

### Assessment of soil pollution with waste in urban ecosystem Chisinau

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**Abstract.** Degree of pollution of land in EUC refers to the second level - low polluted. One of the most polluted areas in the urban ecosystem Chisinau (EUC) is the wastewater treatment plant (SEB) and land adjacent village of Bac, agricultural land in the vicinity of SEB. High content of heavy metals (MG) in soil SEB planning and related sectors is explained by the accumulation of large volumes of sludge at SEB containing essential amounts of MG and use of sludge as fertilizer for growing crops. Estimation of pollution SEB sector, demonstrated that summary index of pollution (Zc) is 27.43, which confirms that the land is moderately polluted. The value of this index characterizes the sector with a high level of ill health.

**Key Words:** mud, level of pollution, industrial sites, summary index of pollution, urbus ground.

**Introduction.** Soil is a natural body specifically formed on the surface of Earth's crust as a result of long interaction of pedogenetic factors, the influence of living organisms and organic wastes on parental rocks in certain climatic conditions in various relief items (Ursu 2011). Soil is an ecosystem biotic and abiotic. Soil ecosystem function is to transform organic matter and its mineralization as plant nutrition, creating and maintaining a good soil structure, water purification water. The soil is characterized by wide local variation and usually slow fluctuation in abiotic conditions. These conditions promote and develop various creatures in the soil. The local population of the soil also has a wide variety of local (Eijsackers 1983).

Fundamental quality of the soil is to be the living environment of plants and plant yield obtained (Chiriță et al 1974). But senior ensure that the soil is determined by several factors of soil degradation: degradation under the action of natural factors (the process of erosion, landslides) and human (natural structure destruction, compaction, and reductions in humus, pollution with various substances, especially waste) (Ursu 2011).

Earlier surveys were conducted of the impact of waste on air (Bulimaga et al 2011), surface water (Bulimaga 2010) and biocenosis (Bulimaga 2009). Study of the impact of waste on ecosystems showed that the urban ecosystem Chisinau (EUC) has been a reduction in plant diversity essential. Waste pollution causes modification of ontogenetic characters of these species vegetate some of them almost year round, reproduce by vegetative intensive, and therefore reduce the number of plants from seeds. Finally degradation is occurring genetic populations (Bulimaga 2009). But so far has not been evaluated in EUC waste impact on soil. It should be noted that unlike other parts of the environment (air, water and biosphere) as a result of economic activities (building blocks, industrial enterprises, highways, aqueducts and other infrastructure engineering) that occur in urban ecosystems not only cause pollution of soil, but also the complete transformation of natural soil so-called urbus soils (Cristea & Baciu 2003). As a result of scaling, natural soil compaction and mixing various construction materials, gravel and waste occurs loss of structure, properties and natural functions of soil. In this paper will be studied the impact of waste and economic activities causing soil pollution with various heavy metals.

The purpose of this paper is to evaluate land pollution urban ecosystem Chisinau (EUC), heavy metal waste caused by human activities and establish summary of pollution index (Zc) of the most polluted area of the city.

**Material and Method.** Researches on the impact of waste on its soil pollution with heavy metals were conducted virtually throughout the EUC: in industrial sites, residential sectors and adjacent agricultural sectors. To establish dynamics of soil pollution with heavy metals from waste investigations were carried out on the territory of SEB and adjacent land. Studies were conducted in representative soil samples collected from each point using the methods recommended for the envelope urban ecosystems (Днепропетровск 1988). Analysis of soil samples for heavy metal content was carried out in the accredited laboratory of the State Hydrometeorological Service.

**Results and Discussion.** Impact of waste (a result of human activities) reflects on all environmental components. But the biggest impact is on the ground, which serves as an accumulator of pollutants in the atmosphere, atmospheric deposition, wastewater discharges and waste generation.

To determine the degree of soil pollution with heavy metals (MG) in EUC soil samples were collected 0-20 cm across town. Data from the Table 1 shows that the concentration of heavy metals in the soil layer varies from one profile to another. Thus, I profile (s Buiucani - Ciocana) were not detected exceeding the CMA or a metal of the analysis. Profile segment II (Lake Valley Mills - Industrial Street), just Mateevici Street were observed for Pb exceeded the MAC of 1.47 times the concentrations of Cu, Zn, Cr is within the CMA.

