

[Look Up Full Text](#)

Full Text from Publisher

[Export...](#)[Add to Marked List](#)

◀ 1 of 1 ▶

Treatment of Taman Beringin landfill leachate using the column technique

By: Ashraf, MA (Ashraf, Muhammad Aqeel)^[1,2]; Balkhair, KS (Balkhair, Khaled S.)^[3,4]; Chowdhury, AJK (Chowdhury, Ahmad Jalal Khan)^[5]; Hanafiah, MM (Hanafiah, Marlia Mohd)^[6]

DESALINATION AND WATER TREATMENT

Volume: 149 Pages: 370-387

DOI: 10.5004/dwt.2019.23839

Published: MAY 2019

Document Type: Article

[View Journal Impact](#)**Abstract**

Landfill leachate is currently a major environmental concern because it contains high concentrations of organic and inorganic contaminants. Leachate treatment using natural materials, such as aquifer sand, peat, and the commercial material BIRM (Burgess Iron Removal Media), was performed through column experiments. Aquifer sand was taken from Kg Teluk, Kelantan, peat was taken from Peatland Paradise, and BIRM was bought from a supplier. The heavy metals (Fe³⁺, Cr, Ni, and Cu) from natural leachate were selected for this experiment. The concentrations of Fe, Cr, Ni, and Cu before the experiment were 11, 1.27, 4.535, and 3.293 mg L⁻¹, respectively. The physical and chemical parameters of leachate and surface water at the Taman Beringin Landfill have been studied to understand the impact of pollution in the area. The results show that leachate samples at the bottom of the landfills have the highest pollution. Both the physical and chemical parameters of leachate exceed the limits of Interim National Water Quality Standards for Malaysia. Experimental test results were also analyzed in terms of breakthrough curves and percentage of heavy metal removal. The results show that the BIRM sample has a higher adsorption capacity for heavy metals, including Fe, compared with aquifer sand and peat.

Keywords

Author Keywords: [Open tipping](#); [Landfill leachate](#); [Contaminant treatment](#); [Natural materials](#); [Efficiency](#)

KeyWords Plus: [AQUEOUS-SOLUTIONS](#); [HEAVY-METALS](#); [ADSORPTION](#); [REMOVAL](#)

Author Information

Reprint Address: Ashraf, MA (reprint author)

+ China Univ Geosci, Sch Environm Studies, Dept Environm Sci & Engr, Wuhan 430074, Hubei, Peoples R China.

Reprint Address: Ashraf, MA (reprint author)

Int Water Air & Soil Conservat Soc INWASCON, Kuala Lumpur 59200, Malaysia.

Reprint Address: Hanafiah, MM (reprint author)

+ Univ Kebangsaan Malaysia, Sch Environm & Nat Resource Sci, Fac Sci & Technol, Bangi 43600, Selangor, Malaysia.

Addresses:

+ [1] China Univ Geosci, Sch Environm Studies, Dept Environm Sci & Engr, Wuhan 430074, Hubei, Peoples R China

[2] Int Water Air & Soil Conservat Soc INWASCON, Kuala Lumpur 59200, Malaysia

+ [3] King Abdulaziz Univ, Dept Hydrol & Water Resources Management, POB 80200, Jeddah 21589, Saudi Arabia

+ [4] King Abdulaziz Univ, Ctr Excellence Desalinat Technol, POB 80200, Jeddah 21589, Saudi Arabia

+ [5] Int Islamic Univ Malaysia, Kulliyah Sci, Kuantan 25200, Pahang, Malaysia

+ [6] Univ Kebangsaan Malaysia, Sch Environm & Nat Resource Sci, Fac Sci & Technol, Bangi 43600, Selangor, Malaysia

E-mail Addresses: chemaqeel@gmail.com

Funding

Funding Agency	Grant Number
HIR-MoE grant	UM/HIR/MOE/SC/04/01
PPP grant	PG008-2014B PG133-2014B

