

Table 2. The Background and Maximum Heavy Metals Content in the Lignosa and Shrub Vegetation in the City's of Stavropol, mg/kg oven – dry matters

element	background	oak	maple	pear	hawthorn	elder
cadmium	0,2	0,18	0,25	0,16	0,37	0,35
copper	3,9	6,0	8,8	4,6	6,1	5,8
zinc	20,4	76,4	23,1	10,6	19,0	30,7
lead	2,3	3,1	3,1	2,4	1,4	1,2

The city of Stavropol historical centre by the contamination level by cadmium (e.g. 0,4 mg/kg), copper (e.g. 8,2 mg/kg), and zinc (e.g. 40,6 mg/kg) is quite comparable with these metals content in the residential zone. However, the large transport loading of the city's central part is resulting in the considerable accumulation of lead in the lawn's cereals (e.g. in 2 times higher, than the background), and in the mosses (e.g. in 7 times higher, than the background). Not high accumulation level of lead, copper, cadmium is quite typical for the plants of the woodland park (see Table No.1), and the zinc concentrations, – in average, 30 mg/kg, – are being observed rather high, in comparison with the background in the parks and public gardens plants.

The HM content is strongly being varied, depending from the plant's species. The heavy metals (HM) increased levels are usually observed at the mosses and plantain that is said on the definite species biochemical specialization of the plants. The HM accumulation is quite typical for the maple and oak from the arboreal species. The microelements content levels in the plants, to a large extent on, are being assigned of their belonging to the various functional zones. The highest metals content has been determined along the large superhighways, and traffic interchanges of the industrial zones.

By data of N.C. Kasimov (1995), there is the enough steady connection between the elements – pollutants accumulation and the functional zones. For all this, the anthropogenic pollutants' delivery is playing the largest role in the vegetable cultures contamination. The city of Stavropol data fully confirm this conformity to the natural laws. The highest values of the HM concentrations in the vegetables are being observed in the residential region of the Tashly river's valley. Here, the growing vegetables have their MPC maximum established exceedings (by cadmium – in 4 times, by zinc – in 1,5 times, by lead – in 5 times). The trans – eluvial, super – aqueous, and aqueous landscapes, having the subordinated and accumulating values, have been developed on this territory. For all this, the anthropogenic pollutants' delivery is being carried out by the prevailing western winds from the western industrial zone (Prokuronov et al., 1992).

The prolonged influence of the numerous household pollution sources in the old (central) residential city's part has been resulted in to the considerable zinc content in the vegetables. The average mi-

croelements content in the vegetable cultures of the suburban plots, having situated directly within the precincts of the city, are not being exceeded MPC. On the background garden and vegetable plots, having situated in 50 km off the city (e.g. the Izobilnensky region), the growing vegetables are being contained in 2 times less cadmium, and lead, in 3 times less copper, and zinc, in comparison with the most contaminated vegetable crops in the city of Stavropol.

In the total of the received results, it is quite possible to make the following conclusions:

1. The city of Stavropol is being experienced rather considerable anthropogenic impact, that has been resulted to the total pollution level rise of the urban environment by the various enterprises' wastes, and the motor transport's emissions etc.

2. The industrial zones' vegetable cover, the city's historical centre are the most contaminated by the heavy metals (HM).

References

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PUPILS' KEY SKILLS FOR SURVIVAL IN A MEGA POLIS

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In successful solving of often unpredictable, current and future environmental problems of a megapolis, human key competencies play a decisive role. Development of these skills stays on national curriculum in many European countries. In Russia, a new federal educational standard is being prepared, which would also target an active approach. Its basics were developed by Russian teachers and psychologists: L. Vygotsky, S. Rubinstein, V. Davydov et al. However,

