

In this mechanism there is a route for the interconversion of branched alkyl (a) and linear acyl (f) species, which is consistent with the observations made above. Thus by modifying the microstructure of the liquid assembly, through the addition of surface active agents and the polarity of the organic solvent, it is possible to effect high selectivities to total aldehydes.

Other features which make this system attractive are that high normal:iso ratios can be achieved at relatively low phosphine concentrations (less than 1/10 of that of the conventional triphenylphosphine-rhodium system). Minimal losses of phosphine, surfactant and rhodium occur, and the phosphine and surfactant are not degraded under the reaction conditions.

A related water soluble system has been developed by Rhône Poulenc and Ruhr Chemie (5). This system utilises sulphonated triphenylphosphine as a water solubilising ligand and operates at higher temperatures and pressures than the truly homogeneous rhodium-phosphine. A comparison of the sulphonated and carboxylated phosphine systems is given in Table VII.

The Destruction of Polychlorinated Biphenyls

In an earlier issue of this journal attention was drawn to the possibility of disposing of persistent aromatic pollutants, including polychlorodibenzo-*p*-dioxins (PCDDs), by an oxidation process which utilised catalytic quantities of ruthenium tetroxide (1).

Since that time there has been a growing awareness of the potential danger to human health posed by polychlorinated biphenyls (PCBs), compounds with similar structures to the PCDDs. PCBs were widely used in the past as insulators in electrical transformers and capacitors. They are very stable, and therefore difficult to get rid of when they are no longer required. Burial in a landfill site cannot be regarded as a permanent solution as leaching into the drainage system may occur. Incineration, the usual alternative method of disposal, requires temperatures of around 1200°C and risks the possibility that even more toxic polychlorinated dibenzofurans could be formed if the process conditions are not controlled satisfactorily. Although various chemical

The trisulphonated triphenylphosphine-rhodium catalyst is operated commercially by Ruhr Chemie for the hydroformylation of propylene and the complexity of these reaction systems suggests that the design of an industrial plant for the hydroformylation of high molecular weight alkenes will not be trivial. However, the mild operating conditions which result from the use of the 4-diphenylphosphino-benzoate-rhodium catalyst, together with the high selectivities attained, mean that this system has considerable potential for the manufacture of aldehydes in the fine organic chemicals markets.

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methods of detoxification have been reported the unreactivity of PCBs generally necessitates the use of extreme conditions. However, a simple, efficient method for the oxidative destruction of PCBs has now been reported by investigators at the University of East Anglia and at Queen Mary College, London (2).

Their procedure makes use of ruthenium tetroxide as an oxidising agent, and complete destruction can be achieved. The rate of destruction of individual polychlorinated biphenyl isomers varies, resistance to degradation depending on the degree of chlorination of the biphenyl. The method is said to be suitable for the detoxification of laboratory equipment, and to have possible application for the large scale treatment of commercial waste fluids.

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