Table 1  
Overall content of heavy metals in soil samples - mg/kg (samples were collected 0-20cm)

<i>Nr. pr.</i>	<i>Points taken</i>	<i>Location</i>	<i>Cu</i>	<i>Zn</i>	<i>Pb</i>	<i>Cr</i>
<i>Profile I</i>						
5	3	Sec. Buiucani Highway. Balkans, turn	29.3	41.9	15.6	32.1
7	4	Sec. Buiucani Street N. Costin, slope	13.4	22.5	10.8	24.8
11	7	Sculeni recreation area, meadow r Bac	<b>35.3</b>	28.4	12.7	26.5
27	15	Orheiului way, mine Chisinau	<b>37.0</b>	51.1	18.4	29.6
31	17	Str. M. Costin, turn	18.2	43.5	14.4	28.0
35	19	Rascani forest valley floor	11.9	37.1	12.1	17.5
39	21	Str. M.Sadoveanu, turn	23.3	57.0	16.1	31.3
43	23	Sec. Ciocana Milescu-Spataru Street, valley	<b>38.5</b>	42.4	13.2	31.5
<i>Profile II</i>						
15	8	Valley Mills	28.8	<b>70.7</b>	23.9	22.3
19	10	Str. Mateevici, slope	19.0	<b>86.0</b>	<b>47.3</b>	17.7
23	12	Str. Varnita below the bridge Izmail	26.7	<b>77.5</b>	<b>34.7</b>	26.3
27	14	Str. Otovasca 19, slope	19.6	54.4	15.3	26.8
31	16	Str. Industrial valley	11.7	27.7	7.3	16.1
<i>Profile III</i>						
1	1	Sos. Hincesti turn	<b>73.1</b>	<b>133.0</b>	18.8	39.8
17	9	Rose Valley	15.0	53.5	13.1	22.7
25	13	Str. Varnița r Bac valley	<b>49.2</b>	47.6	61.9	60.6
29	15	Str. 16 volunteers, watershed	14.8	42.7	12.9	25.7
<i>Profile IV</i>						
1	1	Str. Grenobl, Children's Hospital, turn	43.0	36.0	12.5	32.4
5	3	Str. Sarmizegetusa / Burebista Ecological	19.2	50.9	17.0	46.1
7	4	Bic r valley near the bridge district SEB	33.3	<b>72.6</b>	30.3	34.0
9	5	SEB within the lower part of the slope	696.3	201.7	<b>136.3</b>	<b>4608.9</b>
10A	5	Ter. SEB bottom of the slope	21.4	56.1	17.4	42.4

Analysis of GM content in the 4 profiles indicate the fact that overcoming CMA for MG occurs only in some places. The results show a low level of soil pollution. They're exceeding nesemnfnicative: Profile 1 (for Cu, samples 11, 27, 43, overruns are 1.01, 1.12, 1.16 CMA, respectively); in second place overtaking profile for Zn (samples 15 and 19), for Pb - samples 19 and 23; in Profile III exceeded for Cu in samples 1 and 25 CMA overruns are: 2.15 and 1.49, respectively, profile II (for Zn, samples 15, 19 and 23; overruns CMA is 1.29; 1.56, 1.41, respectively; for Pb: samples 19 and 23, overtaking is 1.43 and 1.05 CMA, respectively). In the third profile (for Cu, samples 1 and 25 are 2.12 and 1.45 MAC exceedances, respectively, and Zn sample 1, overcoming is 2.42 times. Profile IV (exceeded for Zn, samples 7 and 10, for Pb, sample 9 is 4.25 times exceeded. evidence for Cr-9, exceeding the CMA is more than 46.01 times. Overcoming the 1-3 profiles can be explained by accidental pollution and the fourth profile in that they occur mainly within and around SEB, where it is essential quantities of sludge accumulation and appropriate and heavy metals, which contained in the sludge.

