

THE STUDY OF POLLUTION WITH SETTLED POWDERS IN TG -JIU MUNICIPALITY

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Abstract: *This paper presents the study of sedimentary particulate pollution in the city in 2012-2013 Tg-Jiu. For monitoring of particulate sediment Tg - Jiu, were sampled in five distinct areas (points). Interpretation of results for sediment particles was performed according to standard 12574/87. In the period 2012-2013 the highest concentrations of particulates was recorded at the point P3, located at the limit of the functional area of SC SIMCORVAR S. A. - Factory Tg-Jiu north of it. Reducing concentrations of sediment particles in the air in the Tg-Jiu is based on the reduction of industrial activities and measures taken by the existing air pollution prevention.*

Key words: *pollution and sediment particles, measure pollution*

1. INTRODUCTION

One of the most important problems of the modern age is the air pollution. This phenomenon is extremely complex, became the focus of several international organizations as the consequences of air pollution are felt abroad. In general one can describe regional pollution as phenomenon, which consists of atmospheric contamination by waste or byproducts liquid, solid or gaseous that endanger human health, plants and animals, or can attack materials, reduce visibility and cause unpleasant odors. On a global scale, elimination or accumulation in the atmosphere of certain products, lead to irreparable consequences on the natural balance of the planet: ozone depletion and global warming of the atmosphere. Anthropogenic activities that generate the largest share of greenhouse gas emissions are combustion processes.

The level of gases responsible for the greenhouse effect decreased until 1998 - 1999, compared to the level recorded before 1990, mainly due to reduced economic

activity throughout the country, but between 2006-2008 the level increased due to increased consumption of fossil fuels in thermal power sector.

When air pollution is very strong in the area the further it can affect the environment from the source .

Global Air pollution is a threat to our future and we must find efficient solutions to stop it once and for all.

Tackling local air pollution is easier to organize, because the direct effect on human health can be seen live.

The fight for control of the global air pollution is more complicated, because the people affected, often live in a different region from the majority of those responsible for production of air pollution .

This paper presents the study of settled powders pollution in the Tg-Jiu.

2. EXPERIMENTAL

The determination of the settled powders was realized in conformity with STAS 10195-75 by using the gravimetric

Under this standard, the maximum allowable amount of settled powders in the air protected areas is 17g / m² / month.

For monitoring of settled powders Tg - Jiu, were sampled in five distinct areas (points), located as follows:

P1 - located in the north of the city;

P2 - located in the Meteor;

P3 - located at the boundary of functional SC SIMCORVAR SA, point Tg - Jiu north - east of the factory;

P4 - located north of SC Lafarge S.A., away from approx. 250 m from it;

P5 - all located north from SC Lafarge S.A., at a distance of approx. 1500 m

Results on recorded concentrations for sediment particles during two years of study are presented in Table 1

Values that represent concentrations detected in 2012 and 2013.

Table 1. The results of the measurements for the settled powders

Sampling Points. Month	2012					2013				
	P1	P2	P3	P4	P5	P1	P2	P3	P4	P5
January	9,34	8,7	9,77	9,75	10,27	5,43	3,35	12,21	7,76	10,40
February	11,03	9,99	13,85	8,52	9,62	11,68	5,32	6,51	5,87	3,16
March	10,45	9,29	15,26	13,98	7,03	3,66	3,29	8,57	3,57	7,43
April	6,53	7,07	6,98	5,8	2,47	4,83	3,55	17,83	9,99	9,07
May	8,02	4,21	11,93	9,19	3,17	8,56	5,04	7,44	3,94	7,15
June	12,13	14,4	7,17	5,19	8,62	5,69	3,55	10,25	5,23	9,09
July	10,49	10,56	6,41	6,01	6,07	5,16	5,99	7,01	8,01	7,85
August	6,21	8,53	13,26	8,45	11,32	6,56	3,18	4,25	4,15	3,82
September	3,15	2,42	12,24	4,00	3,28	5,79	2,74	6,33	3,45	3,86
October	4,92	4,23	11,98	7,87	4,94	6,13	3,89	7,45	5,42	5,58
November	3,27	4,93	13,9	4,87	10,27	4,59	4,72	8,94	3,54	6,16
December	5,11	2,62	8,22	3,4	6,75	6,58	7,12	3,39	2,57	2,98
Concentration	90,65	86,95	130,97	87,03	120,45	69,84	51,74	11,18	63,30	76,35
Annual Average	7,55	7,25	10,91	7,25	10,04	6,35	4,31	8,35	5,28	6,36

