

# Accepted Manuscript

Biochemical processes in soil and groundwater contaminated by leachates from municipal landfills (Mini Review)

Yu.N. Vodyanitskii

PII: S1512-1887(16)30065-3

DOI: [10.1016/j.aasci.2016.07.009](https://doi.org/10.1016/j.aasci.2016.07.009)

Reference: AASCI 47

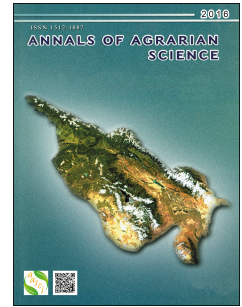
To appear in: *Annals of Agrarian Sciences*

Received Date: 5 May 2016

Accepted Date: 20 July 2016

Please cite this article as: Y.N. Vodyanitskii, Biochemical processes in soil and groundwater contaminated by leachates from municipal landfills (Mini Review), *Annals of Agrarian Sciences* (2016), doi: 10.1016/j.aasci.2016.07.009.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.





## Biochemical processes in soil and groundwater contaminated by leachates from municipal landfills (Mini Review)

Yu.N. Vodyanitskii

*Soil Science Department, Moscow M.V. Lomonosov State University,*

1, Leninskie Gory, Moscow, 1119991, Russia

Received 5 May 2016; Accepted 20 July 2016

Corresponding author: Yu.N. Vodyanitskii

[yu.vodyan@mail.ru](mailto:yu.vodyan@mail.ru)

### Abstract

World clean water deficit grows by increasing pollution on the planet. Landfill of solid domestic waste is one of the most important sources of pollution, where the leachate seeping through soil, gets into the soil and groundwater. Area of landfills of solid household waste, reaches tens of hectares and the mass of waste reaches millions of tones. The specificity of the leachate is the high content of soluble organic substances, providing reduction conditions in contaminated soil and groundwater. Reduction environment is defines biogeochemical processes under landfills with the participation of: ammonium, iron, manganese, bicarbonate, sulfate, methane. The main processes in polluted soil stream are including: biological degradation of organic matter and a variety of biological and abiotic processes. Wide discrimination of the most diverse groups of microorganisms in the polluted leachate is occurs, overlay neighboring redox zones. Microbial population is identifies specific redox zones more contaminated leachate nucleus than on the borders of the leachate with oxygen-enriched by the background thread. Biological reduction processes in the leachate are developing at different speeds: fast evolving and denitrification reduction of iron, slow - methanogenesis.

**Keywords:** Reduction environment, Groundwater, Contamination, Soluble organic matter, Ammonia, Iron, Methane.

### 1. Introduction

In recent years, composition of substances polluting environment is changing. Another 20-30 years ago, attracted universal attention was air emission of heavy metals. Now the problem has shifted to the East: to China, India, and Iran, where the development of industry and energy has not been accompanied by adequate measures of air protection [1]. But in the West, these air

emissions have ceased, and in Russia have stabilized and are declining.

At the same time on the planet is grow shortage of clean water. At the World Economic Forum in Davos (Switzerland) in 2016 year risks global stability, the third highest ranked hazard problem was "water crisis" [2]. Pollutants in water are comes from natural and anthropogenic sources. As a natural example, it should be noted the

Download English Version:

<https://daneshyari.com/en/article/7228826>

Download Persian Version:

<https://daneshyari.com/article/7228826>

[Daneshyari.com](https://daneshyari.com)