

CHAPTER 1 ECOLOGY

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MONITORING OF ANTHROPOGENICALLY DISTURBED LANDS OF LVIV GROUND SOLID DOMESTIC WASTES

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Raising of problem. The purpose of the conducted ecological researches was to carry out watching the physical and chemical parameters of territories adjoining to the Lviv ground of hard domestic wastes and on their basis to estimate the ecological state of earths in the area of exploitation of ground and work out the complex of measures sent to the improvement of the state of the ground cover.

Analysis of the last researches and publications. The large-scale consumption of resources and materials conduces to the increase to the amount of wastes. In middle in industry and agriculture only 1–1,5% of consumable resources joins in the finished useful good [2]. Other are wastes which contaminate a natural environment. Part them darts out sewages, contaminating soil, superficial and underground water, vegetation, other as gases, pair and dust попадає in an atmosphere.

Traditionally domestic wastes are taken out on dumps, located near-by settlements. Ignoring of геоекологічних terms at the choice of areas under dumps and neglects of requirements for utilizations of garbage resulted in a volume, that such objects became the source of the intensive ecological loading on a natural environment [5].

Contamination of ground-vegetable cover on adjoining to the sources of contamination territories is related to mastering soil and plants of contaminants, which migrate from sources in lateral and horizontal directions [1].

In researches of I. Andersen on passing of filtrate through soil showed that distance on which was carried contamination depends on composition of soils, their penetrating and character of contaminations. Yes, organic compounds which show by itself foods of biological curriculum of wastes are carried on small

distances, while inorganic ions can migrate on considerably greater distances [3; 4].

Raising of task. In the burial-places of wastes an ecological situation is tense, that is related to contamination of practically all of the tools of natural environment: atmosphere, ground cover, superficial and underground waters. In connection with it in the places of utilization of wastes necessary monitoring of natural environment which is the system of periodic, continuous and long-term supervisions for an environment, his estimations for a timely exposure and removal of negative anthropogenic processes, and also realization of complex of effective nature protection measures on the basis of operative and medium-term prognoses.

The main task of the conducted researches was to define the quantitative and high-quality changes of ecological parameters of landscapes which tested anthropogenic violation as a result of warehousing of hard wastes of way of life, control activity of enterprise which exploits a ground and forecast possible development of ecological situation on the investigated territories.

Exposition of basic material. The Lviv ground of hard domestic wastes is located in a natural beam, which was the source brook which flows through of Malechiv and falls in Poltva. There is exploitation of ground of started in 1969. Today a ground occupies an area 33,3 hectare and located on earths of Hrybovyczi of village Soviet of Jovkva of district of the Lviv area. Distance to the city of Lviv boundaries presents 4 kilometres, and to the adjoining villages of Zbyranka and Hrybovyczi is a 1 km. Sanitary-hygienic area for villages which are located nearby сміттєзвалища, tenuto.

The morphological analysis of soils showed that on territory, adjoining to the dump cespititious soils which from a depth a 30–40 cm flooding subground waters are widespread, and that is why there is clay (table.).

An analysis the got results showed that territory, adjoining to the Lviv ground of hard domestic wastes is muddy air path, as a result of long-term incineration of garbage to 1991 year and by infiltration waters which broke through a discharge channel

About a presence contaminations talk the indexes of reaction of soil covered environment. For cespititious clay soils characteristic is a weakly acidic reaction (pH – 5,6–5,9), in our case the index of pH hesitated within the limits of near to neutral-weakly alkaline (pH 6,8–7,0). The increased acidity of soils of the investigated territory assists piling up and migration of mobile forms of heavy metals.

Content of humus in these soils is high (4,3–4,8%) enough, with a depth his amount diminishes gradually, that it is related to the cespititious process of ґрунтоутворення which takes place in these soils on a depth a 30 cm.

It is set the conducted літохімічними researches, that in all analysed standards of soils exceeding of content of mobile forms of heavy metals registered comparatively with HDK.

Table

Physical and chemical parameters of cespitious clay soils of territory, adjoining to the Lviv ground of hard domestic wastes

Place of selection of standard	Index					
	Content of humus	pH	Mass of soil, g/of cm^3		General porosity, %	Maximal hygroscopicity
			volum e	specific		
a 50 m is from a dump	4,3	6,9	1,28	2,42	49,8	4,4
a 100 m is from a dump	4,5	6,9	1,29	2,42	49,4	4,3
a 200 m is from a dump	4,5	7,0	1,28	2,41	49,5	4,2
a 300 m is from a dump	4,7	6,8	1,27	2,42	49,3	4,1
a 400 m is from a dump	4,6	6,8	1,28	2,43	49,6	4,4
a 500 m is from a dump	4,8	6,9	1,29	2,42	49,3	4,6

To the elements concentration of which more HDK belongs: lead, cadmium, zinc, copper, cobalt, nickel, chrome, arsenic, vanadium, manganese. Most exceeding above middle content marked at a cadmium and arsenic in 4 times, to lead – in 2 times, molybdenum, cobalt and silver – accordingly in 23,7; 12,3; and 49 time.

The greatest concentrations of heavy metals gravitate to the peripheral areas of trash dump. Nearer to the dump the anomalous concentrations of almost all determined elements are marked. With a removal from the object of contamination heavy metals diminishes, but their concentrations remain higher

norms. With a depth for a norm is approached genetic horizons of concentration of these elements.

Considerable heterogeneity registers in distribution of concentrations of elements for the areas of the tested area. Anomalous content of most elements shows up in soils of area actually valleys of to 350 meters from trash dump, though further their high enough concentrations are also kept. The anomalous concentrations of metals are characteristic also in north-eastern part of valley which adjoins to the stream of flows from a ground. Obviously from this stream in a certain measure there is infiltration of pollutants in soils. Contamination of soils it is observed heavy metals, practically all elements, within the limits of sanitary-hygienic area of ground, namely, in the places of location of oil lakes and, especially, in the places of output of liquid phase of oil on an earthly surface.

Conclusions. Thus, the got results of chemical inspection of territory adjoining to the Lviv ground of hard domestic wastes specifies on existence of technogenic contamination of soils. The special alarm is caused by a considerable accumulation in soils high-toxic of cadmium and arsenic.

Thus, it is set the conducted researches, that the Lviv ground of hard domestic wastes and artificially created depositories of oil, organized and built without the observance of the basic requirements of defence of environment, namely, the geochemical barrier of defence of geological and geohydrology environment is not created from penetration of pollutants.

The exhaust areas of сміттєзвалища it follows reclamation and work out and conduct measures the receipts of products sent to stopping will decompose garbage in soils and agricultural produce.

Before closing of ground the surface of the last layer of garbage must trickle the layer of insulating soil, making more compact no less than on 750 kg/of m^3 .

For protecting of відкосів of the closed ground from weathering and washing off atmospheric fallouts, it is necessary to execute of terracing for the surfaces of hay-crops and arrange the area of the protective planting.

To the Lviv communal enterprise of "Zbyranka", which carries out exploitation of ground it is expedient to set a technological sorting line for sorting of hard domestic and industrial wastes.

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