

Second Meeting of the Kitakyushu Initiative Network (Mayors' Segment)
17 October 2003
Weihai, People's Republic of China

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AIR POLLUTION IN ULAANBAATAR CITY

Ulaanbaatar, the capital city of Mongolia, is settled down on the bank of Tuul River in the valley named Khun-Chuluu between 4 mountains 224 years ago.

The city is located between Branches of Khentii Mountains in 1850m above sea level, territory is 530 hectare square, population is 815.0 thousand and this is biggest center of economics, education, culture, science, trade, services and business of the country.

30% of population of Mongolia live in Ulaanbaatar City. 68% of the city are young people under 30 years, therefore this is a young city.

The administration is located in the center of the territory of the city. The city consisted of 6 district and 3 districts, which are located in 100-200km far from the city. During the difficult period, in which the country is transferring to market economics, the number of people, who are making from local areas to the capital city, is increasing so much, year to year.

Also there is a direct to generate the environment of the city according to centralizing of population and industry. The centralizing of population, industries and economics is causing difficulties to infrastructure, telecommunication, medicine, schools and domestic services of Capital city and also influences negatively for environment and residents health. The current status, air pollution is important problems faced to the city.

Air pollution is one of the emerging environmental problems in Mongolia. This problem has become an urgent issue to solve especially in Ulaanbaatar City, because of rapid industrialization and population growth. Particularly in winter, air pollution in the city increases 4-5 times, as indicated in a study. Beside the human activities climatic factors contribute significantly to the severity of the atmospheric quality problems in urban areas of the country. Mainly, among the atmospheric factors is a stable stationary atmospheric inversion that forms over the country annually, generally remaining in place from October to April. This inversion forms at approximately 600-700 meters above the ground surface and is accompanied by very low wind speed conditions.

The wind speed and direction in Ulaanbaatar is usually travelling from northwest direction and the speeds decreasing to 1 to 2 m/s when they pass through Ulaanbaatar. It means that polluted air can not go far away from the city.

There are 3 main sources, which producing air pollution in Ulaanbaatar City.

1. Stationary sources, which include 3 coal-fired thermal power plants, coal fired boilers which used to heat larger buildings and building complexes and stoves in the Ger. /Mongolian traditional dwelling/ districts

Because of poor planning demonstrated by the location of 3 power plants allows emissions from power plants to travel over the entire city. According to statistics, the emission of smoke dust was 62.000 tons from the power plants, 12.000 from local coal fired boilers and 10.000 tons from the Ger. districts. It is estimated that over 60.000 gers consuming 200.000 tons of coal and 160.000 tons of fire wood. Because ger household stoves release smoke relatively low height—3

to 4 meters above ground—and the winter atmospheric conditions cause these pollutants to remain concentrated in close proximity to the ground and within the human breathing zone. Accordingly smoke emissions cause respiratory diseases in children and the elderly. Statistics shows that since 1980 respiratory diseases were increased by 3 times among the children and 1.8 times adults.

2. Field sources, which include power stations coal ash reservoir, dust from the degraded and eroded lands and waste dumps.

There is 65 hectares coal ash reservoir in the power plants. In a winter time 3 power plants are emitting 60 tons of ash, 4.5 million cube meter smoke and 6 kg of dioxide gas.

3. Mobile sources, which include Motor vehicle air pollution

As of 1999, there are more than 40000 cars registered in Ulaanbaatar mainly imported which are second-hand and many years in-use and operate inefficiently lack appropriation of air emission control devices. The emission of smoke from the engine of vehicles releases 0.2 meters above ground. In contents of emission there are many toxic elements, which causes respiratory diseases and cancers.

Based on the pollution of the city this calculates to an average 95 kg of toxic substances discharged per person. Some results of air monitoring show that during the last 5 years a daily average concentration of sulfur dioxide was 2-3 times greater than permissible air level concentrations and same value for nitrogen dioxide and carbon monoxide 1-2 times greater than permissible levels.

To reduce the air pollution in the Ulaanbaatar City, in 1998, a small project on the design and testing of the G-2 stove was carried out with the support of British Embassy. Some good results were achieved and the objective of this project is to improve combustion and efficiency, to decrease of hazardous emissions. During the testing period air pollution generated by ger districts was reduced by 30-40%, was reduced respiratory diseases and improved monitoring of air pollution. For successful implementation of this project there are need more financial aid from international organizations and donor countries.

In addition, we also need some financial needs to run a project for installation of filter for cars which are operating in Ulaanbaatar city.