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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Austria

MARKET STUDY ON SELECTED FINE CHEMICALS IN THE ASEAN REGION

April 1990

FINAL REPORT

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April 18, 1990

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Attention: Mr. S. Morozov
Chief, Contracts Division

Gentlemen:

Re: Contract No. 89/131 LM
Preparation of ASEAN Market Studies

We are pleased to submit our final report on the Market Study on Selected Fine Chemicals in the ASEAN Region. This is one of the four market studies commissioned by UNIDO to help the Committee on Industry, Minerals, and Energy (COIME) identify, prepare, and promote projects for the ASEAN Industrial Joint Ventures (AIJV) programme. The report compilation was coordinated by the International Team Leader of Project No. DP/RAF/85/010.

This market study covered the following ASEAN countries: Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

The objective of this study is to assess the market potential of the selected fine chemicals used in the pharmaceutical industries of the various ASEAN countries. The Chemical Division of the Philippine Board of Investments provided the selection of fine chemicals that could be produced in a multi-product facility. The fine chemicals identified are:

- analgesics - mefenamic acid, ibuprofen, and glaphenine;
- anti-bacterials - metronidazole;
- anti-bacterials/anti-respiratory tract infection treatments - sulfamethoxazole and trimethoprim;
- anti-tuberculosis treatments - isoniazid, pyrazinamide, and ethambutol;
- intravenous fluid components - dextrose/glucose monohydrate and high grade NaCl.

The primary focus of this study is on the level and trend of demand for the selected fine chemicals in the Philippine pharmaceutical industry.

This study also looks into the potential for export of these selected fine chemicals. The discussion includes overviews on the pharmaceutical industries and an examination of the demand and supply indicators for each selected fine chemical in each country in the ASEAN region.

The market analysis involves the following:

- an estimate of the market size for the selected fine chemicals based on an analysis of the demand and supply conditions in the pharmaceutical industries of each country;
- a determination of the potential growth rate of the demand for the fine chemicals under consideration;
- a determination of product priorities based on the existing and projected demand for the fine chemicals under consideration.

The market data used in this report consisted primarily of secondary information gathered from published government and trade statistics, industry reports, and perindicals. As a supplement, primary data were obtained from pertinent resource people from both the private and government sectors in the countries included in the study. SGV's offices in the other ASEAN countries provided assistance in the data gathering process.

We will be glad to discuss any questions you may have on this report.

Very truly yours,

SGV & Co.

COPY NO. 3

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Austria

MARKET STUDY ON SELECTED FINE CHEMICALS IN THE ASEAN REGION

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FINAL REPORT

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1.1 THE PHILIPPINE MARKET

1.1.1 Background on the Pharmaceutical Industry

The Philippine pharmaceutical industry has grown from an industry with less than 20 drug manufacturers after World War II, to encompass 360 pharmaceutical laboratories, 1,034 drug departments of companies, and 9,467 drug stores and hospital pharmacies.

From a ₱2.9 billion in gross revenues in 1980, revenues grew at an average annual growth rate of 21 per cent to reach ₱13.156 billion by 1988.

In 1988, the major 38 pharmaceutical manufacturers included in the Top 2000 corporations in the Philippines earned a ₱13.2 billion in gross revenues and ₱1.2 billion in net income, making the industry one of the most profitable industries in the manufacturing sector.

Revenues from retail distribution of pharmaceutical products grew from ₱1.1 billion in 1980 to ₱4.1 billion by 1988. Revenues from wholesale distribution grew from ₱843 million in 1980 to ₱8.7 billion in 1988.

Multinational corporations dominate the pharmaceutical industry. While the industry's leader is United Laboratories, Inc., with a market share of 20 per cent, close to 70 per cent of the revenues of the top pharmaceutical corporations come from foreign owned firms.

The retail distribution of pharmaceutical products is dominated by Filipino firms, the largest of which is Mercury Drug Corporation. Meanwhile, wholesale distribution is dominated by Metro Drug Corporation.

The Philippine pharmaceutical industry is still a compounding or converting industry. While close to 100 per cent of the pharmaceutical products sold in the country are locally manufactured, as much as 95 per cent of the active ingredients or raw materials are imported by the manufacturers. The dependence on imports by pharmaceutical manufacturers is attributed to the

poor development of the chemical and petrochemical industries in the country. This is further manifested by the absence of fundamental research and development activities and facilities.

The advertising and promotions of pharmaceutical products depend greatly on the type: either over-the-counter (OTC) or the ethical/prescription drugs, bearing the recommendation and permission of licensed medical professionals. For the OTC drugs, the common media of advertising are utilized, while for the ethical or prescription drugs, companies have sales representatives who handle promotional activities directed towards the medical professionals.

The consumer price of most pharmaceutical products includes the cost and profit requirements of both the wholesaler/distributor and the retail outlet. The cost at which they acquired the products from the manufacturers may also determine the prices.

The Generics Law took effect last January 1, 1990. The law requires the following:

- o that doctors prescribe pharmaceutical products by their generic name and may only suggest particular brands;
- o that drug manufacturers print the generic names of their products more prominently than their brand names in the labels;
- o that pharmacists and drug store clerks inform their customers of all available products under the same generic name as the doctor had prescribed with their corresponding prices.

1.1.2 Demand

Several demand indicators of the selected fine chemicals covered in the study were used.

Since there is no local production and exports of the selected fine chemicals, import data gathered on the products are indicative of their apparent demand by the private sector and the government.

Specific data on government purchases of the fine chemicals, through the Department of Health Procurement Division, were acquired. In addition, actual consumption data by the private sector were gathered for the anti-tuberculosis treatment drugs.

1.1.2.1 Group 1: Analgesics

Ibuprofen, mefenamic acid, and glaphenine are anti-inflammatory, anti-pyretic, analgesic medicines which are used for the treatment of pain of musculoskeletal origin, traumatic injuries, tension headache, fever, osteoarthritis and other arthritic conditions, and dysmenorrhea.