**Geochemical composition of soil covers in urban ecosystem Chisinau industrial sites.** To establish dynamics and sources of soil pollution with heavy metals (Cu, Zn, Pb, Cr) throughout the EUC in time, research has been conducted in industrial platforms EUC ground, and made comparisons with the current situation in the 1990s (Кишинев 1993). The results are presented in Table 2. The data indicate that industrial platform Buiucani only within businesses to "Tracom" and JSC "Pielart" were detected with concentrations exceeding MAC 1.2 to 1.5 times. On the territory of JSC "Viorica - Cosmetic" total Cu concentration which basically forms constitutes one CMA (C = 28.9 to 32.4 mg/kg, CMA Cu = 33 mg/kg).

Table 2  
Content of heavy metals in soil or industrial platforms, Chisinau

Sampling point	Place of sampling	Element, mg/kg			
		Cu	Zn	Pb	Cr <sup>90</sup>
<i>Buiucani industrial platform (platform no. 1)</i>					
p. 5	Meadow r Bic, SA "tractor factory"	<b>36.27</b>	<b>87.58</b>	25.23	7.02
p. 7	Meadow r Bic, SA "tractor factory"	8.4	21.86	8.2	5.28
p. 9	Meadow r Bic, SA "tractor factory"	<b>38.0</b>	<b>96.75</b>	<b>32.96</b>	12.58
p. 37	Territories "tractor factory"	<b>208.83</b>	<b>68.97</b>	25.13	10.41
p. 13	Meadow r Bic, SA "Topaz"	<b>50.51</b>	<b>138.07</b>	<b>42.79</b>	14.43
p. 15	Meadow r Bic, SA "Topaz"	32.25	<b>86.42</b>	25.71	6.57
p. 21	Meadow r Bic, SA "Topaz"	30.15	<b>56.16</b>	17.24	4.76
p. 17	Meadow r Bic, JSC "Viorica Cosmetic"	33.56	<b>96.75</b>	27.33	7.52
p. 19	Meadow r Bic, JSC "Viorica Cosmetic"	26.6	51.83	14.77	6.70
p. 24	Meadow r Bic, JSC "Viorica Cosmetic"	16.33	39.57	10.24	7.60
p. 25	Territory of JSC "Viorica Cosmetic"	28.89	<b>57.66</b>	15.17	7.21
p. 41	Territories "Viotrica Cosmetic"	32.41	<b>90.88</b>	26.77	8.43
p. 27	Meadow r Bic, JSC "Viorica Cosmetic"	19.64	41.38	13.54	7.45
p. 29	Meadow r.Bic, mal.sting, JSC "Viorica Cosmetic"	25.98	56.80	16.08	7.47
p. 31	R Bic bank, upstream JSC "Viorica Cosmetic"	13.66	37.88	11.28	5.67
p. 33	Meadow r Bic, upstream JSC "Viorica Cosmetic"	25.89	44.95	13.93	10.33
p. 35	Lake "JSC" Viorica Cosmetic "	15.07	43.40	13.18	8.44
p. 43	Territories "Pielart"	<b>61.03</b>	<b>136.14</b>	<b>45.87</b>	9.69
<i>Industrial platform CET 1 (platform no. 2)</i>					
p. 2	Str. Mosilor / str.Ismail on shore. r Bic	27.00	<b>61.38</b>	20.94	3.85
p. 4	Behind the hotel "National"	15.14	<b>66.66</b>	16.61	1.59
p. 9	Some Gh.Cașu and stasis intersection	<b>50.35</b>	<b>68.90</b>	25.57	4.61
<i>Industrial platform CET 2 (platform no. 3)</i>					
p. 1	Latin Str.Ginta 17/1, playground for children	17.82	46.52	12.67	6.3
p. 3	Str. Mircea the Elder, transport circle	27.62	52.11	16.38	11.94
p. 5	Str. Maria Dragan School. 35	<b>36.62</b>	<b>198.99</b>	<b>82.34</b>	15.56
p. 7	Str. Malaesti (end)	18.27	<b>60.62</b>	17.97	13.63
<i>SEB industrial platform (platform no. 4)</i>					
pr. 1	Str. Cross Valley, beginning (in circle)	<b>143.84</b>	44.74	14.47	12.23

