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THE IMPACT OF AIR QUALITY ON THE MORBIDITY OF THE POPULATION IN THE MUNICIPALITY OF STARA ZAGORA

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ABSTRACT
Ambient air quality in the Municipality Stara Zagora is monitored through a system of monitoring points. This allows to determine the hygienic status of air pollution in four points in the municipality and its impact on health. The most typical atmospheric pollutants: sulfur dioxide, dust, hydrogen sulfide, nitrogen oxides and lead aerosols. Their impact on the health of the population in the municipality of Stara Zagora was analyzed by total turnover morbidity and the medical assistance provided from medical institutions.

Key words: atmospheric pollutants, dust, sulfur dioxide, hydrogen sulfide, nitrogen oxides, lead aerosols

INTRODUCTION

In modern living human health depends on the environment is not less than from its inherent heredity. One of the worst factors that influence the health of the population, due to the fact that it is under his direct and continuous influence is anthropogenic impact on atmospheric composition (1, 2, 3).

Ambient air quality in the municipality of Stara Zagora is monitored through a system of monitoring points. This allows to determine the hygienic status of air pollution in four points. This study analyzed the impact of air pollutants on the health of the population by the total morbidity and the medical assistance provided from medical institutions.

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MATERIALS AND METHODS

Samples of ambient air sampling for contaminants in these monitoring points - automatic measuring station "Green wedge" in the town of Stara Zagora, OPSIS system - in the village of Mogila, OPSIS system - - in the village Ostra Mogila and manual point - in Stara Zagora (Regional Inspectorate of Environment and Water Stara Zagora)- with manual sampling and subsequent laboratory analysis.

Information on morbidity was obtained from the Regional Health Inspectorate Stara Zagora - health statistics-tracking form 1A Annexes 5 and 6.

All results were statistically processed by the methods of grouping the data and an alternative assay.

RESULTS AND DISCUSSION

Hygienic status of air pollution in Stara Zagora municipality shall be determined in 4 points: automatic measuring station (AIS) "Green wedge" - Stara Zagora, OPSIS system, located in the village Mound - total. Stara Zagora, OPSIS

system - in s.Ostra mound municipality. Stara Zagora and manual point - in Stara Zagora (Regional Inspectorate of Environment and Water Stara Zagora - with manual sampling and subsequent laboratory analysis. The most typical contaminants in Stara Zagora are: sulfur dioxide, dust, lead aerosols, nitrogen oxides and hydrogen sulfide.

Data analysis of annual average concentrations of particulate matter less than 10 micrometers shows that the point OPSIS the village Ostra Mogila for 2010 is 22,73 μg/m^3, for 2011 is 55,07 μg/m^3, with the average rate of 40 μg/m^3 (4). This indicates an increase of air pollution on this indicator. For 2012 there were no exceedances **(Figure 1).**

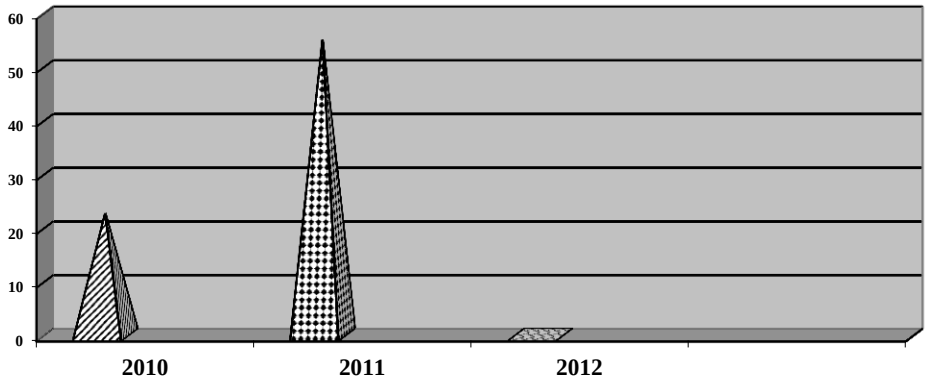

Figure 1. Annual average fine particulates opsis the village ostra mogila for 2010-2012 year

At the automatic measuring station "Green wedge" registered exceedences for 2010 were 34, for 2011 were 45 and 2012 were 27. According to Regional Inspectorate of Environment and Water Stara Zagora that this is mainly due to heating with solid fuels in households during the winter, and road traffic. In comparison with 2011, when the registered excesses for 2011 are 45 and 2010 are 34. Annually aspect is a reduction of pollution in this indicator for agglomeration. Levels of average values for PM_{10} (fine particulate matter) indicator in 2010, 2011 and 2012 at an average annual rate 40 μg/m^3 are shown in **Figure 2**. In the other monitoring stations for PM_{10} at an average annual rate of 40 μg/m3 not detectable excess of the average annual rate for this indicator.

