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Abstract

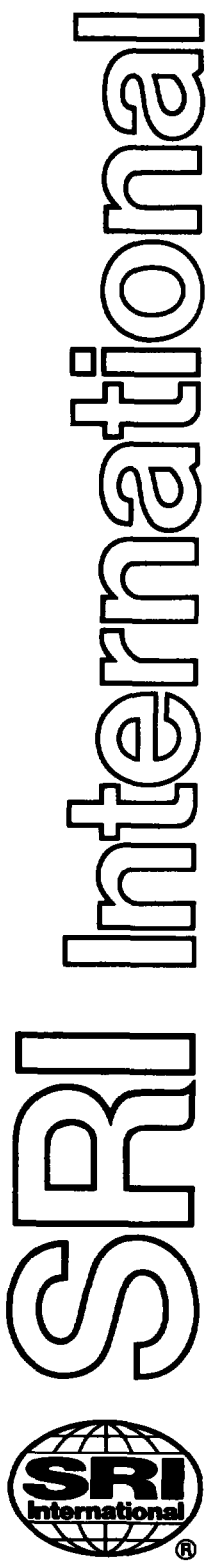
Process Economics Program Report No. 171B

PESTICIDES AND INTERMEDIATES

(September 1986)

This report presents the technology and economics of the manufacture of benomyl, a fungicide, and phenmedipham, a pesticide, and their intermediates.

Commercially, benomyl is made from *o*-phenylenediamine, methyl chloroformate, cyanamide, and *n*-butyl isocyanate. Phenmedipham is made from *m*-aminophenol, methyl chloroformate, and *m*-tolyl isocyanate. The two isocyanates are made from their corresponding amines. Some among these intermediates are produced by two manufacturing processes. Thus, the processes evaluated in this report are benomyl and phenmedipham from the intermediates mentioned before; *o*-phenylenediamine from *o*-chloronitrobenzene and from *o*-dichlorobenzene; methyl chloroformate from methanol and phosgene; cyanamide from calcium cyanamide and carbon dioxide; *n*-butyl isocyanate from *n*-butylamine; *n*-butylamine from *n*-butyl alcohol and from *n*-butyraldehyde; *m*-aminophenol from nitrobenzene via sulfonation, reduction and caustic fusion, and *m*-aminophenol from resorcinol; *m*-tolyl isocyanate from *m*-toluidine; and *m*-toluidine from toluene by nitration, reduction and isomer separation, and *m*-toluidine from *m*-cresol.



Report No. 171B

PESTICIDES AND INTERMEDIATES

SUPPLEMENT B

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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.

CONTENTS

1	INTRODUCTION	1
2	SUMMARY	3
	General Aspects	3
	Technical Aspects	7
	Benomyl	7
	o-Phenylenediamine from o-Nitrochlorobenzene	7
	o-Phenylenediamine from o-Dichlorobenzene	7
	Methyl Chloroformate	8
	Cyanamide	8
	n-Butyl Isocyanate from n-Butyl Amine	8
	n-Butyl Amine from n-Butyraldehyde	8
	n-Butyl Amine from n-Butanol	9
	Phenmedipham	9
	m-Aminophenol from Nitrobenzene	9
	m-Aminophenol from Resorcinol	10
	m-Tolyl Isocyanate	10
	m-Toluidine from Toluene	10
	m-Toluidine from m-Cresol	11
3	INDUSTRY STATUS	13
	Methyl Chloroformate	14
	n-Butyl Isocyanate and m-Tolyl Isocyanate	15
	m-Aminophenol and m-Toluidine	15
	n-Butyl Amine	15
	o-Phenylenediamine	18
	Cyanamide	18
4	BENOMYL	23
	Review of Processes	24
	A. Processes from o-Phenylenediamine to Methyl Benzimidazole-2-ylcarbamate (Formula II)	24
	B. Processes from Methyl Benzimidazole-2-ylcarbamate (Formula II) to Benomyl (Formula I)	29
	C. Processes from o-Phenylenediamine to Aminobenzimidazole (Formula III in Figure 4.1)	29
	D. Processes from Aminobenzimidazole (Formula III) to Methyl Benzimidazole-2-ylcarbamate (Formula II)	30
	E. Other Processes	31
	Process Description	32
	Process Discussion	40
	Cost Estimates	40

