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ENVIRONMENTAL ANALYSIS OF TOPSOIL IN THE GLOBAL CONTAMINATION OF UNAUTHORIZED DUMPS

O. I. Naumovska, Candidate of Agricultural Sciences
National Agriculture University of Ukraine

The condition of the soil agroecosystem adjacent territories to the unauthorized disposal units. It was found that the content of heavy metals, according to the boundary permissible concentrations, there is no excess for their content. The changes in the morphological and genetic structure of the genetic horizons, indicating a change in the natural processes of biological purification of humus accumulation and soil ecosystems.

Soil pollution, heavy metal content, changing morphological and genetic traits.

Environmental monitoring in global pollution, which is the object of observation objects of environment in general and the soil, in particular, performed to detect the presence or potential sources of chemical contamination. The organization provides local monitoring preliminary survey of land in the vicinity of sources of harmful actions on them to determine the area and the nature and sources of chemical contamination.

When unauthorized landfills understand spontaneously formed because of ill-conceived formation of human waste from an area less than 0.5 hectares for the power deposits of more than 1 m [1, 5].

Because unauthorized dumps formed spontaneously, without any justification, completely absent of engineering and environmental study on the level of negative impact on the surrounding area. During the unauthorized storage of household waste are not implemented measures to reduce anthropogenic load is not any control morphological composition of waste are exported, which does not preclude the receipt of medical, toxic and other debris. The presence in the composition of landfill of organic waste consisting of solid wastes leads to the formation of sources of reproduction of rodents, insects and can cause aggravation of the epidemiological situation.

Municipal solid waste decomposing in landfills due to a special combination of chemical, physical and biological processes. As a result, the formation of solid, liquid and gaseous substances and secondary materials. Thus, the products of decomposition of paper and food waste is organic acid, phenol, aldehydes, ammonia, nitrite and others. The gaseous products of decomposition are carbon dioxide, methane, hydrogen sulfide,

volatile organic acids. Metals entering the environment mainly in the form of calcium sulfate and magnesium bicarbonates of calcium, magnesium and iron, oxides of zinc, tin, copper, organometallic compounds. Glass, rubber, plastics are relatively inert in the first period of their decomposition [2, 4, 7].

Periods of decomposition components of household waste by type [6]

1. Paper - from several months to several years, depending on the quality, collapsing to organic compounds. Coated and colored paper decomposes longer than the other.

2. Glass - several millennia, collapsing to a state of sand.

3. Waste canning industry (tin cans) - from 10 to 30 years, depending on quality. Surface iron cans slows down the process of decay, collapse to iron compounds.

4. Plastic bottles - 400 years., As part of the allocation of products containing urethane, phenol, formaldehyde, styrene and others.

5. Plastic packing bags of 50 years.

6. Shoes made of genuine leather - from 25 to 40 years.

7. Batteries - containing a part of heavy metals - zinc, manganese, copper, cadmium, mercury - 110 years.

During the local monitoring carried out measurement of many parameters, the presence of each of which indicates a certain phenomenon, namely the chlorides present in excess household and industrial waste and does not accumulate soil. Ammonia and other forms of nitrogen, especially nitrates are always indicators of pollution by sewage, fertilizers, nitrogen-containing aerosols, plastics and medicines. Nitrates are very mobile and always thoroughly studied. The content of ammonia may also indicate the onset of anaerobic phase. Nitrite is an indicator of active biological activity. Sodium, basic alkali metal remains in solution and is not subject to dispersion. Sodium gets a lot of landfills in the form of salts, which are sources of industrial and domestic waste (paper, soap, food remains). Sulfates are the most common sulfur compounds in landfills. They are very mobile and useful for analysis, such as motion filtrate. They turn to sulphides, which respond well to metals. Potassium explore because it is important for the life of plants and animals. Also, the content of oxygen consumption is correlated with organic matter during decomposition of waste, because it is a component of organic matter plant. Magnesium appears on the Landfill Waste presence in cosmetics, cement and textiles. Copper is sometimes measured in sanitary purposes, but it is not very mobile in the soil and it is not given much attention in monitoring. Lead released from the battery, photographs, drawings and old lead pipes. He checked with toxic and sanitary purposes. By the selection of lead from waste lead acid filtrate. Zinc is released from batteries, fluorescent lamps and fast ice. Iron released as a result of corrosion and may be present in the upper layers of the soil. Sometimes in the early stages of the monitoring revealed that the landfill waste and hazardous waste imported to identify what needs to be done measurement of these parameters annually. If

hazardous waste will not be found, then the later stages of monitoring measurement of these parameters can be stopped. [1]

According to scientists publications [4, 6, 7] morphological features of soil material at landfill sites unauthorized quite heterogeneous in size and depth. The depth of the visual structure of the genetic horizons abuse ranges from 6-50 cm in the case of forming dumps on undisturbed soil surface to 190-200 cm in cases where the landfill was formed on the surface appeared earlier than man-made deposits. Under the influence of unauthorized dumps the soil goes into anthropogenically-altered state, in some cases - slightly disturbed or getting signs of radical change in the presence of a layer consisting exclusively of decomposed food waste products.

The aim - to establish the influence decomposition products formed illegally dump on the state of soil adjacent agro-ecosystems.

Materials and methods of research. In the farmland VP NUBiP Ukraine "Agronomic Research Station" Kyiv region is unauthorized landfill, which is located along the ground field road on the outskirts of the village and surrounded on both sides by production of agricultural crops.

Unauthorized landfill is located 10 meters from the forest belt and reclamation of the stream, the rate of the distance between them at least 50 m and 10 - 15 m of agricultural land at a rate of - 0.5 km [3]. Under normal position taken basic design of solid waste, since the existence of illegal dumps are in violation of environmental regulations.

Results. As of the third quarter of 2013 was established the following dimensions nesankionovanoho landfill: width - 8 m, length - 118 m, height - 1 m, that volume is 944.0 m3, and in the third quarter of 2013 was studied landfill following options width - 11 m, length - 161 m., height - 1.5 m, so the volume is 2,656.5 m3. The intensity of accumulation of household waste per year thus is 1712.5 m 3. Weather accumulation of debris on 5 and 10 years is under 8562.0 and 17125.0 m3. Such intensity accumulation of debris can lead not only to an increase in territory occupied during an unauthorized landfill withdrawal from agricultural use large areas of land, but also the growing problem of pollution of the environment - water ecosystems and soil.

The structure dominates the solid waste plastic and glass. This can be explained by the fact that over the last decade marked increase in the volume of plastic packaging products, with, rural population during this time is not increased.

As of the third quarter of 2014 was established morphological composition unauthorized landfill waste, located on lands of the village. hours of use (Table 1). Compared to last year in the morphological composition largest percentage up again, glass and plastic, less than 10% are organic textiles and paper.

1. Морфологічний склад несанкціонованого сміттєзвалища 2013-2014 рр.

Компонент	Вміст,%			
	III кв. 2012 р.	III кв. 2013 р	IVкв. 2013 р.	Різниця вмісту компонентів, %
Пластик	55	63	68	+ 13
Скло	20	23	25	+ 5
Текстиль, гума, шкіра	9	7	4,5	- 4,5
Папір	1	1,5	1	0
Органіка	10	3	1	- 9
Інше	5	2,5	0,5	- 4,5

Порівнявши отримані дані можна зробити висновок, що кількість пластикових відходів збільшилася на 13 %, скла – на 5 %. Збільшилася і довжина сміттєзвалища на 43 м. В результаті проведених досліджень було встановлено, що сміттєзвалище періодично підпалюється, внаслідок чого у повітря виділяються продукти згоряння пластику та гуми, такі як сполуки свинцю, ртуті та інших важких металів, канцерогенні речовини, канцерогенна сажа і окиси сірки, що викликають респіраторні захворювання, особливо у мешканців села, на території якого знаходиться сміттєзвалище.

Зразки ґрунту прилеглої території до несанкціонованого сміттєзвалища було проаналізовано на вміст важких металів. Встановлено, що вміст основних важких металів не перевищує чинних ГДК. Це свідчить про те, що ґрунтова екосистема здатна «переробити» ту кількість забруднюючих сполук, які надходять. На момент проведення досліджень вміст важких металів на сміттєзвалищі не перевищував ГДК, проте якщо не буде здійснено ніяких заходів щодо ліквідації джерел забруднення, то це може призвести до порушень в структурі комплексу ґрунтових мікроорганізмів, пригнічення їх біохімічної діяльності, інгібування активності цілого ряду ферментів.

2. The impact of the natural placement of landfill as anthropogenic factors on change morphological characteristics typical soil profile humus carbonate lehkosuhlynkovoho on loess loam

morphological features	Result influence
The structure of the genetic horizon	The weak development in transition horizons and lack of humus in the upper layer components biogenic structures (coprolites), broken form pores, cracks units Clotted structure (control section - hrudochkuvato-grained)

The density of drafting	The upper horizon - slightly compacted, the lower transition - sealed. The difference with undisturbed soil No
Humidity	The upper horizon humidified, lower (Npk, NRk) - wet. In terms of genetic horizons of undisturbed soil - wetted state of genetic horizons, since the transition to breed Phk - from wet to wet
Organic residues	The presence of half-decayed wood waste, plant residues - with severe zhylyastoyu structure (slow process of decomposition of crop residues). Compared with control cut - crop residues are well laid out. Single mesofauna including excrement, the presence of inclusions vuhlepodibnyh
Inclusion	The presence of anthropogenic inclusions tumors gypsum and lime in the surface horizons that are not inherent to undisturbed soils

Established that the natural placement of rubbish had an impact on change morphological characteristics of the soil profile (Table. 2). The presence of plant residues of low decay and well-preserved zhylyastoyu structure, and poor development of biogenic structures suggests suppression mesofauna soil. Slow intensity of humification of plant residues forming indirectly reflects unfavorable environmental conditions for soil organisms. Violated form aggregates, pores and cracks indicates a slow process structure. However, in such soils ecological barrier function provides humic substances, minerals and carbonates of montmorylonitovoyi (boiling with top genetic horizon).

Environmental problem is the fact that the area is bordered by unauthorized dump areas capable of providing the high level of performance and serve as biomass for sanitary and sorption geochemical barrier. The destruction of soil threatens these functions.

Conclusions

1. Production and consumption of their savings in a source of significant environmental hazards and social tensions, creating a negative image of the settlement, endangering the possibility of obtaining a full ecological safety of agricultural products and others.

2. Characteristic of all districts have a large number of illegal dumps. Unauthorized dumps pose a serious environmental hazard, since there is the possibility of removal of pollutants directly into water bodies, particularly with the melt, and storm water. Optimal conditions for placing landfill disposal in the Kyiv region can be considered the following geomorphological units:

• tectonically stable crustal blocks or blocks with a tendency to a slight raising or lowering;

• blocks with low fracturing, "monolithic", with a minimum number of small lineaments (IV - V order);

• blocks of a predominance of flat terrain without deep valleys, elevation, poor development of modern geomorphological processes (or with little development processes of accumulation of sediments);

• blocks with conditions that provide a high degree of protection of groundwater - a large depth of the aquifer, reliable vodotryvy specific features of lithology aeration zone.

3. As a result of studies on the content of heavy metals exceeding stipulated by basic content of heavy metals. The changes in the morphological and genetic structure genetic horizons, indicating the change humusonakopychennya natural processes and biological treatment of the soil ecosystem.

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Проанализировано состояние почвы агроэкосистемы, прилегающих территорий к несанкционированным мусоросборников. Установлено, что по содержанию тяжелых металлов, в соответствии к гранично-допустимым концентрациям, отсутствует их превышение. Выявлены изменения в морфолого-генетическом строении генетических горизонтов, что свидетельствует об изменении природных процессов почвообразования и биологическом очищении почвенной экосистемы.

Почва, загрязнение, содержание тяжелых металлов, изменение морфолого-генетических признаков.