Based on import data, demand for analgesics follows:

	Volume (kgs)
1986	17,380
1987	29,143
1988	31,361
1989 (Jan.-Oct.)	30,315

1.1.2.2 Group 2: Anti-bacterials

Metronidazole is an anti-bacterial medication used for the treatment of serious infection carried by susceptible amoebic bacteria.

The apparent demand for the anti-bacterials (specifically metronidazole) follows:

	Volume (kgs)
1986	1,536
1987	600
1988	4,045
1989 (Jan.-Oct.)	1,770

The government purchased the following volume of metronidazole from 1986 to 1989:

	Volume (kgs)
1986	254
1987	473
1988	1,845
1989 (Jan.-Oct.)	1,505

1.1.2.3 Group 3: Anti-bacterials/respiratory tract infection treatments

Trimethoprim and sulfamethoxazole are used to treat respiratory-tract, gastro-intestinal tract, genito-urinary tract, and skin and soft tissue infections. Both chemicals are usually compounded to form cotrimoxazole, another treatment for respiratory tract and bacterial infections.

The apparent demand for the anti-bacterial/respiratory tract infection drugs follows:

	Volume (kgs)
1986	5,614
1987	5,370
1988	10,641
1989 (Jan.-Oct.)	9,883

Government purchases of trimethoprim, sulfamethoxazole, and cotrimoxazole amounted to 1,584 kilograms in 1989.

1.1.2.4 Group 4: Anti-diarrheals

Furazolidone is primarily used for the treatment of specific or non-specific, bacterial or protozoal diarrhea, dysentery, and gastro-enteritis.

Based on import data, demand for furazolidone follows:

	Volume (kgs)
1986	62,570
1987	57,670
1988	47,725
1989 (Jan.-Oct.)	51,380

1.1.2.5 Group 5: Anti-tuberculosis medications

Ethambutol, isoniazid, and pyrazinamide are agents used for the treatment of pulmonary and extra-pulmonary tuberculosis.

The apparent demand for the anti-tuberculosis treatments follows:

	Volume (kgs)
1986	33,425
1987	45,645
1988	35,735
1989 (Jan.-Oct.)	20,012

The consumption of the products, based on available Intercontinental Medical Statistics (IMS) Pacific Ltd. data is:

	Volume (kgs)
1987	49,280
1988	50,835
1989	48,220

On the other hand, government purchases of the product for 1986 to 1989 are:

	Volume (kgs)
1986	996
1987	5,902
1988	4,690
1989	1,391

1.1.2.6 Group 6: Intravenous fluid components

Dextrose/glucose monohydrate is a natural sugar prepared by the enzymatic hydrolysis of starch and comes as a water soluble white crystalline powder. It contains one molecule of water. Dextrose monohydrate is also known as chemically pure glucose powder. Generally, it is used by the pharmaceuticals and food processing industries. It is an essential ingredient in intravenous fluids used in dehydration, shock, and post-operative treatments given patients requiring sugar or carbohydrates in the blood.

At least 99.9 per cent pure, high grade sodium chloride (NaCl) is primarily used by the pharmaceutical industry in the preparation of intravenous and saline solutions.

The apparent demand of the products covered under this classification follows:

	Volume (kgs)
1986	377,420
1987	330,246
1988	97,000
1989 (Jan.-Oct.)	241,000

Demand by the government of dextrose/glucose monohydrate and high grade NaCl (through purchases of dextrose and saline solution) follows:

	Dextrose Volume (kgs)	High grade NaCl Volume 000 ml
1986	164	16,788
1987	333	50,356
1988	386	63,126
1989	411	63,041

1.1.3 Supply

The Philippines' supply of bulk and/or intermediate fine chemicals used for the pharmaceutical industry is dependent on importation.

1.1.3.1 Group 1: Analgesics

Mefenamic acid is mainly sourced from Spain (accounting for 58.7 per cent of total imports), with Warner Lambert as its main importer (with a 72.8 share of total imports)

The major source of ibuprofen (42.3 per cent) is the Federal Republic of Germany. Unilab practically dominated the market, as it accounted for 99.1 per cent of total imports from 1986 to the first ten months of 1989.

The Federal Republic of Germany was the country's main source of glaphenine in 1986 and 1987. For 1988 and the first ten months of 1989, Italy was the main supplier. Warner Lambert Phils., Inc. was the main importer of the product during the period.

1.1.3.2 Group 2: Anti-bacterials

The Philippines' supply of metronidazole comes from France, with Rhone-Poulenc as its major buyer, accounting for 33.3 per cent of total imports.

1.1.3.3 Group 3: Anti-bacterials/respiratory tract infection treatments

The leading sources of sulfamethoxazole from 1986 to the first ten months of 1989 are the Federal Republic of Germany and the United Kingdom, accounting for 29.4 and 24.9 per cent, respectively. Its leading buyers are United Laboratories, Inc. (34.3 per cent) and Wellcome, Phils. (24.9 per cent)

During the period, the main sources of trimethoprim imports were Hong Kong (25.6 per cent) and Spain (17.5 per cent), and its leading importer was Wellcome, Phils., accounting for 18.1 per cent of total imports.

Switzerland is the main source of cotrimoxazole imports, accounting for 72.6 per cent of total imports from 1986 to the first ten months of 1989. The major importer is Roche, Phils. (84.3 per cent)

1.1.3.4 Group 4: Anti-diarrheals

Japan is the main source of furazolidone imports, accounting for a 32.8 per cent share of total imports. The main buyers of the product are not pharmaceutical firms, but feed manufacturers or trading firms. During the period, Vitarich Corp. and Simon Enterprises were the leading importers, with shares of 13.0 and 12.3 per cent, respectively.

