2017 NA ND NA OU III MR/SB Effluent 12/6/2017 NA 1.54 NA OU III MR/SB Effluent 12/6/2017 NA 1.54 NA OU III Building 96 RTW-1 Effluent 12/6/2017 NA ND NA OU III Building 96 RTW-1 Effluent 12/5/2017 NA ND NA OU III Building 96 RTW-1 Effluent 12/5/2017 NA 2.52 NA OU III MSB Effluent 12/5/2017 NA 2.52 NA OU III Industrial Park EW-8/9 Effluent 12/5/2017 NA 7.14 NA OU III LIPA/Airport Effluent 1/17/2018 NA 1.61 µg/L Micrograms per liter.	000-122	OUV	12/5/2017	250	9.08
NASewage Treatment Plant (STP) Effluent12/6/2017NANDNAOU III MR/SB Effluent12/6/2017NA1.54NAOU III Building 96 RTW-1 Effluent12/6/2017NANDNAOU III Building 96 RTW-1 Effluent12/5/2017NA2.52NAOU III WSB Effluent12/5/2017NA2.52NAOU III Industrial Park EW-8/9 Effluent12/5/2017NA7.14NAOU III LIPA/Airport Effluent1/17/2018NA1.61µg/LMicrograms per liter.Image: Constraint of the below land surface.Image: Constraint of the below land surface.Image: Constraint of the below land surface.Image: Constraint of the below land surface.	088-109	Current Landfill	12/5/2017	13.5	0.711
NAOU III MR/SB Effluent12/6/2017NA1.54NAOU III Building 96 RTW-1 Effluent12/6/2017NANDNAOU III WSB Effluent12/5/2017NA2.52NAOU III Industrial Park EW-8/9 Effluent12/5/2017NA7.14NAOU III LIPA/Airport Effluent1/17/2018NA1.61µg/LMicrograms per liter.ft blsFeet below land surface.	106-30	Former Landfill	12/5/2017	36.5	ND
NA OU III Building 96 RTW-1 Effluent 12/6/2017 NA ND NA OU III WSB Effluent 12/5/2017 NA 2.52 NA OU III Industrial Park EW-8/9 Effluent 12/5/2017 NA 7.14 NA OU III LIPA/Airport Effluent 1/17/2018 NA 1.61 μg/L Micrograms per liter. ft bls Feet below land surface.	NA	Sewage Treatment Plant (STP) Effluent	12/6/2017	NA	ND
NA OU III WSB Effluent 12/5/2017 NA 2.52 NA OU III Industrial Park EW-8/9 Effluent 12/5/2017 NA 7.14 NA OU III LIPA/Airport Effluent 1/17/2018 NA 1.61 µg/L Micrograms per liter. ft bls Feet below land surface.	NA	OU III MR/SB Effluent	12/6/2017	NA	1.54
NA OU III Industrial Park EW-8/9 Effluent 12/5/2017 NA 7.14 NA OU III LIPA/Airport Effluent 1/17/2018 NA 1.61 µg/L Micrograms per liter. ft bls Feet below land surface.	NA	OU III Building 96 RTW-1 Effluent	12/6/2017	NA	ND
NAOU III LIPA/Airport Effluent1/17/2018NA1.61µg/LMicrograms per liter. </td <td>NA</td> <td>OU III WSB Effluent</td> <td>12/5/2017</td> <td>NA</td> <td>2.52</td>	NA	OU III WSB Effluent	12/5/2017	NA	2.52
µg/LMicrograms per liter.Image: Comparison of the second se	NA	OU III Industrial Park EW-8/9 Effluent	12/5/2017	NA	7.14
ft bls Feet below land surface.	NA	OU III LIPA/Airport Effluent	1/17/2018	NA	1.61
ft bls Feet below land surface.	µg/L	Micrograms per liter.			
ND Not detected, <0.2 µg/L.	ft bls	Feet below land surface.			
	ND	Not detected, <0.2 μg/L.			



