

[Mutat. Res. 209, 155 (1988)]

The Evaluation of Genotoxic Activities of Disinfectants and Their Metabolites by Umu Test

YOSHIKAZU SAKAGAMI, HIROSHI YAMAZAKI, HIROSHI YOKOYAMA,
YOUKI OSE, TAKAHIKO SATO*

The genotoxic potential of 6 disinfectants and their 9 metabolites was investigated by umu test. In the tested disinfectants, glutaraldehyde(GA) showed positive genotoxicity independent of metabolic activation system and acrinol was positive only in the presence of S9 mixture. Alkyldiaminoethylglycine, benzalkonium chloride(BC), chlorhexidine digluconate(CG) and methylrosaniline chloride were negative in the presence or absence of S9 mixture. In some metabolites of BC, CG or GA, only pyrogallol showed positive genotoxicity in the absence of S9 mixture and the activity was not affected by the metabolic activation system. Aniline, p-chloroacetanilide, p-chloroaniline, p-chlorophenol, decabutyl dimethylamine, glutaric acid, phenol and pyrocatechol did not induce umu gene expression independently of the presence of S9 mixture. The results in the umu test of these compounds were compared with their findings in the liquid rec-assay and Ames test. The umu test is a more useful and simplified method for the detection of genotoxicity of the compounds with killing effects on tester bacteria.

[Sci. Tot. Environ., 72, 1-9 (1988)]

Isolation of dinitropyrene in emission gas from a municipal incinerator and its formation by a photochemical reaction.

AKIO KAMIYA, YOUKI OSE

The extracts of emission gas from incomplete incineration have been proved to be mutagenic by the Ames test, and dinitropyrene(DNP) as a direct-acting mutagen has been detected by use of nitrogen selective GC. The gas-phase photochemical reaction of pyrene with NO₂ gas was examined in a quartz vessel with various reaction times and temperatures. 1-Nitropyrene was readily formed from pyrene in the absence of light irradiation and at low temperature, but DNP was not formed under similar conditions. The formation of DNP is dependent on light irradiation, temperature and HNO₃.

[Sci. Tot. Environ., 73, 29 (1988)]

Possible Methylation of Inorganic Mercury by Silicones in the Environment.

HISAMITSU NAGASE, YOUKI OSE,* TAKAHIKO SATO

Organosiloxanes(silicones) are being released to the environment in increasing quantities, and there are questions concerning the reactivity of silicones as methylating agents under environmental conditions. The interaction of inorganic mercury and silicones were conducted in laboratory experiments, in which inorganic mercury, short and long chain silicones, cyclic silicones, oxidized silicone gums and industrial formulations containing silicones being used. In all cases, there was evidence of the production of methylmercury, a finding of potential significance.