1.1.3.5 Group 5: Anti-tuberculosis drugs

Isoniazid was mainly sourced from Japan and the Federal Republic of Germany, accounting for 52.2 per cent and 39.2 per cent, respectively, during the period. Its main buyer was Unilab (60.8 per cent of total imports)

On the other hand, Netherlands is the main source of ethambutol (30.1 per cent of total imports). Its major buyers are Cyanamid, Phils. and Unilab, both accounting for 35.4 per cent of total imports.

Several countries supply the Philippines with pyrazinamide, they are: South Korea, Spain, Switzerland, and Japan. Unilab (with a 33.1 per cent share of total imports for the period) and Ciba-Geigy Phils., Inc. (with a corresponding 31.5 per cent share) are the leading importers.

1.1.3.6 Group 6: Intravenous fluid components

The main sources of the IV fluid component imports of the Philippines are Netherlands (for dextrose) and New Zealand (for high grade NaCl). Abbott Laboratories is the major buyer.

Based on import statistics, the major distributors of the fine chemicals in the Philippines are:

- Abbott Laboratories;
- Ciba-Geigy, Phils,;
- Cyanamid, Phils.;
- Rhone-Poulenc Phils., Inc.;
- Roche, Phils.;
- United Laboratories;
- Warner Lambert Phils.;
- Wellcome, Phils.; and
- Zuellig Pharma.

The fine chemicals (end product form) covered in the study are ethical/prescription drugs. Usually, the promotional and physical distribution functions are delegated to separate divisions. Each function is carried out by a separate department in the company or any one of the functions may be carried out by an affiliate or a separate company altogether.

Some fine chemical pharmaceutical companies which are registered as manufacturers, but do not have manufacturing facilities, engage the services of contract manufacturers.

The major pharmaceutical companies, which are mostly multinationals, usually have an agreement to source their requirement of basic or intermediate materials from their respective mother companies or affiliates.

There is a sector in the industry which engages solely in the trading of these fine chemicals, importing these from trading countries and distributing these to endusers and small dealers/pharmaceutical companies.

Import data gathered on volume and C.I.F. value reveal two factors affecting the wide range of import prices: country of origin, and more importantly, the existence of transfer pricing.

1.2 EXPORT OPPORTUNITIES: OTHER ASEAN COUNTRIES

1.2.1 Indonesia

The Indonesian pharmaceutical industry is still in its early stage, having started to develop only in the early 1960s. The industry's activities are limited to the compounding or converting of imported active ingredients and raw materials. Although there are several fine chemical manufacturing plants in the country, 95 per cent of basic material requirements are still imported.

The apparent demand for pharmaceutical products has not increased significantly from 1982 to 1987. The only available data on estimated market sizes of the specific fine chemicals were for 1988.

Indonesia's fine chemical requirements are from the following countries: high grade NaCl - Japan; trimethoprim and sulfamethoxazole, metronidazole, and isoniazid - the People's Republic of China (P.R.O.C.); ethambutol - South Korea and India; and pyrazinamide and mefenamic acid - South Korea.

1.2.2 Malaysia

Likewise, the Malaysian industry is in its early stage of development, as the industry is involved in assembling and repackaging basic substances and imported drugs. Local production of pharmaceuticals accounts for only 25 per cent of total basic material requirement.

The domestic consumption for pharmaceuticals increased from US$105.8 million in 1985 to US$131.6 million in 1989, with an annual average growth rate of 8.2 per cent.

The only available data on any of the fine chemicals were for mefenamic acid. The country also exported glucose (in dry state) to various Asian countries, with Hong Kong as its largest market.

As a whole, the pharmaceutical industry is expected to grow by about 10 to 15 per cent in 1990, as primary production of basic pharmaceuticals is being encouraged.

Only dextrose and glucose are manufactured in the country. However, most of these go to the food industry. It also imports the product mainly from People's Republic of China, Singapore, and France.

1.2.3 Singapore

As an effect of the free market economic system of this country, most of its imports including fine chemicals are for re-export to its neighboring countries. 97 per cent of its total sales in 1987 went to the export market.

Except for trimethoprim, which is manufactured in its intermediate form, generally the domestic demand for the other fine chemicals is too small to merit production.

Due to the minimal imports of the products covered in the study, there were no available data on import statistics of these specific chemicals.

Singapore sources its requirements from the following countries: dextrose/glucose monohydrate - Thailand and Malaysia; sulfamethoxazole - South Korea, Thailand, India, P.R.O.C.; ethambutol - India; and ibuprofen, mefenamic acid, and furazolidone - P.R.O.C.

1.2.4 Thailand

The pharmaceutical industry of Thailand is also in its early stage of development. Local production is limited to simple formulation of finished products, since the industry is still dependent on imported intermediate and technical grade materials.

In 1987, the value added by the pharmaceutical industry was US$79.0 million; an increase from the previous year's level of US$70.0 million.

There is no local production of the products covered in the study. All the materials are therefore imported and some are re- exported to neighboring countries. Trade statistics were used to indicate apparent demand. However, the various fine chemicals were classified under different headings from 1986 to 1987, and 1988.

Only data for ethambutol were available to estimate projected demand. Assuming a 2.5 per cent annual average growth rate, projected demand for ethambutol from 1990 to 2000 (based on apparent demand from 1986 to 1988) is estimated as follows:

	Value (kgs)
1990	21,525
1995	24,354
2000	27,554

The sources of Thailand's chemically pure sugar from 1986 to 1987 were Netherlands and France. Major sources of the anti- tuberculosis treatment drugs it acquires are Japan and P.R.O.C. Its main source of ethambutol is India. The major supplier of Thailand's pure sodium chloride requirements is the Federal Republic of Germany.

1.3 MARKET ASSESSMENT

The market potential of the selected fine chemicals used in the Philippine pharmaceutical industry can be assessed by demand indicators discussed in the report. Of particular interest are records on imports of the different fine chemicals and data on purchases of the finished products by both the consumer sector and the government which will be used to estimate the level and trend of the demand for the fine chemicals under consideration.

Information from marketing managers of pharmaceutical companies, government planning coordinators, representatives from the Drug Association of the Philippines and other experts were also obtained to augment the conclusions drawn from the statistical data.