pr. 2	Str. Cross Valley below 100m	19.90	51.48	15.64	12.02
pr. 3	Str. Valea Cross inters. with bd. Dacia (para. left)	14.15	38.05	12.71	8.03
pr. 4	Str. Cross Valley / bd. Dacia (para. right)	15.45	40.20	14.95	5.11
pr. 5	Botanical Gardens, 30m from the Central Gate	28.64	39.45	12.16	10.20
pr. 6	Str. Forests, vis-à-vis SA "Flower"	26.17	52.65	19.56	6.57
pr. 7	Str. Acacia, trolley station	26.68	54.39	20.69	4.62
pr. 8	Botanical Gardens near Bridge Street	24.33	<b>59.29</b>	19.41	7.48
pr. 12	R left bank of Bac, SEB	<b>77.52</b>	<b>158.4</b>	<b>43.43</b>	37.03
pr. 14	SEB, sludge drying beds, row 1, No. 3	<b>97.79</b>	<b>198.99</b>	28.25	<b>132.29</b>
pr. 15	Northeast of SEB 250 m, cabbage garden	<b>76.59</b>	<b>73.41</b>	15.49	87.87
pr. 16	Turn left to r Bic	21.93	39.86	13.98	9.04

Study on degree of soil pollution on land industrial sites indicates the fact that virtually all land is exceeded MAC platforms (1 to 2 CMA). But the greatest excesses of MAC have been established: Cu - 6.33 MAC (JSC "Tractor"), and Zn - 2.51 CMA (SA Topaz) and Zn - 2.48, SA "Pielart" (platform industrial Buiucani.) Overcoming CMA for MG in industrial platform Buiucani variance is explained by these metals during operation of industrial (factory tractors, Topaz, etc.) in this platform. A high content of lead - 2.57 MPC set M. Dragan Street School. 35 (platform CET-1), which is explained by accidental pollution (dumping of waste containing lead).

Mentioned that SEB platform is characterized by increased amounts of heavy metals. The high content of heavy metals is established within SEB platform and adjacent lands. For Cu - 4.36 MAC (Cross Valley near the circle). With-2, 35, Zn-2, 88, Pb -1.36 (left bank of SEB). With-2, 96, 3.26 Zn, Cr-1, 33 CMA (land SEB bed drying).

To determine the degree of soil pollution with heavy metals in the EUC 0-20 cm soil samples were collected in residential and agricultural areas throughout the city (Table 3). Based on the results indicators of soil pollution with chemicals were determined. Results on the content of heavy metals in agricultural and residential areas are shown in Table 3.

Table 3  
GM content in agricultural areas of housing and urban ecosystem Chisinau

Sample no.	Place of sampling	mg/kg			
		Cu	Zn	Pb	Cr
<i>The Central District</i>					
3	Str. Ialoveni no. 94 (head south house)	17.5	42.1	12.4	16.5
4	Str. Ialoveni no. 94 (front of house)	26.6	<b>107.2</b>	16.7	14.9
5	Str. Kindergarten Ialoveni	<b>33.9</b>	<b>90.9*</b>	12.4	19.5
6	Str. Ialoveni no. 96 (back home in Maple)	18.4	<b>57.2</b>	10.9	16.0
7	Str. Ialoveni no. 96 (back of the house under conifers)	17.6	<b>55.1</b>	11.5	16.8
1	Plowed field across from Academy Pbllice Administration (AAP)	<b>83.3</b>	41.3	6.9	16.2
2	AAP territory, 20 m East	23.8	<b>64.1</b>	11.0	16.3
3	After the sports ground	17.7	46.8	9.4	17.9
<i>The Buiucani</i>					
1	Str. Paris, 7-8 m from the road	<b>91.6</b>	<b>61.1</b>	7.9	16.4
4	Str. N. Costin 57, the street below the house	<b>37.9</b>	<b>70.9</b>	16.4	9.6
5	Str. Ghibu spring	11.1	32.2	2.3	9.8
6	Str. Ghibu - 59, playground	20.4	47.7	5.3	13.4
8	Str. N. Costin, 61/1, behind the building	9.4	<b>76.1</b>	9.5	7.7
10	Str. Alba Iulia, 194/1,	17.4	44.3	4.8	14.3
<i>The Tracom</i>					
1	Sports field	19.3	<b>134.1</b>	<b>167.4</b>	19.8
2	Str. Column, 174	13.8	<b>64.0</b>	19.9	17.3
4	Str. Column (5 m from the street)	<b>44.9</b>	<b>109.8</b>	<b>52.4</b>	21.8
5	50 m Column street (in the middle square of the circle)	21.0	<b>67.6</b>	18.6	24.8
6	Tracom (eastern)	22.9	<b>82.6</b>	24.8	30.2
7	Tracom (50 m from the block assembly)	25.6	43.1	23.0	24.0

