The rate of the World Ocean pollution with consumer commodities such us tins, beer bottles, and plastic bags is increasing. Until recently it was difficult for ships to harbor in Barcelona, Marseilles, Genoa, Naples, because water face was covered with rubbish, plastic bottles, and tires.

In 1969 Thor Heyerdahl, a famous Norwegian traveler, while in sea traveling, recognized that Atlantic Ocean is very polluted by overall consumption things. It was calculated that only in the North part of Ocean there was 35 million of plastic bottles. Each human has ever left his rubbish in forests, streets or river [3].

We can see human ecological footprint even in the deepest places in the World Ocean. Once in Puerto Rico trench the Soviet research ship trawls founded tin cans, polyethene ribbons, and latten bolts.

Problem of the World Ocean pollution is very important nowadays. A lot of world famous scientists are trying to solve this problem, people have just started to understand that we depend on the Ocean, and mankind has to save it.

Unfortunately, scientists from all over the world cannot sort out all chemicals and radioactive pollutants despite the contemporary engineering equipment [3].

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ASSESSMENT OF MERCURY LOAD PARAMETERS OF SOLID SNOW PRECIPITATION IN OMSK AREA ACCORDING TO THE ATMOGEOCHEMICAL SURVEY

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Nowadays a lot of toxic pollutants in the air come from anthropogenic sources. Also, some toxic substances are released into the atmosphere from natural sources. It may be volcanoes or forest fires. However, cities are the most concentrated form of anthropogenic impact on the environment.

Atmospheric aerosols containing mercury produce harmful effect on the health of the urban population, and during precipitation and accumulation in the snow cover they become a source of pollution of neighboring components of the environment - soil, surface water and others. As it was found out in previous global mercury assessments, the main industrial sources of atmospheric mercury are coal burning, mining, industrial activities that produce various metals or process other raw materials to produce cement. In these activities, mercury is emitted because it is present as an impurity in fuels and raw materials. Here, mercury emissions and releases are sometimes referred to as ‘by-product’ or ‘unintentional’ emissions or releases. Therefore, the evaluation of airborne releases of mercury from atmospheric deposition is relevant to many urban areas. [10]

To study the magnitude of the mercury load on the territory of Omsk - one of the largest industrial centers of Russia, sponsored jointly by the staff of Tomsk Polytechnic University in February 2013, realized collection of snow samples throughout the city. Sampling was carried out on a regular grid in increments of 1 km. Village Moskalenki was chosen as a conventional background. Works on the selection and preparation of the snow samples were carried out taking into account the guidelines given in the Guide over air pollution control, as well as on the basis of previous practical experience of ecological and geochemical investigations in the territory of Western Siberia.

The mercury content in the samples of solid residue of snow was measured by atomic absorption spectrometry laboratory of trace-element analysis of natural environments MINOTS "Uranium Geology" at the Department of Geoecology and Geochemistry of TPU by mercury analyzer "RA-915 +" with pyrolytic prefix "PYRO-915 +". The total number of selected and analyzed samples was 169. The participation of the authors in carrying out of laboratory analyzes is proportional; the main share of mathematical-statistical, ecological and geochemical processing of results was made by Suhorukova V.A.

Table

Ecological and geochemical parameters of the mercury load on the territory of Omsk

	Dust load, mg/(m2* day)1	The content of Hg in the insoluble precipitate snow, ng/g	The average daily flow of mercury in the snowpack with particles of atmospheric aerosols, mg/(kg^2*day)^2	Coefficient of aerosol accumulation of mercury [3]	The relative increase in the total load of mercury [4]	Concentration criterion [5]
Medium	113	226	29	7	64	1,5
Min	28	41	6	2	14	0,3
Max	1005	752	264	23	574	5
Mode	46	201	-	6	-	1,3
Median	90	227	18	7	40	1,5
Background	3	148	0,46	5		
Coefficient. of variation *	0,95	0,25	1.05	0,25	1,05	0,25

*1 - Dust load (Pn) – the amount of dust on the snow cover. Calculated as follows: Pn = P0 / S * t, where Ro- is the weight of the solid snowfall mg, S - area of the snow pit, m2, t - number of days from the beginning until the day of sampling;*

*2 -The total load of the chemical elements in the environment (Ptot): Ptot = C * Pn, where Robsch- average inflow of mercury in snow with particles of atmospheric aerosols, Pn- value of the dust load mg / m2 * d C - content of elements in the sample, mg / kg;*

3 -Kaa = C / KHg where Qaa – coefficient of aerosol accumulation, C-content of the elements in the sample, mg / kg = 0.033 KHg mg / kg A.A.Beusu.

4 - The relative increase in the total load of mercury (Cr):

Cr = Ptot / of, where of - the background load of mercury.

5-QC-concentration factor: CC = C / Sf where Sf - the background concentration value

The most contrasting technogenic halos of mercury in solid snow precipitation have spatial configuration, due to "wind rose", and placement in the south-eastern and central parts of the city. It the core of this atmogeochemical mercury anomaly the content reaches 752 ng / g and the area is geographically relevant to the enterprises of machine-building industry. Also in other parts of the Omsk city, the individual fixed values exceeded the mercury content in the insoluble residue of snow. Compared to the

background area (the background concentration of mercury in solid snow precipitation 149 ng / g) mercury content of the solid residue of snow in the central part of the city is 5 times more, with an average exceeding in 1.5 times.

According to the study, the change in the average daily loss of mercury from the atmosphere to the snow cover on the territory of Omsk has clearly differentiated - from 6 to 264 mg / (km2 • d.), With an average value of 29 mg / (km2 • d.) And background value of 0.46 mg / (km2 • d.). The excess of background values ranges from 13 to 574 times. In the rest of the city the value of average daily inflow of mercury in the snow cover is between 20 to 60 mg / (km2 • d.).

Aerosol accumulation ratio ranges from 2 to 23 units, with an average value equal to 7, which indicates a significant enrichment of atmospheric aerosols mercury due to anthropogenic sources.

Thus, according to the results of the study it was revealed that the man-made mercury halos are observed in the areas of mechanical engineering and tool making.

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