Unfortunately, information on the demand for fine chemicals in the other ASEAN countries were not available during the course of the research, consequently, the assessment of the markets in these countries is based largely on qualitative data and cannot be as comprehensive as the Philippine analysis.

A table summarizing the level of existing demand for the pertinent fine chemicals in each ASEAN country and another table presenting demand projections of each ASEAN country for each fine chemical under consideration are presented in the following pages. Following these tables is a discussion of the demand projections.

DEMAND FOR SELECTED FINE CHEMICALS IN THE ASEAN REGION
(Volume in kgs.)

Products	PHILIPPINES 1/		INDONESIA 2/	MALAYSIA 3/	SINGAPORE 4/	THAILAND 5/
	1988	1989	1988	1988	1988	1988
ANALGESICS						
Mefenamic acid	13,150	14,687	15,000	6,000	n.a.	n.a.
Ibuprofen	17,500	21,431	1,500	n.a.	n.a.	n.a.
Glaphenine	711	1,775	1,500	n.a.	n.a.	n.a.
ANTI-BACTERIALS						
Metronidazole	4,045	2,035	7,000	n.a.	n.a.	n.a.
ANTI-BACTERIALS/RESPIRATORY TRACT INFECTION TREATMENTS						
Sulfamethoxazole	4,119	5,262	20,000	n.a.	n.a.	n.a.
Trimethoprim	3,709	1,501	5,000	n.a.	n.a.	a/
Cotrimoxazole	2,813	5,590	n.a.	n.a.	n.a.	n.a.
ANTI-DIARRHEALS						
Furazolidone	47,725	59,870	500	n.a.	n.a.	n.a.
ANTI-TUBERCULOSIS DRUGS						
Isoniazid	17,820	6,375	53,000	n.a.	n.a.	b/
Pyrazinamide	7,600	8,564	5,000	n.a.	n.a.	a/
Ethambutol	10,315	10,600	30,000	n.a.	n.a.	21,000
INTRAVENOUS FLUID COMPONENTS						
Dextrose/glucose monohydrate	77,000	288,750	350,000	n.a.	n.a.	c/
High grade NaCl	20,000	12,500	5,000	n.a.	n.a.	n.a.

Notes:

1/ Apparent demand
2/ Estimated annual requirement for intravenous fluid components; apparent demand for other fine chemicals.
3/ Only available data was for mefenamic acid, based on the annual requirement of the chemical's main importer.
4/ Domestic demand is too small to merit local production. Likewise, import volumes of fine chemicals were too small, thus were classified under more general headings in the trade statistics.
5/ a/ Trimethoprim and pyrazinamide were classified under heterocyclic compounds with nitrogen hetero-atoms only (containing a pyrimidine ring or piperazine ring in the structure). This amounted to 121,000 kilograms.
b/ Isoniazid was classified under heterocyclic compounds with nitrogen hetero-atoms only (containing an unfused ring in the structure); this amounted to 1,766,000 kilograms.
c/ Dextrose/glucose monohydrate were classified under chemically pure sugars (excluding sucrose, lactose, maltose, glucose, fructose); this amounted to 55,000 kilograms.

Products	PHILIPPINES					INDONESIA				MALAYSIA 3/	SINGAPORE 4/	THAILAND
	Assumed CAAGR 1/ (%)	Average Demand 1988-1989	1990	1995	2000	Assumed Growth Rate(%) 2/	1988 Demand	1990	1995	1990-2000	1990-2000	1990-2000
ANALGESICS	15	29,057	33,416	67,211	135,185	10	18,000	21,780	35,077	n.a.	n.a.	n.a.
Mefenamic acid	15	13,553	15,586	31,349	63,054	10	15,000	18,150	29,231	5/	n.a.	n.a.
Ibuprofen	15	13,695	15,749	31,677	63,715	10	1,500	1,815	2,923	n.a.	n.a.	n.a.
Glaphenine	15	1,909	2,080	4,184	8,416	10	1,500	1,815	2,923	n.a.	n.a.	n.a.
ANTI-BACTERIALS												
Metronidazole	10	2,054	2,259	3,639	5,860	10	7,000	8,470	13,641	n.a.	n.a.	n.a.
ANTI-BACTERIALS/RESPIRATORY TRACT INFECTION TREATMENTS	15	8,495	9,769	19,649	39,522	10	25,000	30,250	48,718	n.a.	n.a.	n.a.
Sulfamethoxazole	15	3,881	4,463	8,977	18,056	10	20,000	24,200	38,974	n.a.	n.a.	n.a.
Trimethoprim	15	1,870	2,151	4,325	8,700	10	5,000	6,050	9,744	n.a.	n.a.	n.a.
Cotrimoxazole	15	2,744	3,158	6,347	12,766	10	n.a.	-	-	n.a.	n.a.	n.a.
ANTI-DIARRHEALS												
Furazolidone	10	56,959	62,655	100,906	162,511	10	500	605	974	n.a.	n.a.	n.a.
ANTI-TUBERCULOSIS DRUGS	10	35,086	38,595	62,157	100,104	10	88,000	106,480	171,487	n.a.	n.a.	n.a.
Isoniazid	10	14,679	16,147	26,005	41,881	10	53,000	64,130	103,282	n.a.	n.a.	n.a.
Pyrazinamide	10	8,087	8,896	14,327	23,073	10	5,000	6,050	9,744	n.a.	n.a.	n.a.
Ethambutol	10	12,320	13,552	21,826	35,150	10	30,000	36,300	5,,462	n.a.	n.a.	6/
INTRAVENOUS FLUID COMPONENTS	10	276,480	304,128	489,801	788,830	10	355,000	429,550	691,795	n.a.	n.a.	n.a.
Dextrose/glucose monohydrate	10	262,187	288,406	464,480	748,050	10	350,000	423,500	682,051	n.a.	n.a.	n.a.
High grade NaCl	10	14,293	15,722	25,321	40,780	10	5,000	6,050	9,744	n.a.	n.a.	n.a.

