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## ENVIRONMENTAL IMPACT AND RISK ASSESSMENT IN THE AREA OF “PATA RÂT” LANDFILL SITE, CLUJ-NAPOCA, ROMANIA

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### Abstract

This study aims to investigate the environmental impacts of the municipal waste disposal facility of Pata Rat, Cluj-Napoca, Romania during dry periods of the year. The environmental impact assessment on the landfill site was carried out on the basis of the measurements of environmental quality indicators. Environmental indicators were measured in the surface water, soil and air. For the assessment of the environmental impacts generated by landfill on *surface water* measurements were carried out for different quality indicators as: pH, redox potential, conductivity, TDS, salinity, temperature, COD<sub>Cr</sub>, BOD, NH<sub>4</sub>-N, NO<sub>2</sub>-N, NO<sub>3</sub>-N, total P, residue and heavy metals (Cr, Cd, Cu, Ni, Pb, Zn). For the evaluation of the impact on *soil*, the measurements of the following quality indicators: pH, redox potential, conductivity, TDS, salinity and temperature, and heavy metals (Cr, Cd, Cu, Ni, Pb, Zn) were carried out using soil aqueous extracts. The impact on air was evaluated by measuring the following quality indicators: NO<sub>2</sub>, VOC, SO<sub>2</sub>, dust (particulate matter PM<sub>10</sub>) and formaldehyde. Additionally, the following indicators: As, P, total Cr, VI Cr, Pb, Se, Ni, Cd, Co, Cu, Hg, chlorides, COD<sub>Mn</sub>, COD<sub>Cr</sub>, TSM, filterable residue, ammonia, nitrites, nitrates, phosphates, sulphates, total cyanides and pH, were analyzed for *leachate*. After analyzing the leachate, a correlation was set up between the results obtained for the quality indicators of surface water and leachate. The quality indicators showed that the surface water is heavily polluted with leachate during the dry periods of the year, when the precipitation regime is poor. It was concluded that the open dump landfills has an important influence on the surface water.

*Key words:* environmental pollution, impact assessment, integrated method, landfill, waste

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