〔Sci. Tot. Environ., **43**, 149 (1958)〕

Testing for the Toxicity of Chemicals with *Tetrahymena pyriformis*.

YOSHITADA YOSHIOKA, YOUKI OSE*, TAKAHIKO SATO

A test was developed using *Tetrahymena pyriformis* in order to determine the toxicity of various chemicals. Pre-cultured *T. pyriformis* was exposed for 24h at 30°C to various concentrations of chemicals, and the number of *T. pyriformis* surviving were then counted. The concentration of the chemical, at which the proliferation of *T. pyriformis* was restricted to one-half of the blank test(EC_{50}), was determined. The method, applied to 57 chemicals, demonstrated that it could be used to detect the chemicals at low concentrations rapidly and with ease. The EC_{50} values showed a goood relationship with 48h LC_{50} values for Himedaka (*Orizias latipes*), and could be explained on the basis of the partition coefficient between water and n-octanol.

〔Mutat. Res., **157**, 135 (1685)〕

Nitroarenes in Suimon River Sediment. TAKAHIKO SATO*, KENJI KATO, YOUKI OSE, HISAMITSU NAGASE, TETSUYA ISHIKAWA

The direct-acting mutagens in sediment of Suimon River were investigated. The sediment was extracted with methanol and fractionated by Silica gel column. The benzene fraction exhibited mutagenic activity without S9 mix in strain TA 98, while it failed to show mutagenic activity in nitroreductase-deficient strain TA 98NR. The benzene fraction was treated by heptafluorobutyric anhydride (HFBA) and investigated with gas chromatography equipped with electron capture detector (GC-ECD). 2-Nitrofluorene, 4, 4′-dinitrobiphenyl 2, 7-dinitrofluorene and 1-nitropyrene were detected and measured quantitatively. The mutagenic activity of a mixture of these compounds was compared with that of the original fraction and the direct-acting mutagenicity of Suimon River sediment can be explained by these nitroarenes, especially 1-nitropyrene.

〔Sci. Tot. Environ., **43**, 127 (1985)〕

Chlorinated Products from Structural Compounds of Soil Humic Substances. TAKAHIKO SATO*, MASASHI MUKAIDA, YOUKI OSE, HISAMITSU NAGASE, TETSUYA ISHIKAWA

The structural compounds of humic substances extracted from soil were investigated by alkaline hydrolysis and alkaline $KMnO_4$ oxidation; vanillin and vanillic and ferulic acids were found by the former method and benzoic acid by the latter. 2,6-Di-tert-butyl-4-methylphenol (BHT) and some phthalates were detected by both methods. Aliphatic acids were not detected.

Nine representative structural compounds of humic substances were then selected and chlorinated. Mutagenic compounds, chloral and 1,1,1,3,3-pentachloro-2-propanone (pentachloroacetone), were produced from the structural compounds.