CONTENTS

5	o-PHENYLENEDIAMINE	47
	Review of Processes	47
	Reduction of o-Nitroaniline	47
	Amination of o-Dichlorobenzene	48
	Direct Amination of Aniline	48
	Other Processes	49
	A Process for Preparing o-Phenylenediamine from o-Nitrochlorobenzene via o-Nitrolaniline	50
	Process Description	50
	Process Discussion	57
	Cost Estimates	57
	A Process for Preparing o-Phenylenediamine from o-Dichlorobenzene	63
	Process Description	63
	Process Discussion	70
	Cost Estimates	70
6	METHYL CHLOROFORMATE	75
	Review of Processes	75
	Process Description	76
	Process Discussion	81
	Cost Estimates	81
7	CYANAMIDE	89
	Chemistry	89
	Process Description	91
	Process Discussion	97
	Cost Estimates	97
8	n-BUTYL ISOCYANATE AND n-BUTYLAMINE	101
	Review of Processes for Making n-Butyl Isocyanate	101
	From Phosgene and n-Butylamine	101
	Processes Using Phenyl Chloroformate or Phenyl Carbonate	103
	Nonphosgenation Processes	103
	Review of Processes for Preparation of n-Butylamine	103
	From n-Butanol	103
	From n-Butyraldehyde	104
	From n-Butyl Chloride	105
	Other Processes	105
	A Process for the Production of n-Butyl Isocyanate from n-Butylamine	106
	Process Description	106
	Process Discussion	115

CONTENTS

8	n-BUTYL ISOCYANATE AND n-BUTYLAMINE (Continued)	
	Cost Estimates	115
	A Process for the Manufacture of n-Butylamine from n-Butyraldehyde	122
	Process Description	122
	Process Discussion	128
	Cost Estimates	128
	A Process for Producing n-Butylamine from n-Butanol	132
	Process Description	132
	Process Discussion	139
	Cost Estimates	139
9	PHENMEDIPHAM	143
	Review of Processes	143
	Process Description	146
	Process Discussion	159
	Cost Estimates	159
10	m-AMINOPHENOL	165
	Review of Processes	165
	From Metanilic Acid by Alkali Fusion	165
	From Resorcinol by Amination	166
	From m-Aminobenzoic Acid by Caustic Fusion and Acidification	166
	From 3-Aminocyclohexanone by Dehydrogenation	167
	From m-Phenylenediamine by Hydrolysis	167
	From Oxidation of Aniline by Peroxide	168
	From m-Nitrophenol by Reduction	168
	A Process for Manufacture of m-Aminophenol from Nitrobenzene via Metanilic Acid	168
	Process Description	168
	Process Discussion	177
	Cost Estimates	178
	A Process for Producing m-Aminophenol from Resorcinol	182
	Process Description	182
	Process Discussion	188
	Cost Estimates	188
11	m-TOLYL ISOCYANATE AND m-TOLUIDINE	193
	Review of a Process for the Preparation of m-Tolyl Isocyanate ...	193
	Review of Processes for Preparation of m-Toluidine	193
	From Nitrotoluene	193
	From m-Cresol	195
	From Benzaldehyde	195

CONTENTS

11	m-TOLYL ISOCYANATE AND m-TOLUIDINE (Continued)	
	By the Direct Amination of Toluene	195
	Other Processes	196
	A Process for Producing m-Tolyl Isocyanate	198
	Process Description	198
	Process Discussion	205
	Cost Estimates	205
	A Process for Preparing Toluidines from Toluene via	
	Nitration and Reduction Followed by Isomer Separation	212
	Process Description	212
	Process Discussion	224
	Cost Estimates	224
	A Process for the Preparation of m-Toluidine from m-Cresol	229
	Process Description	229
	Process Discussion	235
	Cost Estimates	235
	APPENDIX A: COST ESTIMATION METHOD	239
	APPENDIX B: BENOMYL AND PHENMEDIPHAM: GENERAL DESCRIPTION	
	OF PROPERTIES	241
	APPENDIX C: PHYSICAL DATA	245
	CITED REFERENCES	275
	PATENT REFERENCES	287

ILLUSTRATIONS

4.1	Processes for Preparation of Benomyl and Its Precursors	25
4.2	Benomyl Flow Sheet	295
5.1	o-Phenylenediamine from o-Nitrochlorobenzene Flow Sheet	297
5.2	o-Phenylenediamine from o-Dichlorobenzene Flow Sheet	299
6.1	Methyl Chloroformate Flow Sheet	301
7.1	Cyanamide Flow Sheet	303
8.1	n-Butyl Isocyanate from n-Butylamine Flow Sheet	305
8.2	n-Butylamine from n-Butyraldehyde Flow Sheet	307
8.3	n-Butylamine from n-Butanol Flow Sheet	309
9.1	Phenmedipham Flow Sheet	311
10.1	m-Aminophenol from Nitrobenzene via Metanilic Acid Flow Sheet	315
10.2	m-Aminophenol from Resorcinol Flow Sheet	317
11.1	m-Tolyl Isocyanate from m-Toluidine Flow Sheet	319
11.2	m-Toluidine from Toluene Flow Sheet	321
11.3	m-Toluidine from m-Cresol Flow Sheet	325

