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MONSANTO RESEARCH CORPORATION

REPORT TO THE DIRECTORS

THIRD QUARTER 1976

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PROGRAM HIGHLIGHTS

Dayton Laboratory

Environmental R&D - In anticipation of a definitive modification of our contract for emission source assessment that will broaden its scope to include water and solid residues, we began development of a model for prioritization of stationary sources of these emissions. The Environmental Protection Agency (EPA) will use this information in selecting sources for detailed study.

Assessments are currently under way of the phosphate fertilizer industry, synthetic ammonia production, and pesticide manufacture. A presentation to the Fertilizer Institute's Manufacturing Environmental Committee elicited their assistance in providing emissions data. Representatives of Monsanto Agricultural Products Company (MAP) and other ammonia producers were given the opportunity to review our assessment of that industry. Our assessment of pesticide manufacturing has shown a need for development of a substitute for the arsenicals now used in desiccation of cotton.

In supporting field sampling and analytical work, measurements of the concentration of hydrocarbon vapors emitted during filling of 50,000-gallon underground Air Force fuel storage tanks showed local levels at the vent high enough to indicate a possible need for a vapor recovery system. A method was developed and approved by the EPA for measuring ammonium nitrate particulate emitted from the prilling tower at MAP's Luling plant. MRC and CED assisted in planning sampling methodology plant modifications to assure compliance with state environmental regulations without the need for additional particulate control equipment.

Studies of the environmental aspects of waste solvent disposal showed a probable future demand for recoverable or reusable solvent compositions. New and modified pollution control systems have been identified for phthalic anhydride manufacture. A theoretical study of the potential for polychlorinated biphenyl (PCB) formation during inefficient combustion of chlorine-containing fossil fuels demonstrated that a low but finite possibility exists for PCB formation in this way, but confirmatory data are needed. Other studies examined alternatives to chlorination for control of bio-fouling in process cooling water systems, the applicability of modifications to control of nitrogen oxide emissions from cyclone furnace-fired boilers, and the extent of hydrocarbon emissions in petroleum refinery and organic chemical processing operations.

Energy R&D - An assessment of data on energy consumption by pollution control systems in four major categories of stationary sources (electric utilities, industry, municipal wastewater treatment plants, and solid waste disposal installations) showed that