<i>The Colina Puschin, 11 July 2008</i>					
1	Str. Pushkin hill, 14	19.4	<b>120.0</b>	40.0	12.8
2	Str. Z Shaft 7A	27.7	<b>207.0</b>	<b>133.6</b>	13.2
4	Str. Albișoara 84/1, the schoolyard	16.5	52.6	16.1	21.6
5	Str. Albișoara 80/5 and 84/5	21.8	<b>85.9</b>	<b>129.2</b>	23.7
7	Str. Albișoara 74/1 to 5m Albisoara	26.8	<b>91.5</b>	<b>38.6</b>	30.1
8	Str. Albișoara 74/1	20.7	<b>84.4</b>	21.9	17.5
9	Str. Child, Home A.S.Puskin	18.1	<b>69.1</b>	22.7	16.4
<i>The Riscani, 21 May, 2008</i>					
1	Str. The. Russo, 16/3	14.4	<b>72.0</b>	9.9	18.2
3	Str. The. Russo, 17/4, garbage	21.2	<b>247.0</b>	<b>200.0</b>	17.3
4	Str. Dimo, 9/2	15.8	<b>160.5</b>	<b>81.7</b>	17.3
5	Str. Dimo, 7/3, the 9-story building	13.2	<b>70.6</b>	10.4	15.7
6	10m from Kiev street, behind the house 10/1	17.8	<b>70.3</b>	10.2	15.8
9	Str. Dimo, 1, front of the house	19.3	<b>101.2</b>	9.5	13.4
<i>The SEB (village Bic)</i>					
1	Sol chain with potatoes	<b>182.8</b>	<b>280.1</b>	<b>38.5</b>	<b>559.4</b>
1a	Potato potato chain	10.3	32.1	0.0	2.7
2	S. Bac, at the end of SEB mud platform, end	<b>101.6</b>	<b>244.1</b>	17.3	<b>322.1</b>
3	S from the edge of Bic (small slum) in the right deck over r. Bic	<b>42.9</b>	<b>89.8</b>	7.5	88.6
5	S. Bac, St. Gardens, 176, cornfield	10.1	26.2	0.0	32.8
7	Way "Bubueci-Chisinau" right	11.8	33.6	0.0	15.8
9	SEB (territory), mud scattered	<b>105.6</b>	<b>205.9</b>	15.4	<b>360.2</b>
11	Around aerotank SEB (territory)	<b>74.1</b>	<b>164.5</b>	8.4	<b>182.4</b>
12	SEB (territory), the aerotank (center)	20.2	56.9	0.0	30.6
13	Around the secondary settler	<b>246.4</b>	<b>264.3</b>	30.1	<b>598.4</b>
14	SEB-blowing near the pumping station	22.1	44.8	0.0	54.7
<i>Durlesti, agricultural sector</i>					
1	Durlesti-village plot planted with vines	<b>79.4</b>	28.9	0.6	8.1
4	Valley bottom raw land, Association of grasses	<b>47.8</b>	37.1	0.9	9.4
5	Apple orchard "Rihard" abandoned	<b>97.5</b>	55.6	2.9	11.9
7	The middle of the right side, vines, tended	<b>76.1</b>	46.6	3.1	16.9
9	Head landslide slip into old crumbling slope	<b>39.7</b>	50.1	4.4	12.3
12	Water balance, land planted with vines	32.6	36.4	1.3	10.1
<i>Sectorul Ciocana</i>					
1	Str. Aleco Russo, 99/1, the street, backyard	16.8	47.9	10.0	22.3
2	Aleco Russo, 59/2, intersection A. Russo-Sadoveanu	17.5	47.9	10.5	20.1
3	Str. P. Zadnipru 2/1, front of the house	16.5	54.2	11.4	21.0
4	Str. Sadoveanu 14, the house	<b>110.7</b>	<b>66.8</b>	14.8	19.1
5	Str. Sadoveanu 14, back yard	16.7	<b>71.9</b>	11.2	22.5
6	Str. Aleco Russo, 35, Stadium	16.2	49.0	22.1	20.9
7	Str. Aleco Russo, 4/1, around kindergarten Turret	17.8	<b>111.9</b>	<b>47.9</b>	20.5
8	Bul. Mircea 7 in front of the house	17.0	55.6	15.3	17.5
9	Bul. Mircea 7, behind the house	22.6	53.1	13.4	24.0
10	Bul. Mircea 3, in front of the house	21.7	58.1	14.7	19.5
<i>The Valea Crucii, 3 July 2008</i>					
1	Str. Grenoble 257, former Weather Station	<b>34.4</b>	<b>89.7</b>	30.3	16.3
2	Str. Grenoble 259, 1-2m from corrosive	13.1	37.6	1.0	17.4
3	Str. Cross Valley below the bus station	23.2	<b>81.2</b>	12.8	18.8
4	Str. Cross Valley, 22	18.1	43.8	1.5	21.9
6	Str. Cross Valley, 22/1	11.8	41.0	1.4	15.9
	Str. Cross Valley, CMF 2 (courtyard)	20.1	40.0	1.6	16.7
10	Str. Cuza Voda, 37, the house	13.3	38.9	1.9	18.6