TABLES

2.1	Cost Features of Benomyl and Phenmedipham	4
2.2	Cost Features of Intermediates for Making Benomyl and Phenmedipham	5
3.1	World Producers of Benomyl and Phenmedipham (1985)	14
3.2	World Producers of Methyl Chloroformate (1984)	16
3.3	World Producers of n-Butyl Isocyanate and m-Tolyl Isocyanate (1984)	17
3.4	World Producers of m-Aminophenol (1984)	18
3.5	World Producers of m-Toluidine (1984)	19
3.6	World Producers of Alkylamines, Including n-Butyl Amine (1984)	20
3.7	World Producers of o-Phenylenediamine (1984)	21
3.8	World Producers of Cyanamide	21
4.1	Manufacture of Benomyl and Its Precursors Summary of Du Pont Patents	253
4.2	Benomyl and Its Precursors and Homologs Summary of Patents Assigned to Others than Du Pont	254
4.3	Benomyl Production Design Bases and Assumptions	33
4.4	Benomyl Stream Flows	35
4.5	Benomyl Major Equipment	37
4.6	Benomyl Utilities Summary	39
4.7	Benomyl Total Capital Investment	42
4.8	Benomyl Production Costs	43
4.9	Costs of Raw Materials for Benomyl and Prices Assumed for Du Pont	45
4.10	Du Pont's Probable Production Cost of Benomyl	46
5.1	o-Phenylenediamine Preparation Patent Summary	259
5.2	o-Phenylenediamine from o-Nitrochlorobenzene Design Bases and Assumptions	51
5.3	o-Phenylenediamine from o-Nitrochlorobenzene Stream Flows	52
5.4	o-Phenylenediamine from o-Nitrochlorobenzene Major Equipment	54

TABLES

5.5	o-Phenylenediamine from o-Nitrochlorobenzene Utilities Summary	56
5.6	o-Phenylenediamine from o-Nitrochlorobenzene Total Capital Investment	59
5.7	o-Phenylenediamine from o-Nitrochlorobenzene Production Costs	60
5.8	Production of o-Nitroaniline and o-Phenylenediamine in Two Processes Cost Features	62
5.9	o-Phenylenediamine from o-Dichlorobenzene Design Bases and Assumptions	64
5.10	o-Phenylenediamine from o-Dichlorobenzene Stream Flows	66
5.11	o-Phenylenediamine from o-Dichlorobenzene Major Equipment	67
5.12	o-Phenylenediamine from o-Dichlorobenzene Utilities Summary	69
5.13	o-Phenylenediamine from o-Dichlorobenzene Total Capital Investment	72
5.14	o-Phenylenediamine from o-Dichlorobenzene Production Costs	73
6.1	Methyl Chloroformate Manufacture Patent Summary	261
6.2	Methyl Chloroformate Design Bases and Assumptions	77
6.3	Methyl Chloroformate Stream Flows	78
6.4	Methyl Chloroformate Major Equipment	79
6.5	Methyl Chloroformate Utilities Summary	80
6.6	Methyl Chloroformate Capital Investment	83
6.7	Methyl Chloroformate Production Costs	85
6.8	Methyl Chloroformate without Recovery of HCl Cost Features	87
7.1	Preparation of Cyanamide Patent Summary	262
7.2	Cyanamide from Calcium Cyanamide Design Bases and Assumptions	92
7.3	Cyanamide from Calcium Cyanamide Stream Flows	94

