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Evaluation of the reduction of stabilization times of closed sites for the final disposal of urban solid waste, through the recirculation of inoculated leachates

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The garbage is disposed in a dump in the open air, is the most common way to eliminate municipal solid waste in Mexico, such is the case of the former ex drump called “Bordo Xochiaca” which has received more than 1,200 ton of municipal solid waste from Mexico city, who has operated since 1975, but in 2006 was definitely closed and sanitized, today this site is a mall and sport center. With 13 years elapsed with its closure and following the protocols of Mexican standar continue to generate a significant amount of leachate. A focus on the treatment of leachates is to make use of the municipal solid waste that was extracted from the final disposal sites with more than eight years buried, this waste is called “stabilized material” and is used as packaging material in bioreactors that present important efficiencies in COD and BOD removal. This is why the present work proposes to make use of the recirculation of a leachate from the closed disposal site and inoculate it with rumen of cow origin, in a bioreactor packed with stabilized material from the same site, which will operate in anaerobic conditions, which will allow decrease stabilization times in a final disposal site to accelerate the release of biogas due to the proximity to crowded places. The high efficiencies in bioreactors are attributed to the existence of microbial communities in the stabilized material that have been acclimated to high concentrations of contaminants, developing a capacity to degrade organic matter. This treatment will allow leachates to be used for internal uses in the final disposal sites, converting it from a contaminating liquid to a potential resource, in addition to avoiding such liquids may infiltrate in the basement or in the bodies of surface water drainage.

Recent Publications

1. A. Maury, N. de Belie (2010). State of the art of TiO₂ containing cementitious materials: self-cleaning properties. *Materiales de construcción* 60, 298, 33-50.
2. Ballari, M.M. and Brouwers, H.J.H. (2013) Full Scale Demonstration of Air-Purifying Pavement. *Journal of hazardous materials*, 254, 406-414.
3. Boonen, E., & Beeldens, A. (2013). Photocatalytic roads: from lab tests to real scale applications. *European Transport Research Review*, 1-11.
4. Maggos, T., Plassais, A., Bartzis, J. G., Vasilakos, C., Moussiopoulos, N., & Bonafous, L. (2008). Photocatalytic degradation of NO_x in a pilot street canyon configuration using TiO₂-mortar panels. *Environmental monitoring and assessment*, 136(1), 35-44.
5. Guerrini, G. L., & Peccati, E. (2015). Photocatalytic cementitious roads for depollution. *Newsletter*, 179-186.
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Biography

Dayanira Jovita Gutiérrez Hernández (Mexico City, 1984). Graduated from IPN (National Polytechnic Institute) like Industrial Chemical Engineer, currently she studies a Master’s Degree in Ambiental Engineer. She has ten years of experience work in Acciona Water and Services and Degremont..