Notes:

1/ Compounded annual average growth rate.

2/ Based on interviews, assumed growth rate for the pharmaceutical industry in 1990 is 10 per cent and is assumed to be maintained until 1993.

3/ a/ As a whole, the pharmaceutical industry is expected to grow by 10 to 15 per cent in 1990.
b/ Estimated domestic consumption (in US$ million) of pharmaceuticals from 1990 to 1995 follows:

Year	Value (US$)
1990	143.8
1991	154.0
1992	165.8
1993	178.6
1994	190.8
1995	205.2

4/ No estimates of existing demand on which demand projections can be based.

5/ Based on an annual average growth rate of 10 per cent, mefenamic acid demand is projected as follows:

Year	Kilograms
1989	6,000
1990	6,600
1991	7,260
1992	7,986
1993	8,785
1994	9,663
1995	10,629

6/ Based on an annual average growth rate of 2.5 per cent, ethambutol demand is projected as follows:

Year	Kilograms
1989 (est.)	21,000
1990	21,525
1991	22,063
1992	22,615
1993	23,180
1994	23,760
1995	24,354
1996	24,962
1997	25,586
1998	26,226
1999	26,882
2000	27,554

1.3.1 Philippines

Analysis of the importation records and limited sales data (both private sector and government) reveals the following patterns:

1.3.1.1 Analgesics

The analgesic products appear to be selling well as shown by the increasing importation levels of mefenamic acid, ibuprofen, and glaphenine. This increasing demand can be attributed largely to the marketing efforts of companies with brands composed of the fine chemicals under this group.

For example, the large increase in the requirement for ibuprofen importations, which jumped over 100 per cent in 1987 from the previous year's level, is a result of the successful introduction and marketing of Alaxan, an ibuprofen based consumer product from United Laboratories. Because of the success of this brand, marketing managers of other companies have indicated their plans to launch their own line of ibuprofen based products. A similar scenario is taking place in the marketing of mefenamic acid based products. The success of Ponstan, a product of Parke Davies, has encouraged the entry of other mefenamic acid based brands. These events are taking place because of the growing consumer awareness of the generic names of the more popular analgesics which makes market entry easier for new companies.

Largely because of the marketing efforts of the pharmaceutical companies, the demand for analgesics based on mefenamic acid, ibuprofen, and glaphenine is expected to increase at an annual rate of 15 per cent.

1.3.1.2 Anti-bacterials

The demand for metronidazole, on the other hand, seems to have started to pick up based on the trend of import volumes. This increasing demand can be attributed to the number of government projects aimed at reducing the incidence of bacterial and amoebic infections in the rural areas. In fact, the volume of government purchases of metronidazole based products increased from a level of 473 kilograms in 1987 to 1,508 kilograms in 1988.

These government programs against bacterial and amoebic infections are expected to be a major factor in influencing the demand for metronidazole. Furthermore, as more consumers become aware of metronidazole based products, from either the government programs or through the education campaigns by the public sector and, indirectly, the pharmaceutical companies, the demand for metronidazole should increase at an annual rate of 10 per cent.

1.3.1.3 Anti-bacterials/respiratory tract infection treatments

There appears to be a large demand for respiratory tract infection treatments, based on the importation levels and trend of sulfamethoxazole and more significantly, cotrimoxazole. The significant growth rate of cotrimoxazole import volumes may indicate the shift towards this particular drug from the use of single component medicines.

While trimethoprim use seems to be declining and the usage of sulfamethoxazole appears not to be increasing at the same rate as cotrimoxazole, these trends should change as manufacturers begin to compound cotrimoxazole, which is composed of trimethoprim and sulfamethoxazole,

themselves. The demand for cotrimoxazole, and consequently, the demand for the two constituent products is expected to grow at a rate of 15 per cent per year.

1.3.1.4 Anti-diarrheals

Furazolidone has become more of a component of livestock feed and less as an anti-diarrheal treatment. Consequently, the growth in livestock production should propel the demand for the fine chemical.

Because the livestock production industry is expected to grow at a rate of 9.9 per cent per year, the demand for furazolidone should grow at a proportional rate.

1.3.1.5 Anti-tuberculosis drugs

There appears a lack of growth in the sales of the various brands of anti-tuberculosis products based on isoniazid, pyrazinamide, and ethambutol. This decreasing demand is also seen in the diminishing volumes of imports of these fine chemicals.

Sales figures are limited to drugstore purchases and do not accurately reflect the need for anti-tuberculosis treatment because the population segment that is most affected by the disease usually cannot afford the treatment. To an extent, government purchases of anti-tuberculosis medicines reflect the level and trend of the demand for these drugs because government activities, in general, are responses to the health needs of majority of the population which belongs to the lower income group.

Government purchases of anti-tuberculosis medicines have increased significantly since 1986. Furthermore, comprehensive long term anti-tuberculosis programs have been proposed. When implemented, these programs should push the requirement for anti-tuberculosis treatments. Based primarily on the trend of government purchases, the demand for anti-tuberculosis drugs should increase at an annual rate of 10 per cent.

1.3.1.6 Intravenous fluid components

There seems to be no obvious trend in the demand for intravenous fluid components. Import trends indicate a decreasing demand; government purchases, on the other hand, have increased.

Past reports indicate that the demand for intravenous products is projected to grow at a rate of 10 per cent per year. The main factor for this growth is the capacity of the government to supply hospitals and clinics. As the trend of government purchases indicate, this projected growth of 10 per cent should still be accurate.

A large push on the market potential of these products can be anticipated if the Generics Law is fully and properly implemented. By easing entry into the pharmaceutical market, competition will be enhanced, leading to lower prices, better distribution, and more educationabout drugs. A broader choice of medicines at different price levels, available to more people will effectively increase the size and potential of the market.

