KNOWLEDGE – International Journal
Vol. 23.6
Budva, Montenegro, May, 2018

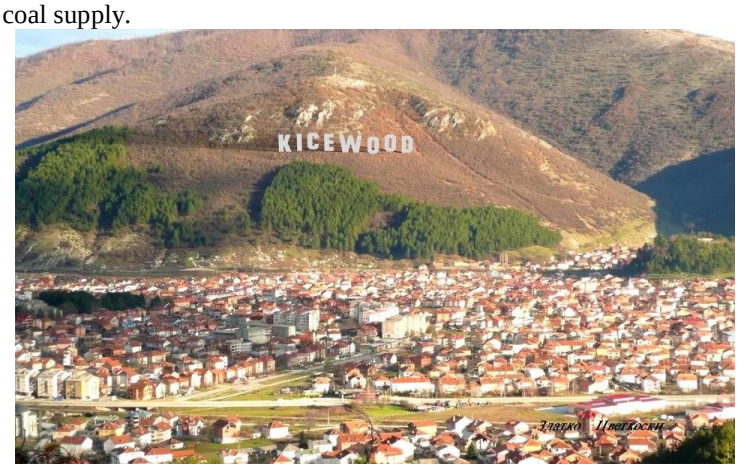
THERMOELECTRIC AND TRAFFICKING AS A DISEASE OF SERIOUS DISEASES IN THE KËRÇOVA POPULATION

Gafurr Ajruli
ES ”Drita”,Rudniçka 2, 6250 Kichevo, Macedonia, gafura@hotmail.com
Adem Xheladini
ES ”Drita”,Rudniçka 2, 6250 Kichevo, Macedonia, adem.xh.@hotmail.fr

Abstract: One of the most dangerous environmental pollutants in the Kërçova/Kicevo plain is Oslome's thermal power plant, 630 m above sea level, which produces electricity from coal burning, which is extracted from the surface of this country.
At the Oslomea thermal power plant during coal-fired power generation, these pollutants are released into the atmosphere: carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxides (NOx), carbon dioxide (CO2) and dust grace.
The measurement of these toxicants has been done in the laboratory for the protection of the environment near the power plant within 2013 and in the beginning of 2014, which are based on the tolerable limits but the occurrence of diseases in the population of this country is increasing and according to the statistics of the Health Bureau, Kërçova/Kicevo settlements occupy one of the first places in the Republic of Macedonia with dangerous cardiovascular, carcinogenic and contagious diseases.
Conclusion on environmental pollution in Kërçova/Kicevo's hail, from Oslomea's thermoelectric power plant is "as one of the most bad" that requires a more urgent solution, because it affects the health of the population of this country, the increase of mortality and the qualitative decrease of nutrients, which are obtained from the plant and animal world, which substances have in the past enabled the existence of this population and today have negative action in their health.
Keywords: thermoelectric, living environment, toxins, protection.

INTRODUCTION

Kërçova/Kicevo is located in the central part of Western Macedonia with an altitude of 620 - 650 m, which has been inhabited since the most ancient prehistoric, Neolithic period. The Kërçova/Kicevo spit lies on a fertile field, characterized by the very high mountains that surround it, to the east the Ujmir Mountain or Dobra Voda, namely the Rhodope Mountains, and to the west the mountains of Dardha and Drenova, which are part of the Massif of Sharr Mountains.
When we are at TEC Oslomeja, according to the installed force is the second thermoelectric plant in the Republic of Macedonia, which since the opening took part with close to 10% of the gross domestic product of electricity. TE Osllomeja consists of an installed power plant of 125 MW, while work started in 1980.
This thermoelectric power plant currently uses base lignite from the remaining local quantities of Oselomeja-West Oceania (Kërçova/Kicevo basin).
In order to continue the life expectancy of TE Osllomeja, by the renowned consultant, during 2015 a feasibility study for the modernization of the plant for which the use of imported coal with higher calorific value is preferred. The strategic goal has been accurately verified in the current state of TEC Oslomeja in order to increase the plant's longevity in line with state requirements and EU environmental requirements and provide long-term and viable coal supply.



The view of the city of Kërçova/Kicevo

However, despite the fact that this thermal power plant is considered as one of Macedonia's power generating giants in addition to the power plants in Bitola, it still remains one of the most dangerous environment polluters in the Kërçova/Kicevo area, which produces electricity from coal burning, which is extracted from the surface of this country.