\*) bolt stated content of heavy metals exceeding CMA.

The results obtained show that the GM content in agricultural and residential areas differ greatly from one sector of the city to another. In the Centre Street Ialoveni copper were detected (sample 5 (1.03 MAC) and 2.52 (land - you dream of Academy of Public Administration) and Zn between 1.4 to 1.95 CMA CMA (str Ialoveni). in Buiucani content varies between 1.15 and 2.78 With CMA (str. M. Costin and str. Paris, respectively). Zn

contents in this sector is 1.11 to 1.38 MAC (str. Paris and N. Costin 61/1). In the "SATracom" The CMA is 1.36 and ranges between 1.16 and 2.44 Zn CMA). Pushkin Colina sector indicates a higher degree of soil pollution. Zn content ranges from 1.26 MAC (Street Child, A. Puşkin house) and 3.76 MAC (Z. street tree. 7A). Is also quite polluted and dry. Riscani Zn content ranges from 1.28 MAC (St. A. Russo, 16/3) and 4.5 MAC Street A. Russo, 17/4 (landfill site).

One of the sectors with the highest degree of pollution is the cleaning station AR (SEB), which includes SEB and land adjacent Bac village, the land around the SEB. In these lands MG is content (CMA): Cu and Zn 1.30 and 1.62, respectively (outskirts Bic) and 5.2 MAC for Cu and 5.01 for Zn (SEB land adjacent chain potatoes). SEB territory GM content is highest: Cu-7, 5 CMA, CMA and 6.0 Zn 4.8 Cr. High content of MG in the SEB and adjacent land is explained by the accumulation of essential quantities of sludge on land SEB containing major amounts of MG and the use of sludge as fertilizer for growing crops. These data confirm the need to control the use of sludge as fertilizer on agricultural land.

Ciocana housing sectors and Cross Valley also Zn content exceeds 1.22 varies between CMA and CMA (str. Sadoveanu, 14) and 2.1 (St. A. Russo 4/1, (kindergarten copăii Watchtower) (sect. Ciocana) and 1.63 MAC Zn (str. Grenobl 257 - former weather station). Results presented indicate that many places within the ecosystem Chisinau are quite polluted.

According to Ghid (2006) table "indicates the degree of soil pollution with chemicals", the degree of soil pollution in the EUC refers to the second level - low polluted. To establish the most polluted sector of the EUC as Кирилюк (2006) was calculated summary index of pollution. Results summary pollution index (Zc) for the most polluted land in the EUC is shown in Table 4

Table 4

MG content summary index value (Zc) pollution in the SEB

Sample no.	Place of sampling	Cu	Zn	Pb	Cr	Zc
1	Sol chain with potatoes	<b>182.8</b>	<b>280.1</b>	<b>38.5</b>	<b>559.4</b>	28.21
2	S. Bac, at the end of SEB mud platform, end	<b>101.6</b>	<b>244.1</b>	17.3	<b>322.1</b>	28.49
3	From Bic s edge	11.8	33.6	0.0	15.8	4.42
9	SEB (territory), mud scattered	<b>105.6</b>	<b>205.9</b>	<b>15.4</b>	<b>360.2</b>	31.25
11	Around aerotank SEB (territory)	<b>74.1</b>	<b>164.5</b>	8.4	<b>182.4</b>	14.58
13	Around the secondary settler	<b>246.4</b>	<b>264.3</b>	<b>30.1</b>	<b>598.4</b>	57.62
Mean summary index of pollution throughout the SEB						<b>27.43</b>