1.3.2 Indonesia

The Indonesian pharmaceutical industry is still in its early stage primarily because the demand for pharmaceutical products had always been suppressed by the low income level of the population. However, the rapid rate of economic growth and the consequent rise in the population's income which in turn promotes the demand for pharmaceutical products has made the industry more attractive. The industry is expected to grow at a rate of 10 per cent per year.

An interview provided the following information:

1.3.2.1 Analgesics

Of the three fine chemicals under the analgesics group, mefenamic acid appears to be the product with the highest level of apparent demand. However, the level of demand for the three products is less than the Philippine average level of demand. An important consideration in the evaluation of Indonesia as a potential market for these three analgesics is the fact that paracetamol, another analgesic product, is already produced locally.

1.3.2.2 Anti-bacterials

The apparent demand for metronidazole in Indonesia appears to be higher than the Philippine level of demand. Unfortunately, no information on the trend of the demand for this product was available during the course of the research.

1.3.2.3 Anti-bacterials/respiratory tract infection treatments

The 1988 Indonesian apparent demand for the three fine chemicals used for anti-respiratory tract infection treatments is three times greater than that of the Philippines, indicating that Indonesia may be a more attractive market for these products. In fact, respiratory preparations is the third largest type of drug import by the country, next only to antibiotics and vitamins.

Of the three fine chemicals, the demand for sulfamethoxazole appears to be most significant. Indonesia imported twenty metric tons of the product in 1988, against the average importation of four metric tons by the Philippines.

1.3.2.4 Anti-diarrheals

Furazolidone based anti-diarrheals do not appear to be products of high demand in Indonesia; the country imported approximately 500 kgs. of the product for pharmaceutical use. However, no data of usage of the product in the livestock industry were available. Data of the use of the product by this industry may have to be gathered. It is possible that, like in the Philippines, furazolidone may be primarily used by the Indonesian livestock industry.

1.3.2.5 Anti-tuberculosis drugs

Based on the level of importations, the Indonesian apparent demand for the three anti-tuberculosis products appears to be twice as great as that of the Philippines. Consequently, Indonesia appears to be a highly attractive market for these products.

As in the Philippines, isoniazid appears to be the more popular anti-tuberculosis treatment. In 1988, Indonesia imported more of this product than pyrazinamide and ethambutol combined.

1.3.2.6 Intravenous fluid components

While the demand for dextrose/glucose monohydrate in Indonesia is at 350 metric tons, the country's requirements for the product are almost fully satisfied by domestic manufacturers. In fact, the country exports significant volumes of the product.

On the other hand, high grade NaCl still has to be imported, primarily from Japan. In 1988, the country imported five metric tons of the product, much less than the importation level of the Philippines.

While there appears to be an attractive market for the fine chemicals studied in Indonesia, some consideration must be given to the fact that many Indonesian pharmaceutical companies, with the support of the Indonesian government, are considering backward integration activities. Unfortunately, no information on which fine chemicals are being evaluated for production was found during the project.

1.3.3 Malaysia

The Malaysian pharmaceutical industry has grown at a double digit rate through out the past three years; from 1988 to 1989, the industry grew at a rate of 17.6 per cent. Also, domestic consumption has been increasing at an annual average growth rate of 8.2 per cent since 1985.

Unfortunately, aside from general industry data, no information on the demand for the fine chemicals in the study could be obtained through the course of the project. The most specific data on the fine chemicals under consideration were gathered through interviews with the president of the Malaysian Pharmaceutical Society, who ranked each of the fine chemicals according to the order of its importance. Information that was gathered is presented below:

1.3.3.1 Analgesics

The only information that was obtained on the fine chemicals classified under this group is on mefenamic acid. Approximately 6000 kgs. of the product is imported annually; the primary importer of this product is Parke-Davis for use in the production of its product, Ponstan.

The interviewee ranked mefenamic acid and ibuprofen as the most important and second most important fine chemicals respectively, based on the health needs of the country.

1.3.3.2 Anti-bacterials

Of the products considered by the interviewee, metronidazole was ranked fifth out of six in importance based on the health needs of the country.

1.3.3.3 Anti-bacterials/respiratory tract infection treatments

Both sulfamethoxazole and trimethoprim were ranked third out of six in importance by the interviewee.

1.3.3.4 Anti-diarrheals

Furazolidone was ranked fourth out of six in importance by the interviewee. The interviewee stated that this chemical, like in the Philippines, is primarily used in the livestock industry, in particular, by veterinarians and not in the pharmaceutical industry.

1.3.3.5 Anti-tuberculosis drugs

All three fine chemicals used for the treatment of tuberculosis were ranked as the least important of all the fine chemicals evaluated by the interviewee. This low ranking can be explained by the relatively low incidence of tuberculosis disease in the country, specially when compared to the incidence of the disease in the Philippines.

1.3.3.6 Intravenous fluid components

Dextrose/glucose monohydrate is currently produced domestically by manufacturers such as CPC Products and Stanford Chemicals. Unfortunately, no data on their output level could be obtained during the project. Domestic demand of the product may be satisfied by local production levels since Malaysia exports a substantial amount of the product and its derivatives.

No information on the level of the demand for high grade NaCl could be found during the research. However, interviews indicated that there are no local manufacturers of the product.

1.3.4 Singapore

Because of the relatively small population of the country plus the comprehensive health care provided by the government, disease incidence is much lower in Singapore than in the other ASEAN countries. Fine chemicals are imported into the country mainly for re-export and as much as 97 per cent of the pharmaceutical industry's total output is exported to other countries throughout the world. In fact, the 16.7 per cent growth of the industry from 1986 to 1987 was driven primarily by increased overseas demand.

In an interview with a director of a leading pharmaceutical manufacturing firm, the interviewee said that while his company could venture into the production of fine chemicals, particularly trimethoprim and high grade NaCl, his company would rather not because of the limited domestic demand.

This interviewee also ranked the importance of each fine chemical under consideration based on the import volume of the product. This ranking, unfortunately, is the only demand data available for analysis.

