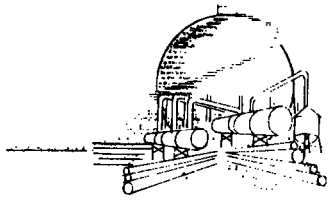

PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL
Menlo Park, California
94025

ABSTRACT

Process Economics Program Report No. 171A

(August 1985)

This report describes and evaluates the processes for making carbofuran and mancozeb, as well as the intermediates for these two pesticides.

Carbofuran is made from either catechol or o-nitrochlorobenzene. The economics of each route, including the manufacture of the intermediates methyl isocyanate and methallyl chloride, are evaluated. The catechol route is found to be economically superior. For methyl isocyanate, which is common to both routes, two nonphosgenation processes are evaluated and compared with two phosgenation processes. The nonphosgenation route is not only competitive with the phosgenation route, but also avoids the transport of both methyl isocyanate and phosgene when integrated with carbofuran production.

Mancozeb is evaluated in detail, with a brief evaluation of two similar pesticides, maneb, and zineb. The intermediates are carbon disulfide and ethylenediamine. The process for making carbon disulfide from methane and sulfur is evaluated, with a discussion of the use of alternative carbon sources. For ethylenediamine, two processes starting from ethylene dichloride, one process from monoethanolamine, and another from ethylene oxide are evaluated and compared.

PEP'84 YCY,
DJL,
CSL

SRI International

Report No.171A

PESTICIDES AND INTERMEDIATES

SUPPLEMENT A

by YEN-CHEN YEN

with contributions by DIN-JIN LIN
and CHUN-SAN LIU

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A private report by the

PROCESS ECONOMICS PROGRAM

Menlo Park, California 94025

For detailed marketing data and information, the reader is referred to one of the SRI programs specializing in marketing research. The CHEMICAL ECONOMICS HANDBOOK Program covers most major chemicals and chemical products produced in the United States and the WORLD PETROCHEMICALS Program covers major hydrocarbons and their derivatives on a worldwide basis. In addition, the SRI DIRECTORY OF CHEMICAL PRODUCERS services provide detailed lists of chemical producers by company, product, and plant for the United States and Western Europe.

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