Image of the Thermoelectric Power Plant of Osllomea

Regarding this problem in the Municipality of Kërçova/Kicevo, little has been done on the pollutants' action against the population of this country, but the risk of their operation is very high, because recently there has been an increase in the number of population mortality human from carcinogenic, cardiovascular, mutagenic or inherited diseases.

Air in a narrower sense is considered polluted when pollutants are at a higher percentage than permissible values and cause serious consequences on human health and its living environment while at the same time damaging the economy of that is, that they also have action against the plant and animal world.

METHOD AND EXPERIMENTAL WORK

To clarify the action of these pollutants, we will be using the measurements that have been made in the laboratory for ecological research near the Thermoelectric Power Station of Osllome, with specialized chemical methods during 2013 and 2014.

From the thermoelectric power station of Osllomea during the production of coal-fired power, these pollutants have been released through the aforementioned methods in the atmosphere:

Carbon monoxide (CO),
Sulfur dioxide (SO2),
Nitrogen oxides (NOx),
Carbon dioxide (CO2) and carbon dioxide
Dust or ash.

The concentration of these pollutants can be seen in the table below.

Table with permissible values of pollutants in the Municipality of Kërçova/Kicevo within 2013 and 2014, marked in green.

2013	Jan	Feb	Mar	Apr	May	Jun	Jul	Au	Se	Oc	Nov	Dec
CO												
CO_2												
SO_2												
nitrogen oxides												
Dust and ashes												
2014												
CO												
CO_2												
SO_2												
nitrogen oxides												
Dust and ashes												

However, based on the data from the responsible persons, the percentage of pollutants in the atmosphere has been in permissible values, but these data are not verifiable in practice because the number of people suffering from the diseases caused by these pollutants is increasing.

According to the Health Institute in the Municipality of Kërçova/Kicevo, as the most common diseases due to pollution can be presented:

Diseases of the blood and the endocrine system,
Damage and respiratory diseases,
Allergy to the eyes, nose and skin,
Headaches,
Immunobiological diseases,
Diseases of the heart, liver and kidney,
Poisoning of various poisonous gases and alvanosja,
Carcinogenic Diseases,
Cardiovascular Diseases,
Diseases in women or problems with pregnancy, premature birth and infant death,
Neurological diseases,
Nerve problems such as stress, nervousness, depression, etc., and
Mutational or Obesity Diseases in the Human Population.

In addition to the appearance of these diseases or their symptoms, at the same time we have gradual destruction of the plant world, especially fruits and vegetables, but also the gradual disappearance of the animal world.

Discussion of results

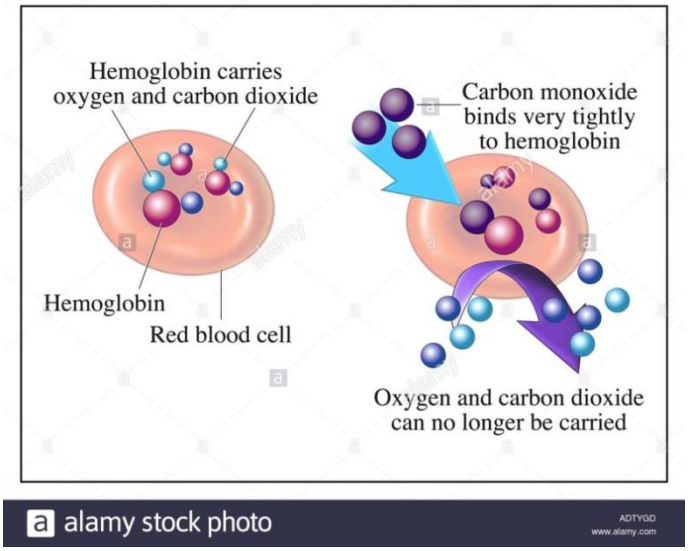
As we can see above, where it is clear that these pollutants are released from the smoker of the Oslome Thermal Power Plant, which at the same time have direct action on human health.

Carbon monoxide (CO) .-

Carbon monoxide values during the operation of the Oslome thermal power plant in 2013 and 2014 can be seen in the table above and based on the violations of the ecological laboratory of this thermal power plant, the CO values are at the permissible limit.

