

WATER TREATMENT PLANT, EAST LIVERPOOL, OHIO																									
MANGANESE PM10 CONCENTRATIONS 2009, 2011-2022 (January)																									
2009		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020**		2021		2022	
Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3
2009-01-01	0.014	2011-06-26	0.011	2012-01-04	0.011	2013-01-04	0.014*	2014-01-05	1.200	2015-01-06	0.079	2016-01-01	0.520	2017-01-01	0.015*	2018-01-02	0.017	2019-01-03	0.329	2020-01-04	0.016*	2021-01-04	0.014*	2022-01-05	0.014*
2009-01-07	0.071	2011-07-02	0.262	2012-01-10	0.145	2013-01-10	0.260	2014-01-11	0.016*	2015-01-12	0.210	2016-01-07	0.016*	2017-01-07	0.015*	2018-01-08	0.015*	2019-01-09	0.015*	2020-01-10	1.4	2021-01-10	0.014*	2022-01-11	0.013*
2009-01-13	0.014*	2011-07-08	0.344	2012-01-16	0.326	2013-01-16	0.014*	2014-01-17	0.016	2015-01-18	0.053	2016-01-13	0.017	2017-01-13	0.190	2018-01-14	0.015*	2019-01-15	0.015*	2020-01-16	0.016*	2021-01-16	0.033	2022-01-17	0.014*
2009-01-19	0.036	2011-07-14	0.985	2012-01-22	0.019	2013-01-22	0.017	2014-01-23	0.014*	2015-01-24	0.040	2016-01-19	0.500	2017-01-19	0.053	2018-01-20	AN	2019-01-21	0.050	2020-01-22	1.67	2021-01-22	0.015*	2022-01-23	0.014*
2009-01-25	0.014*	2011-07-20	0.279	2012-01-28	0.008	2013-01-28	0.018	2014-01-29	1.000	2015-01-30	0.031	2016-01-25	1.100	2017-01-25	0.034	2018-01-26	0.129	2019-01-27	0.015*	2020-01-28	0.016*	2021-01-28	0.014*	2022-01-29	0.013*
2009-01-31	0.014*	2011-07-26	0.152	2012-01-04	0.014*	2013-02-03	0.014*	2014-02-04	0.250	2015-02-05	0.043	2016-01-31	0.021	2017-01-31	AN	2018-02-01	0.016*	2019-02-02	0.799	2020-02-03	0.8	2021-02-03	0.015*		
2009-02-06	0.610	2011-08-01	0.180	2012-01-10	0.056	2013-02-09	0.110	2014-02-10	0.048	2015-02-11	0.150	2016-02-06	0.032	2017-02-06	0.270	2018-02-07	0.016	2019-02-08	0.015*	2020-02-09	0.016*	2021-02-09	0.02		
2009-02-12	0.014*	2011-08-07	0.010	2012-01-16	0.130	2013-02-15	0.570	2014-02-16	0.031	2015-02-17	0.096	2016-02-12	0.072	2017-02-12	0.015*	2018-02-13	0.231	2019-02-14	0.506	2020-02-15	0.015*	2021-02-15	0.113		
2009-02-18	0.470	2011-08-13	0.118	2012-01-22	0.014*	2013-02-21	0.130	2014-02-22	0.031	2015-02-23	0.050	2016-02-18	BA	2017-02-18	0.035	2018-02-19	0.229	2019-02-20	0.470	2020-02-21	0.015*	2021-02-21	0.083		
2009-02-24	0.260	2011-08-19	1.540	2012-01-28	0.015*	2013-02-27	0.015*	2014-02-28	0.680	2015-03-01	0.120	2016-02-24	0.160	2017-02-24	0.084	2018-02-25	0.017	2019-02-26	0.202	2020-02-27	0.016*	2021-02-27	0.025		