The first finding, and the farthest from the point of view of environmental protection is that there was a single exceedance of the maximum permissible concentration.

However, analyzing the results of the measurements made during the two-year study may reveal some aspects of sediment particles size concentrations relative to the maximum permissible concentration, their evolution over time, and others.

Thus, the sampling point P1, located in the north of Tg. Jiu River and nestled between S.C ARTEGO S.A. and SC ROSRAMO S.A, all values obtained during the two-year study were below the maximum permissible concentration.

In 2012, the highest concentrations of settled powders were measured in June, and represented 71.4% of the maximum permissible concentration that means 13.4% of the sum of concentrations.

The lowest concentrations of in 2012 were recorded settled powders between September and November, when the recorded values represented more than 18.5% of the maximum permissible concentration and over 3.5% of the sum of concentrations.

Other concentrations of particulate matter from the year had values that were between approx. 29% and 65% of the maximum permissible concentration.

Annual average concentration was 44.4% of the maximum permissible concentration. In 2013, concentrations of particulate matter from the air showed lower values than in 2012.

The highest concentration recorded during 2013 was measured in February and represented approx. 69% of the maximum permissible concentration and 16.7% of the sum of concentrations.

The lowest concentration was recorded in March and represented 21.5% of the maximum permissible concentration and 5.2% of the sum the concentration.

Sum of the concentrations calculated for this sample was 23% lower in 2013 than in 2012.

Annual average concentrations represented 37.4% of the maximum permissible concentration.

The sampling point P2 located in the west of Tg-Jiu housing neighborhood called "Meteor" during the two-year study of settled powders concentrations had values that ranged all below the maximum permissible concentration. And in this area higher values were measured in 2012.

Thus, this year the highest concentrations of settled powders were determined during the month of June, when the value recorded represented almost 85% of the maximum permissible concentration and 16.6% of the sum of concentrations.

Lowest amount of sediment particles in this area during 2012 was recorded in September, which was worth 14% of the maximum allowable concentration, and only 2.8% of the sum of concentration.

Average of 2012 represented 42.6% of the maximum allowed.

In 2013, concentrations of settled powders present in the air had values lower. The highest concentration of settled powders was recorded in December and 41.9% of the maximum permissible concentration and 13.8% of the sum of concentrations. At the opposite pole figure recorded in September, when the measured concentration was 16.1% of the maximum permissible concentration and 5.3% of the sum of concentration.

And the area sum of the concentrations of 2013 was lower than in 2012, with almost 40%.

The annual average for 2013 was a quarter of the maximum permissible concentration.

P3 sampling point is located throughout the western part of Tg-Jiu, the area of influence of SC Lafarge ROMANIA S. A. and SC SIMCORVAR SA, to the north of it,

to limit the functional area of the company SIMCORVAR.

This is where they had the highest concentrations of settled powders and only the one value was above the maximum allowable concentration.

In 2012, the highest concentration of settled powders was determined in March, its value being 89.7% of the maximum permissible concentration and 11.6% of the concentrations.

The lowest point of this was recorded in July and represented 37.7% of the permissible limit and almost 5% of the concentrations. In the area of monitoring of particulate matter from Tg - Jiu were recorded the highest concentrations of particulate annual average representing 64.2% of the maximum permissible concentration.

And in the course of 2013, the concentrations recorded at this point showed higher values than the other points.

