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ENVIRONMENTAL ASSESSMENT IN THE AREAS OF NON COMPLIANCE WASTE LANDFILLS IN THE POST CLOSURE PERIOD

Adriana Cuciureanu¹, Bogdan Adrian Stanescu¹, Georgiana Cernica¹, Sorin Dinca²

¹National Research and Development Institute for Industrial Ecology, ECOIND, 71-73, Drumul Podu Dambovitei Street, 060652, Bucharest, adriana.cuciureanu@incdecoind.ro, Romania

²SC Salubris SA, 2A Aleea Tineretului, 230042, Slatina, salubris_slatina@yahoo.com, Olt

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Introduction

In the context of the implementation process of the European Council Directive 31/1999 / EC on waste storage, Romania has made notable efforts to achieve integrated waste management. The impact on the environment generated by municipal landfills is one of the major concerns at national level, and compliance obligations require that measures to control municipal landfills be carried out from the design, operation to closure and rehabilitation. The assumed by our country the obligations to close non-compliant landfills located in urban areas, through specific legislation, was required post-closure monitoring of these landfills, for a period of at least 30 years, in order to highlight the effects on the environment by storage activities.

Materials and methods

Based on these considerations, this paper presents a series of results of investigations on the quality of environmental components groundwater and surface water in the areas of two landfills permanently closed in Olt County (localities Scornicesti, Draganesti-Olt). In addition, the detail aspects for each location, for a better evaluation of the quality of the environmental components were taken into account.

In the *investigation field activities* for the landfills permanently closed in Olt County the experimental program included the groundwater samples from three wells on each site and two surface water samples points (upstream and downstream of each sites). The geographic localization of all sampling points was achieved with a Garmin GPS receiver.

During the *investigation in laboratory activities* for each landfills permanently closed in Olt County, were determined the quality indicators : pH, COD, BOD, ammonium, nitrites, nitrates, chlorides, sulfides, filterable residue, nickel, iron, copper, cadmium, zinc, manganese, lead, chromium, aluminum, cobalt, arsenic, calcium, magnesium.

Results and conclusions

The evaluation of the induced impact from municipal landfills on surface water and groundwater quality was performed by comparing the results of the investigation parameters with thresholds values from the specific legislation for each environmental component: *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy; Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration*

and Order no. 621/2014 on the approval of threshold values for groundwater in Romania (ROAG09, ROOT08).

The diagrams regarding the quality of groundwater in the vicinity of two permanently closed landfills situated in Olt County presents only the quality indicators which exceed the thresholds limits, respectively: ammonium, sulphates, and chlorides. The changes of the level of the ecological status in the sense of degradation (from upstream to downstream) for surface water are presented in figures 1 respectively, 2.



Figure 1. Scornicesti Landfill - Assessment of the quality of the environmental components (source: processing after Google Earth Pro, 2020)



Figure 2. Draganesti – Olt Landfill - Assessment of the quality of the environmental components (source: processing after Google Earth Pro, 2020)

A general conclusion valid for both landfills permanently closed in Olt County – Scornicesti and Draganesti-Olt landfills can be highlighted, respectively are highlighted the effects induced by the remanent pollution sources in the vicinity of these landfills. Establishing the evolution in space and time of the effects of pollution will be quantified by continuing investigations in several seasonal campaigns.

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