1.3.4.1 Analgesics

Mefenamic acid is the only fine chemical in the analgesics group that the interviewee considered in his rankings; the product was ranked third in importance out of five products considered.

1.3.4.2 Anti-bacterials

Metronidazole was ranked fourth in importance by the interviewee.

1.3.4.3 Anti-bacterials/respiratory tract infection treatments

Trimethoprim is manufactured in the country and was also ranked fifth in importance by the interviewee. However, as mentioned, the interviewee does not believe that the domestic demand is large enough to warrant local production.

1.3.4.4 Anti-diarrheals

No information could be found on the demand for furazolidone in Singapore. Furazolidone was not even ranked by the interviewee and may indicate the unimportance of the product to the needs of the country.

1.3.4.5 Anti-tuberculosis treatments

Singapore does not have any incidence of the disease, therefore, the domestic demand for the anti-tuberculosis products is almost non-existent. Imports of anti-tuberculosis products are primarily for re-export.

1.3.4.6 Intravenous Fluid Components

Dextrose/glucose monohydrate and high grade NaCl were ranked first and second in importance by the interviewee. However, other than this ranking, no other data were available on these fine chemicals for the project.

1.3.5 Thailand

The country's pharmaceutical industry, as in all the other ASEAN countries, is still at the compounding and packaging stage and has to rely on imports for most of its base material requirements. The slow growth of the industry is attributed to the high capital and technology requirements to set up basic and intermediate pharmaceutical manufacturing plants.

Unfortunately, very little data on the pharmaceutical market could be found and the demand for the fine chemicals under consideration is difficult to establish given the data available.

1.3.5.1 Analgesics

No information on the demand for the three analgesic products could be gathered during the course of the project.

1.3.5.2 Anti-bacterials

While no information on the demand for metronidazole could be found, data on disease trends indicate a high rate of increase in the incidence of bacillary dysentery and amoebisis. The number of cases of the disease rose from 173,000 in 1986 to 220,000 in 1988, an annual average growth rate of 38 per cent. This trend indicates that there may be a large requirement for metronidazole.

1.3.5.3 Anti-bacterials/respiratory tract infection treatments

No specific information on the demand for any of the three anti-respiratory tract infection treatments could be found. However, data on the chemical grouping under which trimethoprim was classified showed an increase in importation volumes. In 1986, the country imported 2,000 kilograms of products under the classification, Isonicotinhydrazide and Derivatives, which includes trimethoprim. In 1987, the volume of imports of products under this group increased to 6,000 kilograms. Unfortunately, in 1988, trimethoprim was re-classified into a different group, making it difficult to estimate the import level trend after 1987.

1.3.5.4 Anti-diarrheals

No specific information on the demand for furazolidone could be found. However, data on the incidence of enteritis and other diarrheal diseases in Thailand show an increasing trend. In 1986, the number of cases of the disease was 173,000; the number of cases increased at an annual rate of 13 per cent to reach 220,000 cases by 1988. This trend could indicate a demand for furazolidone which is used to control diarrheal diseases.

1.3.5.5 Anti-tuberculosis treatments

The data available were import statistics of the general classification under which two products, isoniazid and pyrazinamide, were grouped. While the import level of products in this classification increased from 1986 to 1987, it is difficult to determine if the volume of anti-tuberculosis drugs increased because of the decreasing incidence of the disease.

The incidence of tuberculosis in Thailand decreased at an average rate of 3 per cent per year from 1986 to 1988. This trend could indicate that the disease has been controlled in the country and may indicate that the demand for anti-tuberculosis products may be at a stable level, if not on the decline.

1.3.5.6 Intravenous fluid components

Dextrose/glucose monohydrate used to be classified under the group, chemically pure sugars, and import data of products within this group show an increasing trend. Import volume increased 15 per cent, from 2,583 kilograms in 1986 to 2,978 kilograms in 1987. In 1988, dextrose/glucose monohydrate was re-classified, making it difficult to continue the trend analysis.

1.3.6 Product Prioritization

Part of the project involves prioritizing the fine chemicals under consideration on the basis of their market conditions in the ASEAN region. Criteria used in this evaluation are the import level of the product when quantitative data were available, the rankings of importance by industry representatives that were interviewed, disease trends, and other qualitative data.

Based on the data gathered, the order of importance of the different fine chemicals is as follows:

1. Mefenamic Acid
2. Isoniazid
3. High Grade NaCl
4. Sulfamethoxazole
5. Ibuprofen
6. Ethambutol
7. Furazolidone
8. Metronidazole
9. Trimethoprim
10. Pyrazinamide
11. Glaphenine
12. Dextrose/glucose monohydrate

Cotrimoxazole was not considered in the prioritization because of insufficient data on the demand for the product. Also, the low ranking of dextrose/glucose monohydrate is due to the fact that the product is currently manufactured in Indonesia and Malaysia. Indonesian companies, in fact, export substantial volumes of the product.

1.3.7 A Note on South Korean Exports

As part of the market assessment, specific mention must be made on the increasing penetration of South Korean pharmaceutical products into the ASEAN market. The presence of South Korea, with the country's technological development, high production capacity, and relatively lower costs will have to considered as a potential threat to the feasibility of the venture. A brief discussion of the South Korean pharmaceutical industry and marketing activities follows:

The development stages of the Korean fine chemicals industry can be divided into the following stages:

- o the importation stage (1950-1971);
- o the import substitution stage (1972-1979); and
- o the imitative production stage (1980 to the present).

By the 1990s, the country intends to attain technological independence, by creating new substances and acquiring substance patents.

Exports of fine chemicals increased from US$40.0 million in 1979 to US$64.8 million in 1985, as shown below.

EXPORTS OF PHARMACEUTICALS IN SOUTH KOREA
(Value in US$ million)

1979	40.0
1981	46.8
1983	49.1
1985	64.8

One possible explanation of the increasing South Korean exports of pharmaceuticals is the low prices of their products. Since local production is based on imitating the technology of the industrialized countries, it entails lower processing costs.

