

Hurricane Sandy Vegetative Debris Burns Sampling Summary

Pre-Burn and January 2013 Debris Burn

November 19, 2012 and January 7-8, 2013

The following summarizes finalized results from EPA samples taken during controlled vegetative burns conducted by the US Army Corps of Engineers to reduce vegetative debris created by Hurricane Sandy

Summary of Observations

Air sampling: For air quality lab-analyzed samples collected during the Vegetative Debris Burn conducted on January 7-8, 2013, none of the **detected** results exceeded Region 2 established screening levels for metals, dioxins, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs). Barium (Ba) was the only metal detected; Ba was detected at two locations at concentrations less than the established screening level. Dioxin and PAH results were 100 percent (%) non-detects. Although numerous VOCs were detected, concentrations were less than the established screening levels.

Air monitoring: EPA is measuring air quality with real-time instruments, obtaining real-time estimates of air quality during the vegetative debris burns.

Air Sample Summary

	Pre- Burn	Test Burn
Number of Sample Locations	8	8
Number of Samples Submitted for Analysis* (including metals, dioxins, PAHs, VOCs)	36	36
Metals: Number of Compounds Analyzed in Each Sample	24	24
Dioxins: Number of Compounds Analyzed in Each Sample	17	17
PAHs: Number of Compounds Analyzed in Each Sample	23	23
VOCs: Number of Compounds Analyzed in Each Sample	55	55
Total Number of Sample Analyses Exceeding Screening Levels	0	0

*1 sample was collected per location per analyte class (excluding field and trip blanks). Additionally a collocated sample was collected at 1 location per event per class of analytes: (8 locations + 1 collocated) x 4 analyte classes = 36 samples per event.

TABLE SUMMARY

SAMPLES WITH DETECTIONS

Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result 11-19-2012 ($\mu\text{g}/\text{m}^3$)	Jan 7-8 2013 Result ($\mu\text{g}/\text{m}^3$)
FBF-01	2-Butanone	52100	0.729	13.7
FBF-01	Acetone	322000	7.99 J	8.13
FBF-01	Benzene	28.75	0.873	0.694
FBF-01	Chloromethane	939	1.16	0.867
FBF-01	Dichlorodifluoromethane	1040	1.76	1.4
FBF-01	Hexane	7300	0.619	0.471
FBF-01	Isopropyl Alcohol	980000	1.56	3.26
FBF-01	Methylene Chloride	6260	0.464	5.59
FBF-01	Propylene	31300	1.32	1.46
FBF-01	Toluene	52100	2.11	1.23
FBF-01	Trichlorofluoromethane	7300	1.5	1.12
FBF-01	Vinyl Acetate	2090	0.386	0.83 J
FBF-02	1,2,4-Trimethylbenzene	73	ND	0.155
FBF-02	2-Butanone	52100	0.702	13.8
FBF-02	Acetone	322000	8.17 J	3.61
FBF-02	Benzene	28.75	0.755	0.685
FBF-02	Carbon Tetrachloride	1040	0.513	0.413
FBF-02	Chloromethane	939	1.06	0.796
FBF-02	Cyclohexane	62600	0.141	0.123
FBF-02	Dichlorodifluoromethane	1040	1.42	1.52
FBF-02	Ethyl Acetate	1400000	0.65	0.205
FBF-02	Heptane	350000	0.246	0.17
FBF-02	Hexane	7300	0.505	0.448
FBF-02	Isopropyl Alcohol	980000	ND	1.79
FBF-02	m&p-Xylene	1040	0.779	0.34
FBF-02	Methylene Chloride	6260	0.397	6.07
FBF-02	o-Xylene	1040	0.328	0.142
FBF-02	Propylene	31300	1.15	1.33
FBF-02	Tetrahydrofuran	20900	ND	0.104
FBF-02	Toluene	52100	1.63	1.42
FBF-02	Trichlorofluoromethane	7300	1.46	1.29
FBF-02	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.614	0.621
FBF-02	Vinyl Acetate	2090	0.599	0.229
FBF-03	1,2,4-Trimethylbenzene	73	ND	0.215
FBF-03	2-Butanone	52100	0.994	13
FBF-03	Acetone	322000	11.3 J	4.36

Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result 11-19-2012 ($\mu\text{g}/\text{m}^3$)	Jan 7-8 2013 Result ($\mu\text{g}/\text{m}^3$)
FBF-03	Benzene	28.75	0.848	0.689
FBF-03	Carbon Tetrachloride	1040	0.469	0.418
FBF-03	Chloromethane	939	1.04	0.82
FBF-03	Cyclohexane	62600	0.168	0.149
FBF-03	Dichlorodifluoromethane	1040	1.55	1.59
FBF-03	Ethyl Acetate	1400000	0.808	0.248
FBF-03	Ethylbenzene	2920	0.306	0.172
FBF-03	Heptane	350000	0.304	0.209
FBF-03	Hexane	7300	0.617	0.521
FBF-03	Isopropyl Alcohol	980000	1.4	0.487
FBF-03	m&p-Xylene	1040	0.876	0.509
FBF-03	Methylene Chloride	6260	0.428	5.62
FBF-03	o-Xylene	1040	0.36	0.199
FBF-03	Propylene	31300	1.44	1.36
FBF-03	Tetrachloroethene	417	0.417	0.246
FBF-03	Tetrahydrofuran	20900	ND	0.0892
FBF-03	Toluene	52100	1.97	1.3
FBF-03	Trichlorofluoromethane	7300	1.4	1.3
FBF-03	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.562	0.643
FBF-03	Vinyl Acetate	2090	0.561	0.501
FBF-04	1,2,4-Trimethylbenzene	73	ND	0.185
FBF-04	1,3-Butadiene	20.9	ND	0.365
FBF-04	2-Butanone	52100	0.925	16.2
FBF-04	Acetone	322000	8.64 J	3.74
FBF-04	Barium	5.21	ND	0.035
FBF-04	Benzene	28.75	0.754	0.665
FBF-04	Carbon Tetrachloride	1040	0.475	0.395
FBF-04	Chloromethane	939	1.03	0.79
FBF-04	Cyclohexane	62600	0.146	0.123
FBF-04	Dichlorodifluoromethane	1040	1.45	1.46
FBF-04	Ethyl Acetate	1400000	1.17	0.24
FBF-04	Ethylbenzene	2920	0.27	0.164
FBF-04	Heptane	350000	0.245	0.21
FBF-04	Hexane	7300	0.551	0.512
FBF-04	Isopropyl Alcohol	980000	ND	0.47
FBF-04	m&p-Xylene	1040	0.783	0.46
FBF-04	Methyl Isobutyl Ketone	31300	ND	0.141

Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result 11-19-2012 (µg/m³)	Jan 7-8 2013 Result (µg/m³)
FBF-04	Methylene Chloride	6260	0.421	7.32
FBF-04	o-Xylene	1040	0.32	0.182
FBF-04	Propylene	31300	1.22	1.29
FBF-04	Tetrahydrofuran	20900	ND	0.119
FBF-04	Toluene	52100	1.71	1.32
FBF-04	Trichlorofluoromethane	7300	1.45	1.22
FBF-04	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.593	0.595
FBF-04	Vinyl Acetate	2090	0.515	0.266
FBF-05	1,2,4-Trimethylbenzene	73	ND	0.316
FBF-05	2-Butanone	52100	1.94	50.8
FBF-05	Acetone	322000	ND	4.43 J
FBF-05	Barium	5.21	ND	0.0316
FBF-05	Benzene	28.75	0.832	0.864
FBF-05	Carbon Tetrachloride	1040	0.478	0.421
FBF-05	Chloromethane	939	1.1	0.844
FBF-05	Cyclohexane	62600	0.166	0.171
FBF-05	Dichlorodifluoromethane	1040	1.84	1.55
FBF-05	Ethyl Acetate	1400000	3.47	0.293
FBF-05	Ethylbenzene	2920	0.346	0.227
FBF-05	Heptane	350000	0.292	0.293
FBF-05	Hexane	7300	0.545	0.647
FBF-05	Isopropyl Alcohol	980000	ND	0.9
FBF-05	m&p-Xylene	1040	1.07	0.69
FBF-05	Methylene Chloride	6260	0.42	20.7
FBF-05	o-Xylene	1040	0.422	0.263
FBF-05	Propylene	31300	1.35	1.49
FBF-05	Tetrachloroethene	417	0.885	0.264
FBF-05	Tetrahydrofuran	20900	ND	0.304
FBF-05	Toluene	52100	1.9	2.21
FBF-05	Trichlorofluoromethane	7300	1.43	1.28
FBF-05	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.581	0.594
FBF-05	Vinyl Acetate	2090	0.503	0.174 J
FBF-06	1,2,4-Trimethylbenzene	73	ND	0.44
FBF-06	Acetone	322000	11.9	5.16
FBF-06	Benzene	28.75	0.931	0.949
FBF-06	Carbon Tetrachloride	1040	0.471	0.4

Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result 11-19-2012 (µg/m ³)	Jan 7-8 2013 Result (µg/m ³)
FBF-06	Chloromethane	939	1.04	0.889
FBF-06	Cyclohexane	62600	ND	0.239
FBF-06	Dichlorodifluoromethane	1040	1.58	1.61
FBF-06	Ethyl Acetate	1400000	0.885	0.331
FBF-06	Ethylbenzene	2920	0.351	0.296
FBF-06	Heptane	350000	0.372	0.319
FBF-06	Hexane	7300	0.79	0.854
FBF-06	Isopropyl Alcohol	980000	ND	0.957
FBF-06	m&p-Xylene	1040	1.07	0.873
FBF-06	o-Xylene	1040	0.416	0.336
FBF-06	Propylene	31300	1.53	2.03
FBF-06	Tetrahydrofuran	20900	ND	0.158
FBF-06	Toluene	52100	2.14	1.69
FBF-06	Trichlorofluoromethane	7300	1.43	1.34
FBF-06	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.6	0.638
FBF-06	Vinyl Acetate	2090	0.652	0.315
FBF-07	1,2,4-Trimethylbenzene	73	ND	0.232
FBF-07	2-Butanone	52100	0.644	32.3
FBF-07	Acetone	322000	ND	4.16 J
FBF-07	Benzene	28.75	0.849	0.721
FBF-07	Carbon Tetrachloride	1040	0.471	0.422
FBF-07	Chloromethane	939	1.07	0.881
FBF-07	Cyclohexane	62600	0.187	0.144
FBF-07	Dichlorodifluoromethane	1040	1.49	1.58
FBF-07	Ethyl Acetate	1400000	0.531	0.275
FBF-07	Ethylbenzene	2920	0.319	0.174
FBF-07	Heptane	350000	0.317	0.232
FBF-07	Hexane	7300	0.638	0.58
FBF-07	Isopropyl Alcohol	980000	ND	3.12
FBF-07	m&p-Xylene	1040	0.936	0.518
FBF-07	Methylene Chloride	6260	0.438	9.73
FBF-07	o-Xylene	1040	0.376	0.207
FBF-07	Propylene	31300	1.3	1.45
FBF-07	Tetrahydrofuran	20900	ND	0.195
FBF-07	Toluene	52100	1.94	1.65
FBF-07	Trichlorofluoromethane	7300	1.43	1.33

Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result 11-19-2012 (µg/m³)	Jan 7-8 2013 Result (µg/m³)
FBF-07	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.602	0.617
FBF-07	Vinyl Acetate	2090	0.522	0.19
FBF-08	1,2,4-Trimethylbenzene	73	ND	0.197
FBF-08	Acetone	322000	10.9 J	3.78
FBF-08	Benzene	28.75	0.879	0.707
FBF-08	Carbon Tetrachloride	1040	0.485	0.445
FBF-08	Chloromethane	939	1.11	0.905
FBF-08	Cyclohexane	62600	ND	0.142
FBF-08	Dichlorodifluoromethane	1040	1.45	1.59
FBF-08	Ethyl Acetate	1400000	0.527	0.247
FBF-08	Ethylbenzene	2920	0.332	0.165
FBF-08	Heptane	350000	0.315	0.207
FBF-08	Hexane	7300	0.668	0.554
FBF-08	Isopropyl Alcohol	980000	ND	0.547
FBF-08	m&p-Xylene	1040	0.957	0.469
FBF-08	Methyl Isobutyl Ketone	31300	ND	0.377
FBF-08	o-Xylene	1040	0.387	0.189
FBF-08	Propylene	31300	1.49	1.46
FBF-08	Toluene	52100	1.99	1.1
FBF-08	Trichlorofluoromethane	7300	1.52	1.37
FBF-08	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.629	0.639
FBF-08	Vinyl Acetate	2090	0.746	0.251
FBF-08 Colo	1,2,4-Trimethylbenzene	73	ND	0.203
FBF-08 Colo	2-Butanone	52100	0.837	4.02
FBF-08 Colo	Acetone	322000	10.9 J	3.74
FBF-08 Colo	Benzene	28.75	0.879	0.666
FBF-08 Colo	Carbon Tetrachloride	1040	0.485	0.409
FBF-08 Colo	Chloromethane	939	1.11	0.938
FBF-08 Colo	Cyclohexane	62600	ND	0.147
FBF-08 Colo	Dichlorodifluoromethane	1040	1.45	1.27
FBF-08 Colo	Ethyl Acetate	1400000	0.527	0.247
FBF-08 Colo	Ethylbenzene	2920	0.332	0.161
FBF-08 Colo	Heptane	350000	0.315	0.218
FBF-08 Colo	Hexane	7300	0.668	0.53
FBF-08 Colo	Isopropyl Alcohol	980000	ND	0.57
Sample Location	Parameter	Region 2 Screening Level	Pre-Burn Result	Jan 7-8 2013 Result

			11-19-2012 ($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
FBF-08 Colo	m&p-Xylene	1040	0.957	0.451
FBF-08 Colo	Methyl Isobutyl Ketone	31300	ND	0.482
FBF-08 Colo	Methylene Chloride	6260	0.476	1.7
FBF-08 Colo	o-Xylene	1040	0.387	0.18
FBF-08 Colo	Propylene	31300	1.49	1.36
FBF-08 Colo	Toluene	52100	1.99	1.06
FBF-08 Colo	Trichlorofluoromethane	7300	1.52	1.35
FBF-08 Colo	Trichloro-1,2,2-trifluoroethane, 1,1,2-	313000	0.629	0.622
FBF-08 Colo	Vinyl Acetate	2090	0.746	0.209

NSL – Essential nutrient; no screening level is needed

ND – Not detected that sampling event

$\mu\text{g}/\text{m}^3$ – micrograms per cubic meter

Note: Tabulated data is reported in $\mu\text{g}/\text{m}^3$ to comply with typical reporting practices. This is the convention because the $\text{PM}_{2.5}$ monitoring instrument reports data in $\mu\text{g}/\text{m}^3$, therefore making the sampling data comparable.