2009-03-02	0.058	2011-08-25	0.026	2012-02-03	0.410	2013-03-05	1.000	2014-03-06	0.430	2015-03-07	0.760	2016-03-01	0.260	2017-03-02	0.015*	2018-03-03	0.015	2019-03-04	0.015*	2020-03-04	0.015*	2021-03-05	0.019		
2009-03-08	0.049	2011-08-31	1.230	2012-02-09	0.040	2013-03-11	0.340	2014-03-12	0.022	2015-03-13	0.041	2016-03-07	0.160	2017-03-08	0.015*	2018-03-09	0.015*	2019-03-10	0.015*	2020-03-10	0.028	2021-03-11	0.037		
2009-03-14	0.017	2011-09-06	1.530	2012-02-15	0.099	2013-03-17	0.014	2014-03-18	0.290	2015-03-19	1.000	2016-03-13	0.016*	2017-03-14	0.040	2018-03-15	0.016*	2019-03-16	0.015*	2020-03-16	0.214	2021-03-17	0.337		
2009-03-20	0.050	2011-09-12	0.993	2012-02-21	0.210	2013-03-23	0.026	2014-03-24	0.029	2015-03-25	0.270	2016-03-19	0.015	2017-03-20	0.088	2018-03-21	0.045*	2019-03-22	0.015*	2020-03-22	0.015*	2021-03-23	0.298		
2009-03-26	0.540	2011-09-18	0.030	2012-02-27	0.022	2013-03-29	0.120	2014-03-30	0.015*	2015-03-31	0.280	2016-03-25	0.015*	2017-03-26	0.016*	2018-03-27	0.111	2019-03-28	0.137	2020-03-28	**BB	2021-03-29	0.076		
2009-04-01	0.470	2011-09-24	0.012	2012-03-04	0.015*	2013-04-04	0.460	2014-04-05	0.015	2015-04-06	0.930	2016-03-31	0.083	2017-04-01	0.015*	2018-04-02	0.100	2019-04-03	0.082	2020-04-03	**BB	2021-04-04	0.015*		
2009-04-07	0.015*	2011-09-30	0.007	2012-03-10	0.014*	2013-04-10	0.086	2014-04-11	0.047*	2015-04-12	0.096	2016-04-06	0.520	2017-04-07	0.015*	2018-04-08	0.016*	2019-04-09	0.050	2020-04-09	**BB	2021-04-10	0.015*		
2009-04-13	0.460	2011-10-06	0.928	2012-03-16	0.025	2013-04-16	0.200	2014-04-17	0.170	2015-04-18	0.170	2016-04-12	0.054	2017-04-13	0.186	2018-04-14	0.062	2019-04-15	0.015*	2020-04-15	**BB	2021-04-16	0.015*		
2009-04-19	0.022	2011-10-12	2.450	2012-03-22	0.170	2013-04-22	0.220	2014-04-23	0.020	2015-04-24	0.190	2016-04-18	0.340	2017-04-19	0.095	2018-04-20	0.052	2019-04-21	0.328	2020-04-21	**BB	2021-04-22	0.015*		
2009-04-25	0.032	2011-10-18	0.295	2012-03-28	0.026	2013-04-28	AV	2014-04-29	0.082	2015-04-30	0.200	2016-04-24	0.025	2017-04-25	0.711	2018-04-26	0.051	2019-04-27	0.000	2020-04-27	**BB	2021-04-28	0.026		
2009-05-01	0.015*	2011-10-24	0.123	2012-04-03	0.230	2013-05-04	0.230	2014-05-05	AN	2015-05-06	0.430	2016-04-30	0.032	2017-05-01	0.062	2018-05-02	0.163	2019-05-03	0.048	2020-05-03	**BB	2021-05-04	0.016*		
