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## Laboratory investigation of gas leakage rate through a GM/GCL composite liner due to a circular defect in the geomembrane

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**Author(s):** Bouazza A, Vangpaisal T

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**Times Cited:** 25 **References:** 19 [Citation Map](#)

**Abstract:** The migration of gas through a geomembrane overlying a geosynthetic clay liner (GM/GCL composite) in a landfill cover occurs primarily through defects in the geomembrane. This paper presents the experimental results of an investigation on gas flow through a GM/GCL composite liner where the geomembrane contained a circular defect. It shows that the gas leakage rate is affected by differential gas pressure, moisture content of the GCL, contact conditions, and defect diameter. Moisture content of the GCL was found to be a significant parameter controlling the gas flow rate. This implies that the GCL in a GM/GCL composite should be kept hydrated to high moisture content in order to achieve an effective composite barrier to gas in case a defect occurs in the geomembrane. It is also shown that intimate contact between the geomembrane and the geotextile supported GCL is required to reduce gas leakage rate through a composite system. (c) 2005 Elsevier Ltd. All rights reserved.

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Abuel-Naga H, Bouazza A [A novel laboratory technique to determine the water retention curve of geosynthetic clay liners](#) GEOSYNTHETICS INTERNATIONAL 17 5 313-322 OCT 2010

McWatters RS, Rowe RK [Diffusive Transport of VOCs through LLDPE and Two Coextruded Geomembranes](#) JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING 136 9 1167-1177 SEP 2010

Gates WP, Bouazza A [Bentonite transformations in strongly alkaline solutions](#) GEOTEXTILES AND GEOMEMBRANES 28 2 219-225 APR 2010

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