



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CENTER FOR ENVIRONMENTAL MEASUREMENT AND MODELING
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF RESEARCH AND DEVELOPMENT

September 23, 2020

Mr. Steven E. Flint, Director
Division of Air Resources
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-3250

Dear Mr. Flint:

I am sending this letter in response to my March 23, 2020 letter outlining the scope for additional assistance the US Environmental Protection Agency (EPA), Office of Research and Development (ORD) is providing to characterize tetrafluoroethylene (TFE) emissions from polytetrafluoroethylene sintering oven operations. This follow-up report provides estimated concentrations of TFE and volatile organic compounds (VOCs) from the SUMMA canister samples for which qualitative results were provided in our report dated December 2, 2019.

Table 1 (attached) provides estimated concentration results for the TFE and VOC analyses of the SUMMA canister emissions samples collected at the Saint-Gobain Performance Plastics McCaffrey Street facility in Hoosick Falls, New York as part of the joint ORD/ New York State Department of Environmental Conservation (NYSDEC) emissions characterization study. The results reported are in concentration units of parts per billion by volume (ppbv). In the initial study report, results were reported in the respective area counts, given the study was intended to be qualitative in nature, providing an indication of the identity of compounds present in the exhaust and their relative, not absolute, levels.

While initially reported as area counts (qualitative), the original analyses for TFE and VOCs could be quantified following established procedures documented in the associated study research Quality Assurance Project Plan, which allows ORD to provide the requested estimated concentration results in Table 1. However, the results in Table 1 should be considered as estimated concentrations as the application of VOC measurements using SUMMA canisters is intended for ambient environments and not emissions sources. In addition, these SUMMA samples were collected without knowledge of the sintering process's volumetric exhaust flow. Again, because of the novel application of an ambient sampling approach for this source, these quantitative emissions measurements are only estimated. In addition, it is important to note that these values do not represent actual exposure or risk. While the data provided in the attached table provide estimates of TFE and VOC concentrations from SUMMA canister samples, we do not have sufficient information to offer interpretations related to actual human or environmental exposure and risk.

Thank you for inviting us to be part of this effort to further both the EPA's and NYSDEC's understanding of an important issue. This is just one of many Agency efforts demonstrating EPA's commitment to working with our state partners. If you have any questions or concerns, do not hesitate to contact me at (919) 541-2107 or via email

at watkins.tim@epa.gov. I look forward to continuing to work together.

Sincerely,

Timothy H Watkins

Timothy H. Watkins
Director

Enclosure

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Table 1: TFE and TO-15 Estimated Concentration Results from SUMMA® Canisters for Saint-Gobain Performance Plastics McCaffrey Street Facility

	Inst Blank	Inst Blank	Trip Blank	Field Blank	Ambient	Nitrogen System Blank	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Target Compounds	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Tetrafluoroethylene (TFE)	ND	ND	0.04	0.01	0.03	0.05	0.13	0.05	0.03	0.05	0.03
Propylene	0.00	0.00	0.00	0.69	19.59	0.47	17.06	196.93	56.18	50.19	42.46
Propane	0.00	0.00	0.00	1.81	74.93	1.44	59.41	699.78	206.52	186.79	153.76
Dichlorodifluoromethane	0.00	0.00	0.00	0.00	0.40	0.00	0.40	0.48	0.54	0.46	0.45
Butane	0.00	0.00	0.00	0.04	0.30	0.09	0.74	1.39	0.66	3.01	3.19
Ethanol	0.00	0.00	0.00	137	666	76.4	1490	2660	2120	2710	2800
Acetone	0.00	0.00	0.00	0.00	5.15	0.00	7.08	7.22	7.30	14.1	27.5
iso-Pentane	0.00	0.00	0.00	0.03	0.77	0.00	0.84	0.68	0.99	1.70	2.24
Trichlorofluoromethane	0.00	0.00	0.00	0.00	0.24	0.00	0.25	0.26	0.28	0.30	0.34
Isopropyl Alcohol	0.00	0.00	0.00	0.44	1.94	0.46	3.38	12.84	13.89	4.37	9.25
1-Pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	1.27	0.24	0.28
n-Pentane	0.00	0.00	0.00	0.06	0.84	0.08	0.98	0.60	1.23	1.78	1.56
Isoprene	0.00	0.00	0.00	0.00	0.15	0.00	0.06	0.08	0.15	0.17	0.15
trans-2-pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylene Chloride	0.00	0.00	0.00	0.00	0.08	0.00	0.07	0.21	0.18	0.26	0.33
2-Chloroprene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00
1-Hexene	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.00	1.65	0.38
Diisopropyl ether	0.00	0.00	0.00	0.05	0.26	0.00	2.44	4.21	2.44	5.79	6.69
Ethyl Acetate	0.00	0.00	0.00	0.00	0.00	0.00	13.0	24.0	13.0	32.7	37.0
n-Hexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.64	1.38	1.61
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.28
2,4-Dimethylpentane	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.32	0.18	0.67	0.87
Benzene	0.00	0.00	0.00	0.00	0.16	0.00	0.12	0.19	0.14	0.19	0.21
Carbon Tetrachloride	0.00	0.00	0.00	0.00	0.05	0.00	0.07	0.07	0.09	0.10	0.10
2-Methylhexane	0.00	0.00	0.00	0.12	0.12	0.10	2.39	4.55	2.47	9.73	12.42
3-methylhexane	0.00	0.00	0.00	0.11	0.10	0.13	2.39	4.83	2.57	10.4	12.9
Trichloroethene	0.00	0.00	0.00	0.00	0.11	0.00	0.07	0.07	0.13	0.17	0.19
Heptane	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.55	0.34	1.22	1.42
Methylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00
Toluene	0.00	0.00	0.00	0.00	62.7	0.00	42.2	6.87	2.07	1.56	1.08
Ethylbenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m-Xylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
o-Xylene	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.26	0.27	0.30
Chlorotoluenes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Propylbenzene	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00
n-Decane	0.00	0.00	0.00	0.00	0.00	0.00	0.88	20.79	37.71	44.70	75.63
1,2,3-Trimethylbenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.07	0.00
Undecane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.11	0.00
Naphthalene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.29	0.11	0.00
Dodecane	0.00	0.00	0.00	0.69	19.6	0.00	0.11	0.32	0.49	0.15	0.21