Thus, in April there was one value that exceeded the maximum allowable concentration, which is almost 5% over the limit and represented 17.8% of the sum of concentrations.

The lowest concentration was measured in December, when the recorded value was below the maximum permissible concentration by 80% and represented 3.4% of sum of the concentration.

Even though there has been a concentration exceeding the maximum permissible amount concentrations in 2013 were lower compared to 2012 by 23.5%. Annual average concentration was 49.1% of the limit.

The following two sampling points were located in the influence area of SC Lafarge ROMANIA S. A. - Factory Tg-Jiu, the town Bârsești.

Thus, P4 is located at a distance of approx. 250m to the north of the factory.

Concentrations recorded during 2012 had values whose total amount was 5.1 times higher than the maximum permissible concentration.

The highest concentration of settled powders was recorded in March, the amount of which represented 82.2% of the maximum

permissible concentration and 16% of the sum of concentrations.

The lowest concentration was determined in December and presented a value represented 20% of the permissible limit and 3.9% of the sum of concentration.

In 2013 concentrations of settled powders showed lower values than in 2012 the highest concentration was measured in April, representing 58.8% of the concentrations.

At the opposite pole concentration recorded in December of that amount represented 15.1% of the maximum permissible concentration and 4% of the sum of concentrations.

Sum of the concentrations of 2013 to this point was about 27% lower than 2012. Annual average accounted for 31% of the maximum permissible concentration.

The sampling point P5 is situated at a distance of approx. 1500m, north of SC Lafarge ROMANIA S. A. and SC SIMCORVAR S.A.

In this case, all values calculated for settled powders, both in 2012 and 2013 were below the limit. In 2012, the highest concentration of settled powders was registered in August and represented 66.6% of the permissible limit and 9.4% of the sum of

3. CONCLUSION

Network Monitoring settled particles in the Tg. Jiu consists of five sampling points located mainly in the north and west of the city, in the areas of influence of the economic potential polluters.

In 2012 there was no exceedance of the maximum allowable concentration in the five sampling points.

Comparing the sum of the concentrations in the five sampling sites, the highest values were recorded at the point P3, located at the limit of the functional area of SC SIMCORVAR S. A. - Factory Tg. Jiu north of it.

The sum of the annual five sampling points in 2012, has the following descending order: P3> P5> P1> P4> P2.

concentration.

Lowest value was recorded in April, it represents 14.5% of the maximum permissible concentration and 2% of the monthly concentrations.

Annual average accounted for 59% of the maximum permissible concentration. In 2013, the presence of settled particles in the air was low.

The highest concentration of settled powders represented a value that was below the permissible limit of 39% and represented 13.6% of the sum of concentrations.

With the lowest concentration was by 83% lower than the permissible limit and represented only 3.9% of the sum of concentrations being recorded in December.

For this sum of the concentrations of 2013 showed a value that was lower than in 2012 by about 37%.

If we follow the settled powders concentrations during the two years of study in the five monitoring sites, it appears that every time sum of the concentrations were lower in 2013 than in 2012, indicating a reduction of the pollution in sediments.

The periods during the year 2012 with the highest concentrations of settled powders were February and March, and the lowest, September and December, the amount of the latter being at half periods against the concentrations high.

In 2013, a total of 60 measurements at five sampling points alone was above the maximum allowable concentration, which represented a 1.67% frequency of overflows.

The highest concentrations of settled powders were recorded throughout the P3, here recorded, and only exceeded the maximum permissible concentration, which was in April, she standing by 4.9% over the limit.

Based on the amount of annual concentrations of five sampling points decreasing order of these is the same as in 2012, namely:

P3> P5> P1> P4> P2.

Dates of 2013 with concentrations of settled powders was highest in April, and only when there was overflow, and the periods with the lowest concentrations were August, September and December.

Reduced levels of settled powders in the air in the Tg-Jiu is based on two factors: the reduction of economic activities in the area and measures taken by businesses to reduce pollution.

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