

CHARACTERISATION OF BIOWASTE TREATMENT PLANT LEACHATES – TOWARDS ENVIRONMENTAL IMPACT ON SURFACE AND GROUNDWATER

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Abstract

In 1998, the environmental authorities of Wallonia (South part of Belgium) set up an ambitious monitoring network on sanitary landfills, including 12 municipal solid waste and non-hazardous waste landfills located all around the Walloon territory. Since then, ISSeP (Institut Scientifique de Service Public), which was in charge to set up the monitoring program, organizes periodic and regular inspections on every environmental topic related to landfilling activities (e.g. surface and groundwater quality, leachate, ambient air quality, odour ...)¹. However, due to the expansion of the development of alternative pathways of processing (sorting, recycling ...) and the prohibition to landfill garbage and organic fractions since 2010, the amount of landfilled waste decreased drastically. In this context, investigations of ISSeP have been expanded to environmental control of these new activity sectors, specifically composting and anaerobic digestion of biowaste. Currently in Wallonia, no less than 24 biowaste treatment plants have been identified, including 19 composting plants, 3 biomethanisation centers and 2 mixed sites.

Two years ago, ISSeP began an overall environmental study on every plant to finally assess the relevance of establishing a monitoring network as it exists for sanitary landfills. ISSeP focused its investigations on surface and groundwater sensitivity towards contamination by compost leachate leakage and on odour annoyance and ambient air quality alteration at the nearest neighbours.

This paper is dealing with the characterization of biowaste treatment plant liquid emissions, which is the first step to highlight an eventual contamination by leachates in the receiving receptors. On each site, ISSeP collected and analyzed every liquid that has been in contact with organic matters during their conversion processes. Gathering all the analytical results, available for a large set of parameters, in a “leachate focused database” led to the computation of representative statistics for biowaste leachates. Ranges of concentrations have been calculated globally and distinctively according to the specificities of the processes implemented.

Additionally, on the basis of these statistics, typical tracers of leachates have been selected.

This work also aims to give the Competent Authorities a tool to better adapt the operating license regarding the compulsory controls (parameters to be analyzed, frequency...) applied to the leachates and to the potential receiving receptors.

References

- [1] Internet website of the monitoring network of the landfills in Wallonia, including links to monitoring reports: <http://environnement.wallonie.be/data/dechets/cet>