However, even though this pollutant is found to be permissible, it has a negative effect on living organisms, but especially in humans, to block the transport of oxygen through hemoglobin pigment, which pollutants show

great ability to bind to hemoglobin pigment in erythrocytes close to 200 times more than oxygen and thus gains carboxyhemoglobin and human annealing.



The alvanization process is a reversible or reversible process but with consequences because during the alvanization it may result in damage to the central nervous system, in reality to brain damage, especially in the process of remembering and long-term learning in the cardiovascular system and respiratory tract that allows the appearance of diseases, angina pectoris, blockage of blood vessels-arteries, chest pain and lowering the ability of the body to perform physical exercise.

The appearance of patients with angina pectoris

Carbon Dioxide (CO 2) -

This atmospheric component can also be observed in the above table but also its values are at permissible limits.

Carbon dioxide is released during the process of exhalation or breathing from animal and human organisms, but the larger quantity is released during fossil fuels such as fossil fuels. during the combustion of oil and its derivatives, during the combustion of coal in thermoelectric power plants where electricity is obtained, during combustion of waste and incineration of forest communities.

Increasing the concentration of CO2 in the atmosphere from the aforementioned sources is an important factor in increasing the temperature in the environment, a phenomenon that we have in our country.

If the amount of CO2 in the polluted sites reaches 2.5% then it can not cause any significant negative action, but if it reaches 3% then that amount, there is action on the destruction of the respiratory organs, and the concentration of 4 to 6% CO2 , can ruin human health.

Carbon dioxide has immediate and acute poisonous effects on the respiratory system: for periods of exposure to it for up to 15 minutes and for atmospheric concentrations of up to 5% (CO2) causes narrowing of the blood vessels and increased respiratory activity; at concentrations greater than 10%, it causes respiratory paralysis and abnormalities, at concentrations greater than 25% it causes immediate death.

Usually the high CO2 uptake in the air, in closed environments above 3000 ppm becomes the cause of anemia (decreasing oxygen in the blood, ie below the physiological level) and in this case the respiratory process is paralyzed, the muscular system changes the acid- basic (acidosis).

The level above 5000 ppm is a sign of unusual indoor air conditions, where there may be other high percentage gasses. This is also the allowed daily limit of CO2 in the workplace.

Gaseous sulfur from the thermoelectric power station of Osllomese is released in the form of: SO2 (**Sulfur Dioxide**) and H2S (**Sulphuric Gas**). Based on data from the ecological laboratory, the values of these two compounds are also within the permissible limits.

Sulfur dioxide is a colorless, but harsh gas that can be investigated on the basis of taste, while sulphide gas is a breeze of broken eggs and can be detected very quickly. The sulphidic gas in the atmosphere has a living life less than one day because it is very quickly oxidized to SO2, whereas sulfur dioxide in the atmosphere can be transferred to sulfur anion (SO4) -2, which process is enabled during the action of sunlight and the factors of others.

$$H_2S\text{---------- } SO2\text{---------- } (SO_4)^{-2}$$

Sulfur dioxide is a colorless gas, water-soluble, irritant, strong and non-flammable.

It is benefited by oxidation of sulfur during the combustion processes of substances that contain this as an element, as in the case of fossil fuels, or that have sulfur as element of pure element. This gas tends to accumulate in the lower atmosphere because it is heavier than air.

The first sources of pollution from this gas are the volcanoes that contribute to maintaining the level of this gas in the environment, while sources of human activity include combustion of fossil fuels such as coal, naphtha, benzene and benzene used for energy-efficiency processes at home, on machines, or for industrial purposes.

In indoor environments concentrations of this gas depend on the use of furnaces, various cookers used for cooking or heating, tobacco smoke etc. SO2 concentrations in these environments are usually lower than those in the air because SO2 has properties to be absorbed by the surfaces of various household utensils like curtains, furniture, and because it is neutralized by the presence of ammonia that located in the interior.

In small concentrations it causes damage to the respiratory system (chronic bronchitis, asthma), can cause skin and mucous damage. High concentrations can cause tachyocarditis and irritation of the eyes and nose, which are also registered in the population of Kërçova/Kicevo.

Sulfur dioxide in the atmosphere can be transferred to sulfuric acid, which acid on earth falls in the form of dry peals by sticking in the shape of leaves and fruits of fruits and vegetables and thus causing various stains.

Nitrogen oxides.-

Among the most important pollutants of nitrogen oxides in gaseous state are: ammonia (NH3), nitric oxide (NO), nitrogen dioxide (NO2), and nitrogen suboxide (N2O), which also compounds are located at permissible values, which can be seen in the table above.