Table 1: TFE and TO-15 Estimated Concentration Results from SUMMA® Canisters for Saint-Gobain Performance Plastics McCaffrey Street Facility (cont.)

	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15	Sample 16
Target Compounds	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
TFE	0.05	0.05	0.08	0.05	0.10	0.13	0.57	0.52	0.51	0.32	0.54
Propylene	47.2	35.0	50.5	48.0	47.0	32.6	21.8	24.9	39.5	25.7	40.4
Propane	170	115	163	163	163	121	74.8	83.8	133	86.8	140
Dichlorodifluoromethane	0.45	0.40	0.47	0.50	0.48	0.00	0.48	0.41	0.44	0.44	0.44
Butane	2.49	2.10	1.47	1.43	0.78	0.00	0.74	1.63	2.31	0.86	0.73
Ethanol	2440	3040	2790	2510	2480	2110	2390	1870	2360	1200	1367
Acetone	21.7	32.0	56	30.1	22.1	15.2	6.92	11.3	15.5	6.12	7.96
iso-Pentane	2.49	3.04	4.12	2.85	2.40	1.52	0.96	1.81	2.91	1.14	1.53
Trichlorofluoromethane	0.37	0.33	0.30	0.27	0.27	0.24	0.25	0.28	0.25	0.25	0.23
Isopropyl Alcohol	8.29	19.4	14.4	31.4	14.3	22.0	2.57	9.07	19.8	6.05	19.3
1-Pentene	0.23	0.42	0.58	0.43	0.42	0.28	0.24	0.21	0.33	0.60	0.00
n-Pentane	2.10	2.19	2.40	2.06	2.45	1.21	0.75	1.84	2.69	1.54	1.86
Isoprene	0.18	0.17	0.23	0.33	0.27	0.17	0.08	0.07	0.35	0.07	0.26
trans-2-pentene	0.00	0.06	0.10	0.13	0.06	0.00	0.00	0.00	0.09	0.00	0.00
Methylene Chloride	0.21	0.33	0.23	0.13	0.19	0.13	1.26	0.16	0.15	0.12	0.14
2-Chloroprene	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-Hexene	0.12	0.56	0.22	0.19	0.13	0.08	0.06	0.07	0.11	0.09	0.12
Diisopropyl ether	4.04	8.06	4.61	2.34	2.22	1.22	1.40	1.63	2.08	0.50	0.53
Ethyl Acetate	21.6	44.2	25.9	12.4	11.6	6.37	7.47	8.26	11.3	3.78	4.10
n-Hexane	1.49	1.11	0.63	0.38	0.93	0.00	0.00	0.00	0.32	0.00	0.00
Methylcyclopentane	0.21	0.34	0.24	0.19	0.10	0.09	0.00	0.13	0.16	0.00	0.09
2,4-Dimethylpentane	0.51	1.08	0.37	0.14	0.09	0.05	0.00	0.20	0.16	0.00	0.06
Benzene	0.43	0.95	1.45	1.04	0.93	0.33	0.39	0.38	0.73	0.35	0.34
Carbon Tetrachloride	0.11	0.10	0.09	0.07	0.08	0.06	0.08	0.07	0.06	0.07	0.06
2-Methylhexane	7.18	15.8	6.43	3.50	2.49	1.39	0.47	2.32	1.77	0.10	0.22
3-methylhexane	7.39	16.0	5.88	1.86	1.48	0.73	0.56	2.41	1.95	0.12	0.24
Trichloroethene	0.27	0.23	0.20	0.31	0.21	0.13	0.08	0.09	0.46	0.13	0.22
Heptane	0.84	1.77	0.72	0.28	0.23	0.12	0.00	0.26	0.30	0.00	0.13
Methylcyclohexane	0.16	0.35	0.18	0.10	0.00	0.00	0.00	0.00	0.18	0.00	0.00
Toluene	1.76	2.07	1.35	6.31	13.7	1.81	21.0	3.26	29.3	8.89	101
Ethylbenzene	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.17
m-Xylene	0.00	0.00	0.11	0.31	0.00	0.00	0.00	0.00	0.14	0.00	0.34
o-Xylene	0.33	0.31	0.17	0.18	0.07	0.00	0.00	0.00	0.07	0.00	0.17
Chlorotoluenes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Propylbenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.34
n-Decane	93.7	120	137	58.8	11.7	2.48	0.34	0.31	0.17	0.08	0.12
1,2,3-Trimethylbenzene	0.21	0.21	0.26	0.17	0.07	0.04	0.00	0.00	0.04	0.00	0.07
Undecane	0.31	0.29	0.62	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Naphthalene	0.20	0.00	0.11	0.41	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Dodecane	1.08	1.58	2.02	1.35	1.93	0.35	0.11	0.16	0.14	0.15	0.14