

## Results of the year 2010 (in µg/m³)

### Number of exceedances/maximum values

	SO <sub>2</sub> 1 Std.	SO <sub>2</sub> 24 Std.	NO <sub>2</sub> 1 Std.	PM10 24 Std.	CO 8 Std.	O <sub>3</sub> 8 Std.	O <sub>3</sub> 1 Std.
number of allowed exceedances	24	3	18	35	keine	25	keine
limit value	350	125	200	50	10.000	120	180
<b>Background-, ozone- and special stations</b>							
Billbrook	- / 76	- / 21	- / 155	16 / 82	-	-	-
Billstedt	- / 46	- / 21	- / 196	15 / 84	-	-	-
Blankenese	-	-	- / 91	-	-	18 / 201	11 / 232
Bramfeld	-	-	- / 131	-	-	16 / 203	12 / 225
Finkenwerder Airbus	-	-	- / 120	-	-	-	-
Finkenwerder West	-	-	- / 126	12 / 83	-	-	-
Flughafen-Nord	- / 29	- / 20	- / 145	14 / 81	- / 2.070	12 / 188	10 / 222
Heimfeld	- / 49	- / 22	- / 121	14 / 78	-	-	-
Neugraben	-	-	- / 98	-	-	21 / 202	19 / 226
Sternschanze	- / 103	- / 35	- / 130	18 / 87	- / 960	13 / 192	13 / 209
Tatenberg	-	-	- / 122	-	-	12 / 195	8 / 209
Veddel	- / 232	- / 74	- / 168	18 / 80	-	-	-
Wilhelmsburg	- / 97	- / 21	- / 170	14 / 78	- / 1.422	-	-
<b>Traffic stations</b>							
Habichtstr.	-	-	24 / 263	26 / 98	- / 2.663	-	-
Kieler Straße	-	-	1 / 215	-	- / 1.912	-	-
Max-Brauer-Allee	-	-	11 / 228	19 / 86	- / 2.073	-	-
Stresemannstraße	-	-	1 / 201	20 / 89	- / 1.438	-	-

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The Institute for Hygiene and Environment is part of the Hamburg Ministry for Health and Customer Protection. In the areas of food chemistry, human- and veterinary medicine and environmental analyses 350 scientists, medical and veterinary surgeons, veterinarians, engineers, technicians and administrative staff – work every day for the observation of the environment in order to prevent damage to the public, animals and nature, to protect customers against unsatisfactory products and to ensure public health.



## Air analyses results 2010

### The ambient air pollution network of Hamburg (HaLm)

## Air pollution in Hamburg

In the year 2010, the air pollution situation was uncomplicated in general, although high concentrations of nitrogen dioxide were measured at hotspots in the city of Hamburg and the information value for ozone was exceeded several times.

The extreme cold weather conditions in the first three months of the year and in December 2010 and the partly very hot summer were responsible for a large number of higher particle concentrations (PM10) in the winter months and for high concentrations of ozone in summer.

Cold and stagnant weather conditions with inversions prevented an efficient dilution of the pollutants in the atmosphere. At the same time the cold weather led to more emissions caused by domestic heating. The large scale background concentration was therefore higher than during a warmer winter. In addition, local emissions from traffic (sea and street traffic) influenced the measurements at several stations. Nevertheless, the limit values for PM10 of the European Directive 2008/50/EC ("Clean Air for Europe") were not exceeded. The annual mean value at each station was lower than the annual mean limit value for 40 µg/m<sup>3</sup>, the daily mean value of 50 µg/m<sup>3</sup> was not exceeded more than 35 times (number of allowed exceedances per year). The highest number of exceedances (26) in the city was documented at the traffic station Habichtstraße.

There were several ozone episodes during the summer months. On several days the information value for ozone of 180 µg/m<sup>3</sup> was exceeded, leading to an information of the public by radio. This value had not been exceeded for several years. Intensive ozone formation is dependent on strong sun radiation, high temperatures and high precursor concentrations (e. g. NO, NO<sub>2</sub> and hydrocarbons). A further limit value for ozone is the 8-hourly limit value of 120 µg/m<sup>3</sup> for which 25 exceedances are allowed. This number was not exceeded.