Looking at the overall annual results there is a reduction of pollution when considering the indicator for agglomeration.

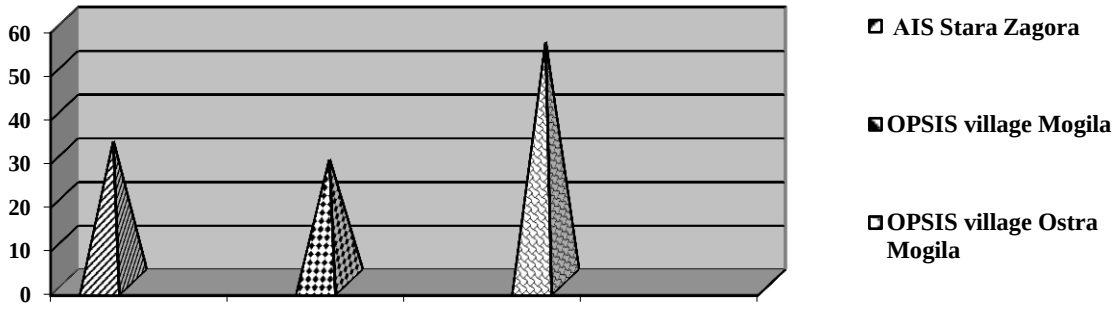

Figure 2. Annual average fine particulates Individual locations in the municipality stara zagora for 2010-2012 year

Excess at the stations for monitoring operating in the municipality Stara Zagora, and sulfur dioxide indicator Average values have only been established for only 2011 **(Figure 3)**.

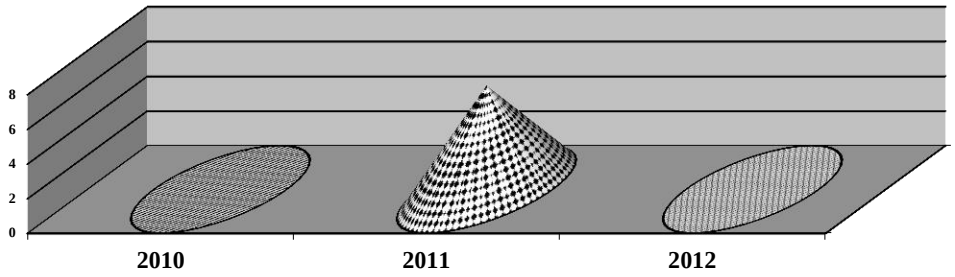

Figure 3. Number of exceedances sulphur dioxide for the period 2010-2012 year

No significant variations in hydrogen sulfide were found. For the period of November 2010 there was an established concentration of 0,015 mg/m^3, with a daily average norma 0,003 mg/m^3. For this period the average annual concentrations of lead aerosols in the atmosphere were not above the maximum permissible concentration.

Morbidity in turnover for medical assistance to the population in the municipality Stara Zagora the 2010-2012 is given in **Table 1**. **Table 2** gives information about the morbidity as hospitalization (5).

Table 1. *Number of exceedances sulphur dioxide morbidity according to medical turnover for 2010-2012 year for municipality stara zagora*

1000 people

	2010 year	**2011 year**	**2012 year**
Aged 0 to 17 years	1 798,6	2 457,3	1 849,7
Age over 18 years	2 133,9	2 543,2	2 048,8

Table 2. *According hospitalization morbidity for 2010-2012 year for municipality stara zagora*

1000 people

	2010 year	**2011 year**	**2012 year**
Aged 0 to 17 years	272,1	174,9	415,2
Aged 18 to 64 years	249,0	188,4	391,8
Age over 65 years	223,2	158,4	337,9

The overall prevelance of illness in the municipality Stara Zagora, shows that the most common diseases are those of the circulatory system (22.13% of all diseases), followed by respiratory diseases (16.45% of all diseases). The proportion of respiratory diseases in the municipality Stara Zagora is below the average for the area.

The greatest incidence of hospitalized patients are those with cerebrovascular disease; heart failure and ischemic heart disease; and in patients with respiratory disorders. The largest proportion of those hospitalized are patients with chronic diseases of the lower respiratory tract and bacterial pneumonia.

Amongst subjects from 0 to 17 years, respiratory diseases are most frequent, of which the most are bacterial pneumonia.

CONCLUSION

Atmospheric pollution in the municipality Stara Zagora for 2010-2012 year shows a decreasing trend. The integrated level reduction leads to reduction of the overall incidence of the

population. The highest share of the diseases are those of the circulatory system, followed by diseases of the respiratory system.

The proportion of respiratory diseases in Stara Zagora is below the average for the area.

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