



STUDY REGARDING THE WATER POLLUTION BY A WASTE STOREHOUSE FROM THE DISTRICT OF GORJ

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„ABSTRACT”

The controlled storing is the main waste treatment channel at the world scale. In view of ascertaining the water quality, there were drawn two water samples from the river Jiu, and the quality indicators were determined according to the STAS in force. The results obtained are compared with the maximum values allowable according both to NTPA 001/2002 and Order 1146/2202, and the water of the river Jiu from the vicinity of the domestic waste storehouse integrates within the second class quality for almost all the indicators except NO_2^- , Cu , PO_4^{3-} , that through the values determined are included in the third class quality.

1. Introduction

At the present moment, the controlled storing represents the main global waste treatment channel, mainly of the domestic wastes. The field necessary for the waste storing has to be established by mutual agreement with the local authorities, the health and the protection of the environment authorities, based on the hydro geological, topographical studies, that allows the establishment of some measures for avoiding the risks of underground or surface water pollution through the infiltrations or surface leakings of the waters. [1,4,5]

The emplacement of the future Targu-Jiu storehouse suited for the domestic wastes is located on the Horse Hill, at about 7 km afar from the municipality and 3 km from the cement factory Lafarge ROMCIM.

The area proposed for the building of the storehouse suited for Targu-Jiu has the following vicinities:

- northward: beech and hornbeam forest on the Horse Hill slope that belongs to the Forest Range Targu-Jiu; SC Lafarge Romcim;
- eastward: field belonging to CL Targu Jiu; technical station CF Barsesti;
- westward: beech and hornbeam forest on the Horse Hill slope that belongs to the Forest Range Targu Jiu;
- southward: beech and hornbeam forest on the Horse Hill slope that belongs to the Forest Range Targu Jiu.

The entire surface occupied by the future storehouse suited for domestic wastes has 379.000 m², out of which 35.550 m² will be employed in the first stage.

The access to the future storehouse suited for Targu-Jiu will be done from the asphalted state highway DN 67 Targu-Jiu – Baia de Arama and, further away, on a paved road with granite plates that secured the access also for the former clay quarry. The distance from the DN 67 is of about 2.000 m.

The storehouse will be located on a thick layer of clay, and the earth resulted from excavation and modeling the storehouse foundation will be used for making the perimetral and compartmental dams.

The compartmental dams will be realized from big used tires filled with sand and disposed in 2 or 3 rows under a frustum of a pyramid shape over which is stretched a geomembrane (fig. 1).

The sealing layers from synthetic materials (polyethylene geomembranes of high density – PEHD and the relevant drainages are performed following the diagram presented in fig. 2).



Fig. 1. Compartmental dam.