Another pollutant which influences the air quality of Hamburg very much is nitrogen dioxide (NO<sub>2</sub>). The annual limit value of 40 µg/m<sup>3</sup> which came into force on 1st January 2010 was exceeded at all four traffic stations, the highest NO<sub>2</sub> pollution was measured at the Max-Brauer-Allee with 70 µg/m<sup>3</sup>. At the Habichtstraße even the limit value for one hour (200 µg/m<sup>3</sup>) was 24 times exceeded. In the European Directive 18 exceedances of the hourly limit values are allowed. Further measures will have to be considered in order to fulfil the requirements of the European Directive.

At the moment the clean air plan from 2004 for Hamburg is adjusted considering the requirements of the new directive. The annual limit value of 5 µg/m<sup>3</sup> for benzene which is also valid from 1st January 2010 can already be met, even at the traffic stations.

### The ambient air pollution network of Hamburg

- Operated 18 measurement stations in 2010 for the monitoring of the air quality in Hamburg
- Differentiates between background-, ozone- and traffic stations and stations for special purposes
- Measures continuously according to EU Directives and national law.

The background stations monitor the general air quality in a larger area. They measure normally sulphur dioxide (SO<sub>2</sub>), Nitrogen monoxide (NO), nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM10: particle smaller than 10 micrometer). Some stations also measure carbon monoxide (CO) and PM2,5 (particles smaller than 2,5 micrometer).

The ozone stations measure ozone (O<sub>3</sub>) and also NO<sub>2</sub>- and NO-concentrations.

At the traffic stations pollutants are monitored which are typical for traffic locations: benzene, NO, NO<sub>2</sub>, CO and PM10 or PM2,5.

There are special stations which measure for special requirements mostly in connection with complaints or special building activities or because of special emission situations e.g. in connection with cruise ships.

From May 2009 to August 2010 special SO<sub>2</sub>-measurements were carried out on a former waste disposal site. During this period an annual mean value of 9 µg/m<sup>3</sup> was measured. That corresponds very well with the result of the permanent station in Veddel. The daily mean limit value of 125 µg/m<sup>3</sup> was exceeded once. Three exceedances per year are allowed. The hourly limit value of 350 µg/m<sup>3</sup> was exceeded three times. Here 24 exceedances are allowed.

The table considers not only limit values of the EU Directive but also the annual mean limit value for SO<sub>2</sub> of 50 µg/m<sup>3</sup> from the national technical guide.

\*Limit value of national technical guide (TALuft= Technische Anleitung Luft)

## Results of the year 2010 (in µg/m<sup>3</sup>)

### Annual mean values

All stations	SO <sub>2</sub>	NO	NO <sub>2</sub>	O <sub>3</sub>	PM 10	CO	Benzol	PM 2,5
limit value 2010	50*	-	40	-	40	-	5	-
<b>Background-, ozone- and special stations</b>								
Billbrook	4	11	26	-	21	-	-	-
Billstedt	4	14	32	-	20	-	-	-
Blankenese	-	4	18	48	-	-	-	-
Bramfeld	-	6	18	47	-	-	-	-
Finkenwerder Airbus	-	7	20	-	-	-	-	-
Finkenwerder West	-	7	22	-	20	-	-	-
Flughafen-Nord	3	8	22	44	21	228	0,7	-
Heimfeld	4	11	27	-	21	-	-	-
Neugraben	-	4	16	49	-	-	-	-
Sternschanze	4	9	29	42	24	254	0,7	16
Tatenberg	-	4	17	44	-	-	-	-
Veddel	7	21	38	-	22	-	-	16
Wilhelmsburg	4	9	30	-	22	240	0,8	15
<b>Traffic stations</b>								
	SO <sub>2</sub>	NO	NO <sub>2</sub>	O <sub>3</sub>	PM 10	CO	Benzol	PM 2,5
Habicht-Straße	-	71	60	-	29	537	1,8	20
Kieler Straße	-	48	54	-	-	400	1,3	20
Max-Brauer-Allee	-	84	70	-	27	590	2,0	-
Stresemannstraße	-	62	66	-	24	448	1,4	-