

spilitization, epidotization, keratophyritization and silicification. Basaltic andesites show actinolite (substituting clinopyroxene), chlorite, albite, epidote, quartz and opaques. Porphyritic types bear relic phenocrysts of magmatic hornblende. Keratophyritized dacites and rhyolites show quartz, albite, chlorite, epidote, zircon and opaques.

Spinifex-textured MBVU-rocks have been referred to previously as komatiites or basaltic komatiites; this is not sustained mineralogically nor geochemically. These rocks present tremolite-actinolite, chlorite, albite, talc, epidote, carbonate and opaques. Pseudomorphosed acicular clinopyroxene spinifex textures predominate by far over those of bladed olivine, typical of (peridotitic) komatiites. SiO<sub>2</sub> reaching the range of intermediate rocks, low TiO<sub>2</sub> (0.25-0.40 wt-%), and Ti/Zr ~ 60 (50-75) relegate these rocks to siliceous magnesian basalts or low-Ti tholeiites linked to boninites, rather than komatiites with Ti/Zr > 100 (Coish 1989). These rocks may represent extrusive equivalents of the most primitive magmas, from which AVU-andesites differentiated in infracrustal magma chambers.

Differentiated magnesian basaltic flows show a spinifex-textured andesitic top and massive ultramafic cumulate base made up of pseudomorphosed euhedral medium-grained olivines and rare relic orthopyroxenes in a tremolite-chlorite intercumulus matrix with chromite as a constant magmatic intercumulus phase.

The BVU consists mainly of basic Fe(-Mg) tholeiitic flows. All three volcanic units contain subordinate volcanoclastic and chemical intertrap metasediments. — (December 14, 2001).

#### HEAVY METAL BEHAVIOR ASSOCIATED WITH SOIL COVER USED IN THE BANDEIRANTES SANITARY LANDFILL, SÃO PAULO DISTRICT

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Soil used to cover compacted solid waste at sanitary landfills plays an important role in attenuating contamination by interfering in leachate composition and incorporating organic and inorganic substances. In order to investigate the behavior of metallic ions associated with the soil cover of the Bandeirantes Sanitary Landfill, Mu-

nicipality of São Paulo, Brazil, we propose to assess the mobility and fixation mechanisms by simulating environmental conditions of sanitary “cells” *in vitro*.

The experiment will consist of glass columns, in which organic and metallic phases of an “artificial waste” will be placed upon a bed of soil and coarse sand layers, both supported on filter. Above this waste layer, a known mass of soil will be added and compacted keeping the proportions used in real sanitary landfill. Rain water or artificial rain will be allowed to percolate through the column at a rate based on known monthly precipitation. The control experiment will use soil only, taken from an intact soil profile near the landfill.

Other experiments will also reproduce the conditions equal to those in the Bandeirantes Landfill cell, but will inject rainwater and also known concentrations of heavy metals (Zn, Cr, Pb). Soil chemistry will be analyzed as well as the chemical and physical-chemical properties of the leachates such as pH, Eh, temperature, humidity and DO. These parameters will be measured, as they reflect microbiological activity during aerobic and anaerobic decomposition within the landfill; the metallic ion behavior will reveal characteristics of both biochemical and physico-chemical processes. — (December 14, 2001).

#### THE OCCURRENCE OF INTERMEDIATE SCHORL-DRAVITE AND ALKALI-DEFICIENT, Cr(-V)-BEARING TOURMALINES IN THE VOLCANIC-SEDIMENTARY SEQUENCE OF THE SERRA DO ITABERABA GROUP – SP

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In the Morro da Pedra Preta Formation, metamorphosed volcanic-sedimentary sequence of the Serra do Itaberaba Group (northeast of São Paulo City – SP), tourmalines occur in tourmalinite, metachert, iron formation, metasediments, calc-silicate and metabasic/intermediate rocks, and hosted by quartz veins. In Tapera Grande and Quartzite areas, intermediate schorl-dravite compositions predominate. Under the microscope, these tourmalines stand out for their color, zoning (alternating light and dark greenish blue tints from core to rim), and strong pleochroism (dark blue to light brown). In general, the rims are