Mean summary pollution index (Zc) for the SEB is 27.43. According to Кирилюк (2006) this sector covers moderate degree of pollution and the territories are characterized by high levels of ill health. This is confirmed by Бодруг et al (2009). Mention that according to (Кишинев 1993), summary of pollution index (Zc) SEB sector and other sectors of EUC in 1989-1990 exceeded 128. The results presented by (Кишинев 1993), demonstrates enormous pollution virtually the entire EUC, where the index pollution summary (Zc) of 16-32 was practical feature throughout the EUC. Research EUC land pollution with heavy metals in 1989-1990 and the results obtained in these studies (2006-2010) shows an essential decrease of soil pollution. This difference can be explained by the fact that in the period before 1990 in EUC operating a large number of industrial enterprises in the process of which is essential quantities using GM (Mezon, Vibropribor, Signal, Topaz, Pielart, tractor factory, etc.), that caused huge pollution of all environmental components and especially soil (most pollutants in the air settles on the ground). Currently these companies no longer exist and this source of pollution has disappeared.

Study after other indicators of soil quality in the EUC during a 2003-2007 compared to the 90 showed the following. The degree of soil pollution by chemical indicators, schools, beech and microbiological also decreases. After signs of a chemical does not meet 82.4% in 2003, and a 2006 to 48.5% of the samples analyzed. Following

clues in a beech coli 2003 does not meet the requirements of 25.4, and a 2006 to 25.8% in a microbiological indices after 2003 do not meet 37.3%, and a 2006-31, 7%. Reduction of soil pollution with GM over the years is explained by the decrease key polluting enterprises in economic activity and the influence of climatic factors (rainfall, wind, etc.) that lead to washing and migration of heavy metals and other pollutants in soil and their uptake by ecosystems and components autoasane process environment (data Center Chisinau Public Health for the years 20003-2006).

In conclusion it can be stated that the degree of soil pollution on land of 4 profiles are episodic and essential. Study territories industrial sites indicates the fact that virtually all their land is exceeded MAC (between 1 and 2 MAC). This is due to the removal and dispersal of industrial enterprises MG past and present in the operation. The most polluted of all sectors where SEB EUC is essential overtaking GM place. The results obtained on adjacent territories MG content SEB, where it confirms the use of sludge as fertilizer need to control its use as fertilizer on agricultural land.

**Conclusions.** Worst polluted lands MG are profiles where CMA overruns are accidental and essential. Among the most polluted industrial sites are industrial platform Buiucani, CET-1 and CET-2 and SEB.

Study on GM content in soil samples at the sampling point in the housing sector demonstrates that the degree of pollution of EUC sectors are caused by the way the mismanagement of solid waste (MSW), which requires the removal of hazardous waste collection: Batar accumulators, lamps and other waste containing GM.

It was established that the most polluted land is the GM of the EUC SEB (with 7.5 CMA, Zn and Cr 4.8 6.0 CMA). MG high content in soil and SEB land adjacent sectors is explained by the accumulation of large amounts of sludge at SEB containing essential amounts of MG and its use as a fertilizer for growing crops.

It was estimated that the degree of pollution of land in the urban ecosystem Chisinau refers to the second level of pollution - polluted weak.

It was assessed that the highest level of pollution is established for the SEB. Summary of pollution index value (Zc) of this section is 27.43, which indicates the fact that the industry refers to moderate degree of pollution. This value index (Zc) characterizes the sector through a high level of ill health.

It was demonstrated that the degree of pollution of urban ecosystem Chisinau territory established in a 1990 compared to a 2010 decreased very essential, which is explained by the disappearance of GM pollution sources (industrial enterprises) and Clean-up under the influence of natural climatic factors (rainfall, wind, etc.) that lead to washing and migration of heavy metals and other pollutants in soil and their uptake by ecosystems.

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