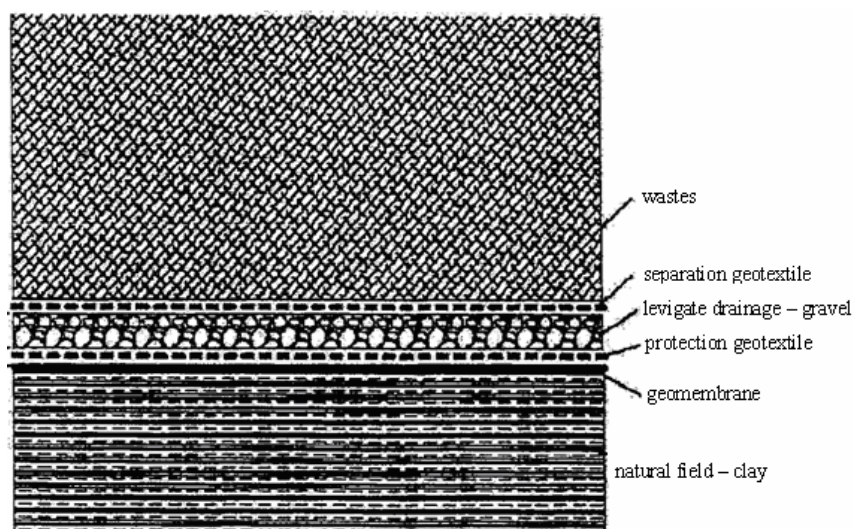


Fig. 2. Sealing system of the storehouse foundation

2. Experimental part

In view of ascertaining the quality there were drawn two surface water samples from the river Jiu. The results of the analysis are compared with the maximum allowable values from the NTPA 001/2002 and the Order MAPM No. 1146/2002 „Surface waters”. The surface water samples are currently samples and reflect the loading of these waters at the moment of drawing these samples.[2,3]

3. Results and discussions

The results obtained are presented in Table 1 and compared with the maximum allowable values according both to NTPA 001/2002 and the Order 1146/2002. The

determinations done for the samples drawn from the two sampling points had, as a purpose, to point out the level of potential pollution with metals and metallic compounds of the surface water from the closest vicinity of the domestic waste storehouse belonging to the Targu-Jiu municipality.

Table 1. Quality indicators

No. crt.	Quality indicator	U.M	Analyzed values		Values allowed	
			P ₁ - upstream	P ₂ - downstream	Order 1146/2002 (mg/L)	NTPA 001/2002 (mg/L)
1	pH	mg/L	7,21	7,29	6,5-8,5	6,5-9
2	NO ₃	mg/L	3,8	3,8	3	25 (37)
3	NO ₂	mg/L	0,2	0,2	0,06	1(2)
4	SO ₄ ²⁻	mg/L	0	0	150	600
5	NH ₄	mg/L	0,13	0,13	0,3	2(3)
6	PO ₄	mg/L	0,37	0,1	0,1	-
7	Cl	mg/L	7,1	7,1	100	500
8	Fixed residue	mg/L	186	183	500	2000
9	Total N	mg/L	1,01	1,04	4	15
10	Dissolved O ₂	mg/L	8,95	8,75	Minimum 6	-
11	Oil products	mg/L	0	0	0,1	5

According to the values determined one may notice the integration within the maximum allowable limits according to NTPA 001/2002 „Used waters overflowed in natural receptors” for all the indicators. Comparatively with the values established by Order No. 1146/2002 the water of the river Jiu from the vicinity of the domestic waste storehouse integrates in the second class quality for most of the indicators except NO₂, Cl and PO₄³⁻ that, through the values established, surpasses this class integrating it in the third class quality. Generally, the water from the river Jiu comes with a loading with varying bigger compounds. One may also notice a good oxygenation of the water in the vicinity of the waste storehouse corresponding to the first class quality. The values determined indicate an insignificant impact over the surface waters.

The levigate quantity was determined through the elaboration of an account of the water for the future storehouse suited for the wastes.

For the water account for the storehouse suited for the domestic wastes there were taken into consideration the following:

- The quantity of the stored wastes. There were taken into consideration the medium monthly quantities stored;
- The water consumption in the fermentation processes was considered at about 20%;
- In view of the type of the stored wastes it was considered a retaining quantity of water for the wastes of about 10 L/m³;
- The quantity was calculated as the difference between the water inputs (precipitations) and the internal consumption (evaporation, consumption in the fermentation process, water retained in the storehouse);
- The calculus of the levigate quantity was realized for the situation in which the compartment 1 is in the filling phase;

Table 2 presents the annual, monthly and daily quantities of levigate that can be produced.

Table No 2. The annual, monthly and daily quantities of levigate predicted

	The annual total quantity (m³)	The monthly medium quantity (m³)	The daily medium quantity (m³)
Storehouse suited for domestic wastes Targu-Jiu	5244	437	145

4. Conclusions

- The storing from the Targu-Jiu municipality resulted in a significant increment of the waste quantity in need of collecting and storing;
- The ecological storehouse that will be built will determine the implementation of the European standards necessary for the protection of the environment and health.

5. BIBLIOGRAPHY

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