Air contamination caused by human activity

Insertion into atmosphere or the creation of the chemical agents and substances caused by natural, and anthropogenous factors forms an air contamination. The natural sources of contamination of an atmosphere are volcanos, wood fires, dusty storms, a weathering etc. These factors do not threaten with negative consequences to natural ecosystems, except some catastrophic natural phenomena. For example, the eruption of a volcano Cracatao in 1883, when into atmosphere 18 km cubes of ashes powder were thrown out ; eruption of a volcano Catmay (Alaska) in the 1912 that had thrown out 20 km cubes of friable products. The ashes of these eruptions were spread over large part of the surface of the Earth and has caused the reduction of solar radiation by 10-20 % that accordingly has caused in northern hemisphere reduction of annual average temperature of air by 0.5 C.[1]

However per the last decades the anthropogenous factors of an air contamination became to exceed by scales natural factors, acquiring global character. They can render various effects on atmosphere: direct - on state of the atmosphere (heating, change of humidity etc.); influence on chemical properties of the atmosphere (change of structure, increase of concentration of carbon dioxide, aerosols, freons etc.); influence on properties of a spreading surface (change of size, albedo, system «ocean - atmosphere» etc.)

To basic sources of contamination we can refer: the industrial enterprises, transport, power system, agriculture etc. Among industries especially toxic wastes are made by enterprises of colour metallurgy, chemical, petrochemical, black metallurgy, wood-working, pulp&paper industry etc.

«If you live in the advanced country, with probability 2:3 you breathe by air that does not meet the standards»[2]. Is this air bad enough? It's bad enough to cause 50 thousand anticipatory death annually. It's potentially enough bad to destroy ecosystem and to make the Earth uninhabited.

2. Air contamination in russian federation

The ecological problems of the Russian society have become aggravated recently so, that without their consideration it is impossible to decide political and economic tasks, to form a notion of prospects of social development. «A Level of ecological safety, in opinion of the experts, is lowest: 94 % of the interrogated experts have evaluated an ecological situation in country as unsuccessful»[3].

The analysis of the statistical data of the amount of wastes of harmful substances in atmosphere during 90-s' has shown that on the whole in Russian Federation during this period there was a significant decrease of wastes by 6525000 tons or 19 % [4].

So, «in 1992 in comparison with 1991 wastes of contaminating substances in atmospheric air from stationary sources have decreased less than by 17 %. Althogh the level of production in almost all branches was decreased by 35-30%»[5].

«Leaders» of wastes of harmful substances in an atmosphere during 3 years are Krasnoyarsk region, the Tyumen, Sverdlovsk, Chelyabinsk, Kemerovo area and these areas only by the given parameter it is necessary to attribute to a zone of the ecological catastrophe (see table). As you see most contaminated regions are economic centers of Russian Federation and unfortunately most populated.



For example, as a result of activity of the industrial enterprises Cherepovetsk is lead up to the verge of the ecological catastrophe. And the main part here belongs to joint-stock company «Severstal»; the share of the company in wastes into atmosphere annually has constituted 95 % of all-urban's.[6]

As to Yakutsk, in opinion of the chief of the group of the monitoring center of the environment pollution of Yakutsk hydroweather station headquarter Ludmila Yushkova, it is contaminated by the weighted substances (dust), oxide of carbon, dioxide of nitrogen and, that especially alarms, by benzapiren. In winter northern part of Yakutsk hardly suffer where the industrial objects are concentrated. The greatest pollution by dust and oxide of carbon is noted in the center of the city owing to the large congestion of motor-vehicle transport there. Nevertheless the concentration of heavy metals in air is lower than norm and lower than estimates over cities of Russian Federation.[7]

Now 2/3 population of Russia continues to live in conditions of dangerous air contamination. It undoubtedly has an effect on their health, as the various chemical elements are most intensively absorbed by organism during breathing. But the effect of changes of the environment is especially harmful for quality of genofond.

3. Atmosphere protection measures

Measures of the protection of atmosphere are subdivided into three large groups. First group: decrease measures of gross amount of contamination, thrown out into atmosphere. This is the improvement of the quality of fuel, using of special liquids in fuel etc. Same group of measures includes perfecting of technological processes including development of the closed cycle production without making of harmful substances into atmosphere.

The second group includes measures of protection of atmosphere by dispersion, processing and neutralization of harmful wastes.

And finally the third group of measures assumes prevention of the air contamination by rational placing of the «dirty» enterprises - sources of harmful wastes with consideration of natural conditions and potential possibility of the air contamination.

For realization of atmosphere protection measures the strict state control of air environment, economic and legal stimulation of measures for control of its pollution are also important.

But no one company begins to reduce its wastes if it does not meet their interests, if it is not profitable for them (especially for Russia). Unfortunately it is hard to make them reduce pollution by prohibitions. In this connection it is offered to distribute interesting experience of the USA, Canada, Germany and Austria where enterprises redeem quotas for wastes of harmful gases (i.e. pay for using of natural environment belonging to all world community). Other variant is introduction of the international "green tax " for harmful wastes. In this case firms would be interested in ecologically clean production.[8]

But unfortunately in most cases nature protection activity does not yield a profit for enterprises, except of cases connected with useful using, that is utilization of wastes caught during cleaning of waste water and gases. The most of these substances are valuable raw material (sulfur, a dust of colour metals etc.) and can be used in production, promoting thereby for receiving of the additional profit.

This measure, certainly, requires forward scientific technologies. So, for example, in Norway in 80's there was one factory on production of aluminium, it threw out into an atmosphere many weighted particles, especially lead, and the management of this factory was compelled to use special dustcatchers. By 90's the factory became unprofitable, then it has paid attention to this thrown leaden dust, It appears that this dust is a very valuable material for production of completely new high-strength plates[9]. Now this factory exists only due to waste of this dust. In Russia, much to our regret, there are no such examples.

Finally large significant part has an ecological culture of the population (one of examples of respect of the nature is the act of the board directors chairman of the company «Monsanto» Reachard Mahoney. He, having seen, how much toxic wastes his company makes, was shocked and has decided to reduce a level of toxic wastes by 90 %[10]).