

7<sup>th</sup> International Conference and Exhibition on

## BIOPOLYMERS AND BIOPLASTICS

October 19-20, 2017 San Francisco, USA

## Necroslurry polymer transportation through pipes

Juliana S M Guedes<sup>1</sup>, Camila A. F. M. Souza<sup>2</sup>, Marina S. Godinho<sup>2</sup> and Maria Alzira P. Dinis<sup>1</sup><sup>1</sup> University Fernando Pessoa, Portugal<sup>2</sup> FUMEC University, Brazil

A conventional burial, considering its environmental aspect, has a reality that contrasts with the social, cultural and religious beliefs of most people. After burial in graves or chambers, in addition to decomposition by bacteria, the body is also consumed by insects. Such animals enter through cracks in the concrete, masonry and wood, depending on the type of the burial construction. Consequently, these insects that had access to a corpse become disease transmitters. Therefore, animals' access to bodies in decomposition can bring discomfort to those people who live around the cemetery. It also causes discomfort to visitors. The insects that gather in such places denote a lack of dignity for the person buried in the spot. A decaying human body generates a substance called necroslurry. It is a liquid released during the corpse decomposition process and is composed of water, minerals and organic substances, which are responsible for the contamination of the soil and possible underground aquifers in the cemetery area. The soil is not prepared to receive this type of compound, so the consequences can be irreparable damages to this environment. The viscosity of the necroslurry is due to the chemical reactions that produce polymers. So, necroslurry is viscous, with a mean density of 1.23g / cm<sup>3</sup> (greater than the water density) and is polymerizable. Necroslurry drying tests have already been carried out and showed that the liquid is polymerized and pulverized at 1 liter every 84 hours and is reduced to about 50 grams of a whitish inert powder. The decomposition of organic substances in the corpse can produce diamines such as cadaverine (C<sub>5</sub>H<sub>14</sub>N<sub>2</sub>) and putrescine (C<sub>4</sub>H<sub>12</sub>N<sub>2</sub>), which when degraded, generate NH<sub>4</sub><sup>+</sup>, a substance with high concentration levels of toxicity. As necroslurry is a polymerizable substance, it is difficult to transport it in the liquid phase. To prevent social discomfort and environmental problems inherent to soil and water, it is necessary to develop a system that prevents leakage of the necroslurry into the external environment. A fully leak-proof technology associated with the vertical cemetery has already been developed in Brazil. This system has proved to be very efficient in the cities where it is being applied. Due to the difficulty to transport the necroslurry in the liquid phase because of the polymers, this system deals with the necroslurry in its gas phase, which makes its transportation feasible. Although, the solution for this challenge proves to be troublesome due to the negligence and lack of interest from governments and most people, there is an immense and immediate need to control cemetery contamination toward the environment. And, this solution would still bring much more dignity to burials than most of other systems carried out today.

## Biography

Juliana da Silva e Mascarenhas Guedes holds a degree in Civil Engineering from Universidade Federal de Minas Gerais, a Master's Degree in Structural Engineering from Universidade Federal de Minas Gerais, a PhD in Earth Sciences from Universidade Fernando Pessoa, in Porto, Portugal. Currently, is a professor of Civil Engineering at Universidade FUMEC and post-graduate in Structural Engineering from Universidade FUMEC. She is an investigator at FP-ENAS, UFP Energy, Environment and Health Research Unit, Porto. Has experience in the structural and sanitary area. Articles in papers in sanitation, environmental and structural área.

Juliana@mascarenhas.eng.br

## Notes: