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ABSTRACTS

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P3-24.45

DISTRIBUTION OF BACTERIAL POPULATIONS AND CHEMICAL COMPOSITION OF GRANULAR METHANOGENIC SLUDGE

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The development of very active granular sludge in UASB (upflow anaerobic sludge blanket) reactor is associated with its exceptional performance. Sludge granulated samples from the UASB reactors treating piggyery wastewaters, operating at influent TSS (total suspended solids) of 1500 and 2000 mg L⁻¹ with percentage of CH₄ in off-gas always higher than 75%, were subjected to HMDS treatment and observed using scanning electron microscopy. Granular structure could be divided in three layers. The predominance of filament bacteria associated to acid forming, small rods (1,0 µm), rods over 2,0 µm, and coccus occurred in the surface layer. The first internal layer was formed by rods of different sizes, and slightly less heterogeneous populations. In the core, the genus *Methanoseta* morphology was found to predominate. The results from EDX microanalysis permitted to verify the presence of P and Ca as the main elements, excluding C, H, O, N. Mineral precipitates having P, Ca, S and Fe in their composition were present close to the external granule layer. These were associated to the removal of phosphorus (20-40%) observed during the reactor operation.

P3-24.46

THE BACTERIOLOGICAL QUALITY OF GROUND WATER IN THE SURROUNDINGS OF THE REFUSE DUMP OF ALVARENGA

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The refuse dump of Alvarenga is located in the municipality of São Bernardo do Campo, in the Metropolitan Region of São Paulo, in the Environmental Protection Area of Mananciais. The dump is used to deposit urban waste and, clandestine, industrial waste. In the immediate surroundings of the dump resides a population of ca. 500 persons who use water of shallow wells. These wells display construction problems, lack of maintenance and inadequate exploration. The objective of this paper is to determine the bacteriological quality of the well-water. For this, a survey of the environmental health of the area was carried out, as well as an inventory of wells (totalling 47), and a monitoring of the water quality. Analysis of water samples of 7 wells show a higher presence of total and faecal coliforms, of hundreds to thousands per 100 ml water. The waste dump is one of the sources of this contamination, which takes place via percolation caused by the decomposition of organic material. This way, the water quality don't follow the drinking water standards established by the Act 36 of 1990, of the Ministry of Public Health.

P3-24.47

TRENDS IN FAECAL COLIFORM POLLUTION IN GUANABARA BAY, BRAZIL

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Guanabara Bay surrounds a broad metropolitan and industrialised area in Brazil. The trends in faecal pollution between 1980 and 1990 were indicated by data of coliforms from different institutions. Total and faecal coliforms were determined by the multiple-tube most-probable-number (MPN) method for all samples. Rio de Janeiro population has increased by 9% between 1980-1990 without any increment in sewage treatment plants. The increase in organic matter input is obvious and the consequent decline in water quality within Guanabara Bay is an expected result. There was an increase in faecal coliforms from 1.3 to 2.9% per year. The available sewage treatment systems now end in contamination above the permitted standards, endangering the sanitary quality. Coliform bacteria exhibited good correlation with other pollution indicators in the study area. Domestic pollution is considered the worst problem Guanabara Bay waters are submitted to, and therefore its monitoring is a priority.

P3-24.48

INFLUENCE OF CADMIUM IN THE GROWTH OF *Aspergillus niger*.

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Four different strains of *Aspergillus niger* were tested as to their response at presence of cadmium (0.1; 0.5; 1.0 and 10 mg/L) in opposite to a control, absent of cadmium. The growth medium was: sucrose: 30.0 g/L, (NH₄)₂SO₄: 5.0 g/L, KH₂PO₄: 1.0 g/L, MgSO₄ . 7 H₂O: 0.5 g/L and KCl: 0.1 g/L; the pH was correct to 7.0. The inoculum was 10⁵ esporos / mL of medium. The samples were taken at every 24 hours for 5 days.

For cadmium concentrations of 0.1; 0.5 and 1.0 mg/L were observed increase in biomass, acid production and consumption of sucrose in relation to the control. However in concentration of 10 mg/L, the toxicity of the cadmium ion was observed. Here the biomass and acid concentration in comparison with control decrease.

With the increase of the cadmium ion concentration the micelium was changed. For the control was observed esporulation and a smooth micelium. At the same time that concentration of cadmium increase, the capacity of esporulation decrease and the micelium turned more rugose.