TABLES

7.4	Cyanamide from Calcium Cyanamide Major Equipment	95
7.5	Cyanamide from Calcium Cyanamide Utilities Summary	96
7.6	Cyanamide from Calcium Cyanamide Total Capital Investment	98
7.7	Cyanamide from Calcium Cyanamide Production Costs	99
8.1	n-Butyl Isocyanate Preparation Patent Summary	263
8.2	Preparation of n-Butylamine Patent Summary	265
8.3	n-Butyl Isocyanate from n-Butylamine Design Bases and Assumptions	107
8.4	n-Butyl Isocyanate from n-Butylamine Stream Flows	109
8.5	n-Butyl Isocyanate from n-Butylamine Major Equipment	112
8.6	n-Butyl Isocyanate from n-Butylamine Utilities Summary	114
8.7	n-Butyl Isocyanate from n-Butylamine Capital Investment	117
8.8	n-Butyl Isocyanate from n-Butylamine Production Costs	119
8.9	n-Butyl Isocyanate from n-Butylamine Cost Features	121
8.10	n-Butylamine from n-Butyraldehyde Design Bases and Assumptions	123
8.11	n-Butylamine from n-Butyraldehyde Stream Flows	124
8.12	n-Butylamine from n-Butyraldehyde Major Equipment	125
8.13	n-Butylamine from n-Butyraldehyde Utilities Summary	127
8.14	n-Butylamine from n-Butyraldehyde Total Capital Investment	129
8.15	n-Butylamine from n-Butyraldehyde Production Costs	130
8.16	n-Butylamine from n-Butanol Design Bases and Assumptions	133
8.17	n-Butylamine from n-Butanol Stream Flows	134

TABLES

8.18	n-Butylamine from n-Butanol Major Equipment	136
8.19	n-Butylamine from n-Butanol Utilities Summary	138
8.20	n-Butylamine from n-Butanol Total Capital Investment	140
8.21	n-Butylamine from n-Butanol Production Costs	141
9.1	Phenmedipham Patent Summary	268
9.2	Phenmedipham Design Bases and Assumptions	147
9.3	Phenmedipham Stream Flows	150
9.4	Phenmedipham Major Equipment	155
9.5	Phenmedipham Utilities Summary	158
9.6	Phenmedipham Capital Investment by Section	161
9.7	Phenmedipham Production Costs	163
10.1	m-Aminophenol Preparation Patent Summary	269
10.2	m-Aminophenol from Nitrobenzene Design Bases and Assumptions	169
10.3	m-Aminophenol from Nitrobenzene via Metanilic Acid Stream Flows	172
10.4	m-Aminophenol from Nitrobenzene via Metanilic Acid Major Equipment	174
10.5	m-Aminophenol from Nitrobenzene via Metanilic Acid Utilities Summary	176
10.6	m-Aminophenol from Nitrobenzene via Metanilic Acid Total Capital Investment	179
10.7	m-Aminophenol from Nitrobenzene via Metanilic Acid Production Costs	180
10.8	m-Aminophenol from Resorcinol Design Bases and Assumptions	182
10.9	m-Aminophenol from Resorcinol Stream Flows	184
10.10	m-Aminophenol from Resorcinol Major Equipment	185

TABLES

10.11	m-Aminophenol from Resorcinol Utilities Summary	187
10.12	m-Aminophenol from Resorcinol Total Capital Investment	189
10.13	m-Aminophenol from Resorcinol Production Costs	190
11.1	m-Toluidine Preparation Patent Summary	271
11.2	m-Tolyl Isocyanate from m-Toluidine Design Bases and Assumptions	199
11.3	m-Tolyl Isocyanate from m-Toluidine Stream Flows	200
11.4	m-Tolyl Isocyanate from m-Toluidine Major Equipment	202
11.5	m-Tolyl Isocyanate from m-Toluidine Utilities Summary	204
11.6	m-Tolyl Isocyanate from m-Toluidine Total Capital Investment	207
11.7	m-Tolyl Isocyanate from m-Toluidine Production Costs	209
11.8	m-Tolyl Isocyanate from m-Toluidine (Without HCl Recovery) Cost Features	211
11.9	Toluidine from Toluene via Nitration, Hydrogenation, and Isomer Separation Design Bases and Assumptions	215
11.10	Toluidines from Toluene via Nitration, Hydrogenation, and Isomer Separation Stream Flows	216
11.11	Toluidines from Toluene via Nitration, Hydrogenation, and Isomer Separation Major Equipment	220
11.12	Toluidines from Toluene via Nitration, Hydrogenation, and Isomer Separation Utilities Summary	223
11.13	Toluidines from Toluene via Nitration, Hydrogenation, and Isomer Separation Capital Investment	225
11.14	Toluidines from Toluene via Nitration, Hydrogenation, and Isomer Separation Production Costs	227
11.15	m-Toluidine from m-Cresol Design Bases and Assumptions	229

TABLES

11.16	m-Toluidine from m-Cresol Stream Flows	231
11.17	m-Toluidine from m-Cresol Major Equipment	232
11.18	m-Toluidine from m-Cresol Utilities Summary	234
11.19	m-Toluidine from m-Cresol Total Capital Investment	236
11.20	m-Toluidine from m-Cresol Production Costs	237