2009-05-07	0.015*	2011-10-30	0.010	2012-04-09	0.015*	2013-05-10	0.130	2014-05-11	0.040	2015-05-12	0.023	2016-05-06	0.560	2017-05-07	0.016*	2018-05-08	0.039	2019-05-09	0.151	2020-05-09	**BB	2021-05-10	0.015*		
2009-05-13	0.190	2011-11-05	0.076	2012-04-15	0.015*	2013-05-16	0.028	2014-05-17	0.015*	2015-05-18	0.180	2016-05-12	AN	2017-05-13	0.018	2018-05-14	0.016*	2019-05-15	0.089	2020-05-15	**BB	2021-05-16	0.015*		
2009-05-19	0.033	2011-11-11	0.020	2012-04-21	0.015*	2013-05-22	0.017*	2014-05-23	0.050	2015-05-24	0.230	2016-05-18	0.200	2017-05-19	0.272	2018-05-20	0.016*	2019-05-21	0.157	2020-05-21	**BB	2021-05-22	0.015*		
2009-05-25	0.031	2011-11-17	0.017	2012-04-27	0.015*	2013-05-28	0.120	2014-05-29	0.140	2015-05-30	0.059	2016-05-24	0.045	2017-05-25	0.055*	2018-05-26	0.057	2019-05-27	0.042	2020-05-27	**BB	2021-05-28	AN		
2009-05-31	0.043	2011-11-23	0.035	2012-05-03	0.075	2013-06-03	0.120	2014-06-04	0.130	2015-06-05	0.140	2016-06-04	0.021	2017-06-05	0.016*	2018-06-01	0.016	2019-06-02	0.015*	2020-06-02	0.040	2021-06-03	0.015*		
2009-06-06	0.028	2011-11-29	0.030	2012-05-09	0.016	2013-06-09	0.020	2014-06-10	0.120	2015-06-11	0.047	2016-06-05	0.016*	2017-06-06	0.016*	2018-06-07	0.219	2019-06-08	0.168	2020-06-08	0.222	2021-06-09	0.017		
2009-06-12	0.036	2011-12-05	0.524	2012-0																					

Water Treatment Plant Monthly Averages PM10 Manganese Concentrations (µg/m ³)													
	2009	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
January	0.03		0.07	0.06	0.45	0.08	0.36	0.07	0.07	0.0848	0.62	0.02	0.01
February	0.34		0.16	0.17	0.21	0.08	0.09	0.13	0.12	0.3984	0.17	0.05	
March	0.14		0.05	0.30	0.16	0.41	0.09	0.06	0.06	0.0394	0.07	0.15	
April	0.20		0.06	0.24	0.07	0.32	0.19	0.33	0.07	0.11875	*	0.02	
May	0.05		0.06	0.11	0.06	0.18	0.21	0.12	0.09	0.10	*	0.01	
June	0.03	0.01	0.04	0.05	0.10	0.42	0.05	0.02	0.14	0.05	0.06	0.02	
July	0.07	0.40	0.13	0.03	0.05	0.38	0.04	0.04	0.16	0.06	0.02	0.02	
August	0.14	0.52	0.10	0.09	0.07	0.62	0.11	0.12	0.07	0.07	0.04	0.04	
September	0.60	0.51	0.30	0.05	0.91	0.34	0.09	0.07	0.18	0.15	0.05	**	
October		0.31	0.13	0.08	0.24	1.38	0.04	0.06	0.22	0.07	0.04	0.12	
November		0.03	0.04	0.09	0.03	0.25	0.19	0.66	0.13	0.06	0.07	0.06	
December		0.40	0.14	0.17	0.10	0.15	0.05	0.17	0.13	0.11	0.03	0.02	

* Due to Covid-19 and Ohio's stay at home order, all filterable and canister data ceased collection after Jan. 2020. It is TBD when new data will be collected, analyzed and posted.

** No date available

WATER TREATMENT PLANT, EAST LIVERPOOL, OHIO																									
MANGANESE PM10 CONCENTRATIONS 2009, 2011-2022 (January)																									
2009		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020**		2021		2022	
Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3	Date	µg/m3
2009-01-01	0.014	2011-06-26	0.011	2012-01-04	0.011	2013-01-04	0.014*	2014-01-05	1.200	2015-01-06	0.079	2016-01-01	0.520	2017-01-01	0.015*	2018-01-02	0.017	2019-01-03	0.329	2020-01-04	0.016*	2021-01-04	0.014*	2022-01-05	0.014*
2009-01-07	0.071	2011-07-02	0.262	2012-01-10	0.145	2013-01-10	0.260	2014-01-11	0.016*	2015-01-12	0.210	2016-01-07	0.016*	2017-01-07	0.015*	2018-01-08	0.015*	2019-01-09	0.015*	2020-01-10	1.4	2021-01-10	0.014*	2022-01-11	0.013*
2009-01-13	0.014*	2011-07-08	0.344	2012-01-16	0.326	2013-01-16	0.014*	2014-01-17	0.016	2015-01-18	0.053	2016-01-13	0.017	2017-01-13	0.190	2018-01-14	0.015*	2019-01-15	0.015*	2020-01-16	0.016*	2021-01-16	0.033	2022-01-17	0.014*
2009-01-19	0.036	2011-07-14	0.985	2012-01-22	0.019	2013-01-22	0.017	2014-01-23	0.014*	2015-01-24	0.040	2016-01-19	0.500	2017-01-19	0.053	2018-01-20	AN	2019-01-21	0.050	2020-01-22	1.67	2021-01-22	0.015*	2022-01-23	0.014*
2009-01-25	0.014*	2011-07-20	0.279	2012-01-28	0.008	2013-01-28	0.018	2014-01-29	1.000	2015-01-30	0.031	2016-01-25	1.100	2017-01-25	0.034	2018-01-26	0.129	2019-01-27	0.015*	2020-01-28	0.016*	2021-01-28	0.014*	2022-01-29	0.013*
2009-01-31	0.014*	2011-07-26	0.152	2012-01-04	0.014*	2013-02-03	0.014*	2014-02-04	0.250	2015-02-05	0.043	2016-01-31	0.021	2017-01-31	AN	2018-02-01	0.016*	2019-02-02	0.799	2020-02-03	0.8	2021-02-03	0.015*		
2009-02-06	0.610	2011-08-01	0.180	2012-01-10	0.056	2013-02-09	0.110	2014-02-10	0.048	2015-02-11	0.150	2016-02-06	0.032	2017-02-06	0.270	2018-02-07	0.016	2019-02-08	0.015*	2020-02-09	0.016*	2021-02-09	0.02		
2009-02-12	0.014*	2011-08-07	0.010	2012-01-16	0.130	2013-02-15	0.570	2014-02-16	0.031	2015-02-17	0.096	2016-02-12	0.072	2017-02-12	0.015*	2018-02-13	0.231	2019-02-14	0.506	2020-02-15	0.015*	2021-02-15	0.113		
2009-02-18	0.470	2011-08-13	0.118	2012-01-22	0.014*	2013-02-21	0.130	2014-02-22	0.031	2015-02-23	0.050	2016-02-18	BA	2017-02-18	0.035	2018-02-19	0.229	2019-02-20	0.470	2020-02-21	0.015*	2021-02-21	0.083		
2009-02-24	0.260	2011-08-19	1.540	2012-01-28	0.015*	2013-02-27	0.015*	2014-02-28	0.680	2015-03-01	0.120	2016-02-24	0.160	2017-02-24	0.084	2018-02-25	0.017	2019-02-26	0.202	2020-02-27	0.016*	2021-02-27	0.025		
2009-03-02	0.058	2011-08-25	0.026	2012-02-03	0.410	2013-03-05	1.000	2014-03-06	0.430	2015-03-07	0.760	2016-03-01	0.260	2017-03-02	0.015*	2018-03-03	0.015	2019-03-04	0.015*	2020-03-04	0.015*	2021-03-05	0.019		
2009-03-08	0.049	2011-08-31	1.230	2012-02-09	0.040	2013-03-11	0.340	2014-03-12	0.022	2015-03-13	0.041	2016-03-07	0.160	2017-03-08	0.015*	2018-03-09	0.015*	2019-03-10	0.015*	2020-03-10	0.028	2021-03-11	0.037		
2009-03-14	0.017	2011-09-06	1.530	2012-02-15	0.099	2013-03-17	0.014	2014-03-18	0.290	2015-03-19	1.000	2016-03-13	0.016*	2017-03-14	0.040	2018-03-15	0.016*	2019-03-16	0.015*	2020-03-16	0.214	2021-03-17	0.337		