there are still a lot of unsolved questions in its theoretical part. That is why educational experiments are of a great importance in proving the methods to raise pupils' key skills. The problem that we are working on is, why the key skills (general academic performance, according to Russian standards) developed at school, are hardly applicable in real life situations? In 2002 we offered a hypothesis, that child's experience of applying his key skills in arrangement of a personal educational environment with desired parameters, can help solve the problem. This process is both cognitive and practical for a child, causing real changes in his immediate surroundings. A solution to this problem let a child regulate his space-temporal learning conditions, communicate with other students, and choose the best individual learning methods. Such experience help develop an effective individual study style, and is an educational practice of using key skills in school-life situations. To prove our hypothesis, we developed an educational program «Ecology of study process», which was tested in the six Russian regions. The program is a *pilot project* aimed at framing ecological content of school programs, and is based on the *general academic performance system, mentioned in the draft federal standards for general education*.

It was shown, that practical use of key skills for developing an educational microenvironment, increases child's mental task performance, study motivation and psychological health. It also motivates to actively control the environmental conditions outside school walls. We have applied for a patent.

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POLLUTION OF ATMOSPHERIC AIR AND THE FORM OF RESPONSE OF THE HUMAN ORGANISM IN THE LARGE CITY

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The health care maintenance for everybody in the XXI century – is the WHO's main task and the Russian Federation's priority direction. In this respect, «The Health» national project is successfully being realized, the different forms of the medical service, the early detection, and the patients' rehabilitation are being improved. The formation reasons exposure of the different pathology and the human organism's response forms is the most significant task of the medicine.

The atmospheric air designated pollutants, on action of which the mucous membrane of the upper section of the respiratory tracts is sensitively reacted to, take a considerable place in the health rates forma-

tion by data of the numerous scientists – hygienists' researches [2, 3].

More than 100 designated pollutants, having the different limiting harmful indices (e.g. the reflex, resorptive, reflex-resorptive action, and, even, the sanitary and hygienic nature), are being discovered in the atmospheric air of the city of Kazan.

The total designated pollutants emission into the city's atmosphere makes up 114,766 tonnes per a year, and only 28,739 tonnes of the non-detected particles are being ejected into the atmosphere, and 86,027 tonnes of the pollution are being detected, owing to the nature conservation arrangements realization. All this is being distributed in the air within the city's territory limits, and by 26 grams of the designated pollutants are fallen for the every citizen. Such pollution amount in a year is quite insignificantly low, but not for the citizens of Kazan.

The low wind velocities and the calm are made up almost 45% days in a year on the territory of Kazan that creates the definite difficulties of the designated pollutants dispersal and formulates their accumulations conditions in the bottom layer of the air. The given negative factor is being intensified in many times, at the expense of the considerable number increase of the transport units and, in addition to many gas-and-dust detecting installations aren't working in full power, and they often go out of service, that results in the considerable pollution increase in the air basin.

The maximum number of the trials with the exceeding hygienic regulations is found out by the content of 4,9% carbon oxide, 1,4% nitrogen dioxide, 2,6% sulphur dioxide in the average annual calculation for 2007 year, by our researches data and the degree analysis of the city's atmospheric air pollution with due regard for the supervisory bodies results.

The comparative analysis of the actual designated pollutants concentrations with the maximum once-only limiting concentration in the air along the transport thoroughfares in the rush hours of the transport traffic is fluctuated: carbon oxide from 5,6 up to 14,3 mg/m³, nitrogen dioxide from 0,05 up to 0,21 mg/m³, sulphur dioxide from 0,15 up to 0,6 mg/m³, the suspended materials from 0,19 up to 0,58 mg/m³. The designated pollutants concentration in the atmosphere is depended on the transport units' number, the year season, twenty-four hours period and many other factors. Besides the above-mentioned substances, hydrogen sulfide, phenol, benzene, toluene, ammonia, formaldehyde, hydrocarbons, nitrogen oxides, and a great number of transformation products, including the same formaldehyde, acetaldehydes, aldehydes, ketones and the others are defined in the air.

The human organism response on the factors complex influence, having conditioned by the atmospheric air pollution, is begun from the upper sections of the respiratory tracts, that it is revealed in the frequency increase of the respiratory organs diseases,