Mutagenicity of automobile workshop soil leachate and tobacco industry wate water using AMES salmonella test by OKunola *et al*., 2014

Maintenance and materials handling wastes are two types of waste generated by vehicle workshops. These include soiled oil and lubricants, as well as a filthy shop. trash, rags, discarded parts, asbestos from brake pads solvents used in the cleaning of parts The most hazardous waste produced in vehicle repair companies is as a result of the solvents that were used to clean the parts. Several of the Solvents are made composed of extremely toxic compounds. Humans and the environment are both at risk (okunola *et al.,* 2014).

Toxic pollutants can also be found in tobacco industry wastewater. Nicotine, flavoring compounds comprising glycogen and alcohol, absorbable organic halogens, and pesticides from tobacco leaves are the most common sources of these hazardous pollutants, according to Sponza (2002).

Concerns about the human health risks associated with the genotoxic potency of substances prevalent in the environment are emerging all the time. As a result, a slew of short-term genotoxicity tests have emerged, the majority of which have been mandated or recommended by regulatory bodies. AMES test is one (okunola *et al.,* 2014).

Sample sites

* An automobile/mechanic workshop in Sagamu, Ogun state, Southwest Nigeria.
* Also used was tobacco effluent from the British American Tobacco (BAT) Company Ltd, which is based in Ibadan, Oyo State, Nigeria.

AMES test

After sterilization by filtration using a 0.22-mm pore size cellulose nitrate filter (Millipore, Billerica, Massachusetts, USA), the leachate and wastewater were submitted to an Ames test. The Ames test was performed using S. typhimurium strains TA98 and TA100 purchased from Environmental BioDetection Products Inc. (EBPI, Canada), and the method outlined by Maron and Ames (1983).

RESULT

In both the automobile workshop soil-simulated leachate and tobacco wastewater, mutagenicity was observed, which was concentration dependent and statistically significant (p 0.05) at all concentrations, in the two bacteria strains used.

However, TA100 was shown to be a more sensitive strain in terms of MI against the test samples than TA98, despite the fact that both showed similar concentration dependence. The results also revealed that tobacco wastewater is more mutagenic than soil-simulated leachate from a car workshop. In both bacterium strains, MIs of >4 were reported in the tested samples, with the maximum induction recorded in the highest concentrations of the two samples.

The mutagenicity of automobile workshop soil-simulated leachate and tobacco wastewater was investigated in this study.

According to Dearfield et al. (2002), there is no one test that can identify the complete spectrum of induced genotoxicity's various end points.

In the Ames test, the two substances were mutagenic at concentrations as low as 1%. At least two molecular pathways are involved in the genotoxic effects observed by the Ames fluctuation test: base pair substitution mutation (TA100 positive) and frameshift mutation driven by nucleotide insertion or deletion (TA98 positive).

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