2009-03-20	0.050	2011-09-12	0.993	2012-02-21	0.210	2013-03-23	0.026	2014-03-24	0.029	2015-03-25	0.270	2016-03-19	0.015	2017-03-20	0.088	2018-03-21	0.045*	2019-03-22	0.015*	2020-03-22	0.015*	2021-03-23	0.298		
2009-03-26	0.540	2011-09-18	0.030	2012-02-27	0.022	2013-03-29	0.120	2014-03-30	0.015*	2015-03-31	0.280	2016-03-25	0.015*	2017-03-26	0.016*	2018-03-27	0.111	2019-03-28	0.137	2020-03-28	**BB	2021-03-29	0.076		
2009-04-01	0.470	2011-09-24	0.012	2012-03-04	0.015*	2013-04-04	0.460	2014-04-05	0.015	2015-04-06	0.930	2016-03-31	0.083	2017-04-01	0.015*	2018-04-02	0.100	2019-04-03	0.082	2020-04-03	**BB	2021-04-04	0.015*		
2009-04-07	0.015*	2011-09-30	0.007	2012-03-10	0.014*	2013-04-10	0.086	2014-04-11	0.047*	2015-04-12	0.096	2016-04-06	0.520	2017-04-07	0.015*	2018-04-08	0.016*	2019-04-09	0.050	2020-04-09	**BB	2021-04-10	0.015*		
2009-04-13	0.460	2011-10-06	0.928	2012-03-16	0.025	2013-04-16	0.200	2014-04-17	0.170	2015-04-18	0.170	2016-04-12	0.054	2017-04-13	0.186	2018-04-14	0.062	2019-04-15	0.015*	2020-04-15	**BB	2021-04-16	0.015*		
2009-04-19	0.022	2011-10-12	2.450	2012-03-22	0.170	2013-04-22	0.220	2014-04-23	0.020	2015-04-24	0.190	2016-04-18	0.340	2017-04-19	0.095	2018-04-20	0.052	2019-04-21	0.328	2020-04-21	**BB	2021-04-22	0.015*		
2009-04-25	0.032	2011-10-18	0.295	2012-03-28	0.026	2013-04-28	AV	2014-04-29	0.082	2015-04-30	0.200	2016-04-24	0.025	2017-04-25	0.711	2018-04-26	0.051	2019-04-27	0.000	2020-04-27	**BB	2021-04-28	0.026		
2009-05-01	0.015*	2011-10-24	0.123	2012-04-03	0.230	2013-05-04	0.230	2014-05-05	AN	2015-05-06	0.430	2016-04-30	0.032	2017-05-01	0.062	2018-05-02	0.163	2019-05-03	0.048	2020-05-03	**BB	2021-05-04	0.016*		
2009-05-07	0.015*	2011-10-30	0.010	2012-04-09	0.015*	2013-05-10	0.130	2014-05-11	0.040	2015-05-12	0.023	2016-05-06	0.560	2017-05-07	0.016*	2018-05-08	0.039	2019-05-09	0.151	2020-05-09	**BB	2021-05-10	0.015*		
2009-05-13	0.190	2011-11-05	0.076	2012-04-15	0.015*	2013-05-16	0.028	2014-05-17	0.015*	2015-05-18	0.180	2016-05-12	AN	2017-05-13	0.018	2018-05-14	0.016*	2019-05-15	0.089	2020-05-15	**BB	2021-05-16	0.015*		
2009-05-19	0.033	2011-11-11	0.020	2012-04-21	0.015*	2013-05-22	0.017*	2014-05-23	0.050	2015-05-24	0.230	2016-05-18	0.200	2017-05-19	0.272	2018-05-20	0.016*	2019-05-21	0.157	2020-05-21	**BB	2021-05-22	0.015*		
2009-05-25	0.031	2011-11-17	0.017	2012-04-27	0.015*	2013-05-28	0.120	2014-05-29	0.140	2015-05-30	0.059	2016-05-24	0.045	2017-05-25	0.055*	2018-05-26	0.057	2019-05-27	0.042	2020-05-27	**BB	2021-05-28	AN		
2009-05-31	0.043	2011-11-23	0.035	2012-05-03	0.075	2013-06-03	0.120	2014-06-04	0.130	2015-06-05	0.140	2016-06-04	0.021	2017-06-05	0.016*	2018-06-01	0.016	2019-06-02	0.015*	2020-06-02	0.040	2021-06-03	0.015*		
2009-06-06	0.028	2011-11-29	0.030	2012-05-09	0.016	2013-06-09	0.020	2014-06-10	0.120	2015-06-11	0.047	2016-06-05	0.016*	2017-06-06	0.016*	2018-06-07	0.219	2019-06-08	0.168	2020-06-08	0.222	2021-06-09	0.017		
2009-06-12	0.036	2011-12-05	0.5																						