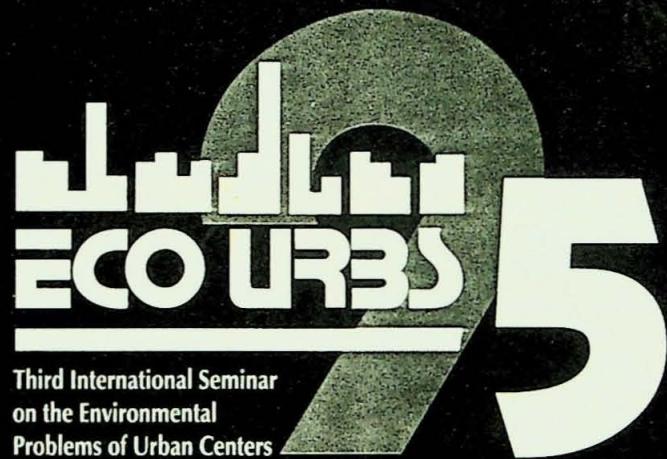


# Abstracts Volume

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# OCCUPATION WITHOUT SANITATION A POTENTIAL RISK TO PUBLIC HEALTH

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In the environment problems existing in the present time, are found in relation to the urbanization's process. In the cities, the greatest concentration and the diversitivity of impacts promoted by man are noticed, like jungle clearing, permeability's alteration of soil and inadequated arrangement of the industrial and domestic residuals. The use of soil is very important to the planning the cities, and with the implantation of sanitary structure, contributing to avoid the very bad life condition of the majority of the urbane population (MOTTA, 1981).

According to NUCCI & ARAÚJO (1978), the process of human occupation is not similar to any place. In the undevelopment countries, it's happened rapidly and without recourse so the cities increase without conditions like energy, treated-water and treatment of residuals like rubbish and domestic drain. In the majority of instances is notice for want of the planning in the occupation of urbane room, is taking multiple consequences that affect the quality of social life.

The exploration of ground-water in the Latin American countries increase too at twenty years ago, making up for the necessities of water to domestic use, agricultural and industrial (MUNOZ et al, 1987). One of the greatest for water quality happen when exist urbanization without creation of one sanitary drain system about vulnerable aquifers, facilitating the infiltration of waste-waters. The interaction cesspool-well is responsible for bad quality of wells of public and private supplies, in the Latin American countries, causing high level of child mortality (70% in Brazil, apud FOSTER et al 1987). According to SILVA & ZANON (1969), the greatest danger that the water can cause to the save, is contamination for drains and excrement of humans. Generally the contamination occur to areas when the waste-water, without treatment, reach into aquifer attaining directly or indirectly group-water level. The most pollution's indicators utilized are the coliforms, mainly the group of faecal coliforms.

The neighborhood of Piratininga localized at littoral of Niteroi City (Rio de Janeiro - Brazil), is composed of mountains and one lowland area aparted for lagoon of littoral girdle, compounding all basin of drainage with

23,2Km<sup>2</sup> (FEMA, 1988). This region don't have to public supplies of treated water and 95,7% of people using ground-water source (VALLEJO et al). The same author relate that, 91,5% of cases have the septic systems. The Secretaryship of Health of Rio de Janeiro detected disease's cases about water vehicular, like typhoid fever at 1988, contamination by *Salmonela typhi*, gastroenteritis, hepatitis. The problem's origin indicated with good security for contamination of ground-water levels (VALLEJO et al).

Twenty-five water of faecal and total coliforms were analyzed belonging indistinctly at areas of study and collected in well pre-existent, considering positive test for the presence of bacteria equal or upper to 30 N.M.P./100ml. The results indicated that 33,33% of samples, presented contamination to total coliforms and approximadly 40,0% of these cases indicated the presence of faecal coliforms.

Above all, 81,82% of samples were localized in lowland's areas of lagoon. It's important to emphasize, that 100% of sample collected in open wells presented contamination for total coliforms, but only 46,67% of tubular wells the test were positive, indicating that contamination can be increase outwardly.

In 66,67% of samples analized in the sandy zone, the results of test for total and faecal coliforms were negatives. According to DACIO DE ALMEIDA CHRISTOVÃO (1977), the sandy soil can filter over 90% of bacteria at approximadly of 4,0 m. In this case the filtration proportioned for depths of water level upper to 5,0m, can be principal mechanism of retention bacteria on soil. This fact is emphasized, when we can observed that in cases where tests were positives, the water's level didn't exceed of 1,0m or were constituted for open wells.

In the remaining of neighborhood only 33,33% of test were negatives for total and faecal coliforms, when the wells are localized, under lagoon and fluvial sediments principally composed by argils. According to GERBA et al (1975), the umid soils and the presence of easy nutriens, support one greatest period of survival for bacteria, facilitating transport.

We can conclude that areas of greatest risk for public health, are these areas in lowland, where the demographic density is greater and the aquifer is few deep.

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## PERSPECTIVES OF THE APPLICATION OF PARTICULATE ELECTRODES IN HEAVY METALS RECOVERY

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#### INTRODUCTION

Economical and mainly ecological reasons have intensified the recuperation of heavy metals such as Pb, Cr, Cd, Hg, Cu, Ni, and Zn from electroplating plants effluents. The most common and presently used treatment technology is chemical precipitation with the formation of sludges that are stored in special deposits or else discharged in rivers or lakes.

Storage facilities ate expensive and difficult to mantain besides the costs of the metals that are lost. Discharging to receiving water bodies is unacceptable because of the high toxicity.

One of the alternatives to the problem is to remove these metals from solution by electroplating with particulated bed electrodes, allowing that way the recycling and a consequently reducion of concentration of the liquid effluents. This tecnology is being developed at world level and has shown good perspectives.

Research projects with this technology of electroplating are being developed in a few centers like the Federal University of São Carlos at the Departments of Chemical Engineering and Chemistry besides the Federal University of Paraná at the Departments of Chemical Engineering and Mechanical Engineering.

#### STATE OF THE ART

The main advantage of using the tri-dimensional electrodes is their high superficial area per volume and their high rate of mass transport. These two characteristics are extremly important for a great number of electrochemical processes, specially those that use diluted solutions, giving concentration polarization with a low efficiency of current and high costs of energy.

These tri-dimensional electrodes are considered to be a good system for the removal of metallic ions from diluted solutions but are limited in their operational life span due to the agglomeration of deposited material on