

Chemical Compound In Detergents Produce Bacteria Alterations In Agricultural Soils

3 A research project conducted by the University of Granada followed the activity of farm grounds due to the increasing presence of linear alkyl benzene sulphonate (LAS), a chemical compound whose active ingredient can be found in most detergents. The high demand of water for farming, the use of distilled water and the use of biological mixtures cause the presence of this chemical component in **agricultural soils**.

Detergents are a pollutant agent which can be found frequently in agricultural soils. There are numerous channels for the passing of chemical components to the soils. Two primary ways are the use of distilled water (both of domestic and industrial origin), and of fertilizers based out of biological mixtures. A study done by the Institute of Water and the Department of Microbiology at the University of Granada, directed by Dr. Maria del Mar Sánchez Peinado , stress the importance of controlling the contamination of our farm grounds. This is due to the increasing presence of linear alkyl benzene sulphonate, a chemical component whose active ingredient can be found in most detergents.

The research project, carried out by three professors, Clementina Pozo Llorente , Maria Belén Rodelas González, and Maria Victoria Martínez Toledo, was financed by the Ministry of Education. This study has proven to be an important advancement towards further understanding of agricultural soils as a receptor of these pollutant compounds, as well as the impact of such compounds on the microbial community, and its microbiotic role on agricultural soils with regards to LAS biodegradation processes. The field work of this study was conducted in the lowlands of Spain, researching LAS biotransformation capacity with regards to microbiota as well as its biotransformation kinetics.

The most utilized At this moment LAS is the most used anionic surfactant in the worldwide detergent market. Its international consumption reaches values of 2,000 kt per year and by the year 2010 it is expected to reach values of up to 3,400 kt per year. However, the UGR scientists believe that its high global production, the need to use it and the toxicity of its initial forms and of some of its waste products “determine the need to control it in different environmental circumstances”. En este trabajo de investigación se ha profundizado –a partir de técnicas químicas, microbiológicas y moleculares- en el impacto del LAS sobre la estructura, función y composición de la comunidad microbiana en el ecosistema edáfico. Igualmente, los científicos han analizado la capacidad de biodegradación del contaminante en el suelo por parte de dicha comunidad microbiana, combinando técnicas correspondientes a distintas áreas del conocimiento, como la microbiología, la química analítica y la biología molecular.

This research work goes deeply, from chemical, microbiological and molecular techniques, into the impact of LAS in the structure, function and composition of the microbial community in the soil ecosystem. Likewise, the scientists have analyzed the biodegradation capacity of this pollutant in fields with regards to the microbial community combining techniques corresponding to different knowledge areas, such as microbiology, analytical chemistry and microbiology. With regards to agricultural soils, “the use of biological mud as a fertilizer and the great demand for water due to agricultural needs are the main means ways that LAS reaches the fields”. A unique ecosystem, where biological interactions and biogeochemical processes, associated to organic material degradation and mineral elements transformation for plant nutrition are especially intense.

The scientists of the University of Granada warn about the negative effects of LAS “LAS could significantly alter the metabolic activity of **soils**, therefore affecting their fertility”.-Universidad de Granada

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