The main sources of pollution from these gases are combustion processes such as p. sh. gas stoves where the combustion process is not complete and is a source of this contamination, as well as the smoke coming out of them, as well as smoking smoke. In external environments, the main sources of pollution are various vehicles, garden maintenance vehicles or those used in agricultural land processing, but also pollution with these pollutants is also done during coal combustion at the Osllomeas power plant.

Effect on health:

Nitrogen dioxide is an irritant gas for mucous membranes of the eyes, nose, and respiratory tract. Exposure to high doses of NO2 can cause lung problems and edema. High-level exposure can also cause acute and chronic bronchitis, while low-level exposure causes asthma, respiratory dysfunction, and increased respiratory tract infections in young children.

Harmful effects of nitrogen oxides.-

Ammonia and nitrogen oxides at concentrations higher than their allowable values in the atmosphere can cause adverse effects to the human population.

Nitric oxide or NOX monohydrate easily binds to the hemoglobin pigment and reduces the oxygen transport process.

NO2 is the most dangerous pollutant in the atmosphere when it is found to be greater than the permissible values, and its action in the human body varies depending on the degree of exposure.

During exposure from a few minutes to one hour at a concentration of 50-100 ppm NO2, it may cause inflammation of the muscle tissue for a period of 6 to 8 weeks, but this inflammation may be cured.

Exposure to 150 to 200 ppm of NO2 in a 3 to 5 week period may cause fibrosis bronchiolitis, and human death may be caused by a concentration of 500 ppm NO2 and exposure of 2 to 10 days.

Dust or ash .-

Represents mixtures of mineral particulate matter in the form of oxides and other compounds that are created during the firing of fossil fuels, and concretely in this habitat during combustion of coal, the values of which are at the permissible limits and can be seen in the table above.

During coal combustion, these particles of minerals turn into end ash which does not cause any problems with air pollution, but the finest particles of ash called "filter grains" can be distributed into the atmosphere and cause severe illnesses this harms human health.

When the excessive amount of dust and gases emitted into the atmosphere, during foggy weather and poor airflow, in such vital settlements a black smoke is called **smog**.

The sensitivity of the population to smog is also facilitated through respiratory and cardiovascular system, especially those suffering from these diseases.

Within the respiratory system, smog can cause bronchial asthma and lung cancer that the disease in the human population of this country based on the statistics of the health institution of R. Macedonia are quite expressed in the district of Kërçova/Kicevo.

The place where is the ash from the thermoelectric power station of Osllomea.

Conclusions on the protection of these pollutants:

Pollution of the environment in the Kërçova/Kicevo plain, from the Ttermoelektrana of Osllomese is "**as one of the best bad things**" that requires an urgent solution because it affects the health of this country's population, especially in the occurrence of cancerous, cardiovascular and other diseases, but also affects the destruction of the plant world, especially the fruits and vegetables that grow in these areas.

During the research work in this period to protect the human population from these pollutants, the following measures should be taken:

Use of filtering means for gases emitted by the smoker this thermoelectric power plant,

Use of filtering devices and the separation of pollutants according to the particle size

The growth of green surfaces with plants that are resistant to these pollutants,

For the protection against dust or ash, cyclical separators should be constructed, where dusting and collection at specific locations are to be done, and

Using the most sophisticated methods for researching these pollutants and their action to the living world.

LITERATURE

[1] http://www.moepp.gov.mk/wp-content/uploads/2014/11/Godisen-os-obraboteni-podatoci-za-kvalitetot-na-zivotnata-sredina-2014.pdf, pages 16-73

[2] http://www.moepp.gov.mk/wp-content/uploads/2015/12/Nacionalna-kniga_021015_Sl.V.-189.2015.pdf, pages 14-62

[3] https://www.24.mk/golema-zagadenost-na-vozduhot-vo-skopje-tetovo-bitola-veles-i-kichevo?quicktabs_popularna_sodrzina=1
[4] https://a1on.mk/archives/415050
[5] http://mkd-news.com/ke-se-zadushime-vo-skopje-tetovo-bitola-veles-i-kichevo-zagaduvaneto-nad-dozvolenite-granitsi
[6] https://kanal5.com.mk/vesti_detail.asp?ID=54727
[7] https://republika.mk/350218