Citation Network

In Web of Science Core Collection

0

Times Cited

[Create Citation Alert](#)

47

Cited References

[View Related Records](#)**Use in Web of Science**

Web of Science Usage Count

4

Last 180 Days

4

Since 2013

[Learn more](#)**This record is from:**

Web of Science Core Collection

- Science Citation Index Expanded

[Suggest a correction](#)

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

[View funding text](#)**Publisher**

DESALINATION PUBL, 36 WALCOTT VALLEY DRIVE,, HOPKINTON, MA 01748 USA

Journal InformationImpact Factor: [Journal Citation Reports](#)**Categories / Classification**

Research Areas: Engineering; Water Resources

Web of Science Categories: Engineering, Chemical; Water Resources

See more data fields

◀ 1 of 1 ▶

Cited References: 47Showing 30 of 47 [View All in Cited References page](#)*(from Web of Science Core Collection)*

1. **[Removal of Cd\(II\) onto Raphanus sativus peels biomass: equilibrium, kinetics, and thermodynamics](#)** Times Cited: 27
By: Ashraf, Muhammad Aqeel; Rehman, Muhammad Abdur; Alias, Yatimah; et al.
DESALINATION AND WATER TREATMENT Volume: 51 Issue: 22-24 Pages: 4402-4412 Published: JUN 1 2013
2. **[Study of contaminant transport at an open-tipping waste disposal site](#)** Times Cited: 22
By: Ashraf, Muhammad Aqeel; Yusoff, Ismail; Yusof, Mohamad; et al.
ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Volume: 20 Issue: 7 Pages: 4689-4710 Published: JUL 2013
3. **[Heavy metal contamination of soil beneath a waste disposal site at Dengkil, Selangor, Malaysia](#)** Times Cited: 19
By: Bahaa-Eldin, E. A. R.; Yusoff, I.; Rahim, S. Abdul; et al.
SOIL & SEDIMENT CONTAMINATION Volume: 17 Issue: 5 Pages: 449-466 Published: 2008
4. **[Cumulative impacts of dissolved ionic metals on the chemical characteristics of river water affected by alkaline mine drainage from the Kuala Lipis gold mine, Pahang, Malaysia](#)** Times Cited: 4
By: Bakar, A.F.A.; Yusoff, I.; Fatt, N.T.; et al.
Chemistry and Ecology Volume: 13 Issue: 1 Pages: 22-33 Published: 2014
[\[Show additional data\]](#)
5. **[Monitoring of forest cover dynamics in eastern area of Beni-Mellal Province using ASTER and Sentinel-2A multispectral data](#)** Times Cited: 5
By: Barakat, A.; Khellouk, R.; El Jazouli, A.; et al.
Geol. Ecol. Landsc. Volume: 2 Pages: 203-215 Published: 2018
[\[Show additional data\]](#)
6. **[Study of Modern Nano Enhanced Techniques for Removal of Dyes and Metals](#)** Times Cited: 8
By: Batool, Samavia; Akib, Shatirah; Ahmad, Mushtaq; et al.
JOURNAL OF NANOMATERIALS Article Number: 864914 Published: 2014
7. Title: [not available] Times Cited: 9
By: Boehme, S.; Panero, M.
Pollution Prevention and Management Strategies for Cadmium in the New York/New Jersey Harbor Published: 2003
Publisher: New York Academy of Sciences New York, New York
8. Title: [not available] Times Cited: 37
By: Boss, C. B.; Fredeen, K. J.
Concepts, Instrumentation, and Techniques in Inductively Coupled Plasma Optical Emission Spectroscopy Published: 1999
Publisher: Perkin-Elmer Corporation, Norwalk, Connecticut
9. **[Biological technology at the treatment of leachate from sanitary landfill](#)** Times Cited: 1
By: Bull, J. S.; Evans, J. V.; Wecnsler, R. M.