An analysis of the Philippine import prices of selected fine chemicals reveal that the prices of the chemicals from South Korea are generally lower than those from other leading manufacturing countries.

PHILIPPINE IMPORT PRICES OF SELECTED FINE CHEMICALS
FROM SOUTH KOREA AND OTHER LEADING SOURCES
(US$ per kg)

Products	1986	1987	1988	1989
Mefenamic acid				
South Korea	17.14	16.75	16.71	13.81
Spain	33.49	29.25	29.53	-
Pyrazinamide				
South Korea	50.77	37.42	43.87	39.39
Switzerland	82.07	125.00	72.31	-
Japan	62.00	49.20	-	45.00
Ethambutol				
South Korea	45.00	41.28	41.10	-
Netherlands	60.19	52.37	53.33	53.51
Switzerland	53.00	53.33	48.57	-
Italy	-	45.28	41.00	36.33
India	45.71	31.43	34.56	37.33

2. INTRODUCTION

2.1 OBJECTIVE

The United Nations Industrial Development Organization (UNIDO) has been assisting the Committee on Industry, Minerals, and Energy (COIME) to identify, prepare, and promote projects for the ASEAN Industrial Joint Venture (AIJV) program.

In this connection, UNIDO has engaged the services of SyCip, Gorres, Velayo and Company (SGV) to assist in assessing the market potential of selected fine chemicals used in the pharmaceutical industries of the various ASEAN countries. This project has been identified by the national coordinators of COIME as a possible joint venture among these countries.

The report compilation was conducted by the International Team Leader of Project No. DP/RAF/85/010.

Since the main focus of the study is the Philippine market, the Chemicals Division of the Philippine Board of Investments (BOI) was consulted for the selection of fine chemicals which could be produced by a multiproduct facility.

To facilitate the discussion of the demand for the various fine chemicals under consideration, this study classifies the different products into the following groups:

Group 1. analgesics - mefenamic acid, ibuprofen, and glaphenine;

Group 2. anti-bacterials - metronidazole;

Group 3. respiratory tract infections treatment - sulfamethoxazole, trimethoprim and cotrimoxazole;

Group 4. anti-diarrheal drugs - furazolidone;

Group 5. anti-tuberculosis drugs - isoniazid, pyrazinamide, ethambutol and the different available combinations of these products;

Group 6. Intravenous components - dextrose/glucose monohydrate and high grade NaCl.

A brief description of each group can be found below:

Group 1: Analgesics

Ibuprofen, mefenamic acid and glaphenine are anti-inflammatory, anti-pyretic, analgesic medicines which are used for the treatment of pain of musculoskeletal origin, traumatic injuries, tension headache, fever, osteoarthritis and other arthritic conditions, and dysmenorrhea.

Group 2: Anti-bacterials

Metronidazole is an anti-bacterial medication used for the treatment of serious infection carried by susceptible amoebic bacteria.

Group 3: Anti-bacterials/respiratory tract infection treatment

Trimethoprim and sulfamethoxazole are used to treat respiratory-tract, gastro-intestinal tract, genito-urinary tract, and skin and soft tissue infections. Both chemicals are usually compounded to form cotrimoxazole, another treatment for respiratory tract and bacterial infections.

Originally, cotrimoxazole (combination of sulfamethoxazole and trimethoprim) was not included in the list. However, the data gathering phase revealed that a separate set of market information for the drug was available. Furthermore, based on interviews, the trend in pharmaceutical products, at present, is to combine two or more intermediate materials. Therefore, the product was deemed essential to the study.

Group 4: Anti-diarrheals

Furazolidone is primarily used for the treatment of specific or non-specific, bacterial or protozoal diarrhea, dysentery, and gastro-enteritis.

Group 5: Anti-tuberculosis drugs

Ethambutol, isoniazid, and pyrazinamide are agents used for the treatment of pulmonary and extra-pulmonary tuberculosis.

Group 6: Intravenous fluid components

Dextrose/glucose monohydrate is a natural sugar prepared by the enzymatic hydrolysis of starch and comes as a water soluble white crystalline powder. It contains one molecule of water. Dextrose monohydrate is also known as chemically pure glucose powder. Generally, it is used by the pharmaceutical and food processing industries. It is an essential ingredient in intravenous fluids used in dehydration, shock, and post-operative treatments given patients requiring sugar or carbohydrates in the blood.

At least 99.9 per cent pure, high-grade NaCl is primarily used by the pharmaceutical industry in the preparation of intravenous and saline solutions.

2.2 SCOPE AND METHODOLOGY

The study assesses the Philippine market and the export opportunities of the selected fine chemicals in the other ASEAN countries.

The study focuses extensively on the Philippine market. The discussion includes the role of the local pharmaceutical industry in the Philippine economy, its structure and key players, regulatory framework, and prospects.

The market discussion goes into the following:

- o estimating the market size for the selected fine chemicals used for the pharmaceutical industry;
- o determining the potential growth rate of the fine chemicals consumption in the next 10 years;
- o determining product priorities and mix based on the actual and projected demand for each specific fine chemical; and
- o investigating the present distribution networks for the identified chemicals including identification of importers and their market shares in the Philippines.

To get an estimation of the level and trend of the demand for specific products, three indicators were used:

- o level and trend of imports, which indicates apparent demand;

- o IMS Pacific, Ltd. data, showing the value and volume of drugstore sales (information was limited to the sales of pharmaceutical products used to treat tuberculosis); and

- o government purchases.

In using the level and trend of imports as an indicator of demand, the following steps were taken:

- o Only import data of bulk or intermediate materials are included, since the imports of the end product in its various forms had different units of measure. Conversion to kilograms is impossible due to the lack of basic data in the import manifests.

- o The data gathered from the import manifests compiled by the Business Statistics Monitor (BSM) were not complete, in terms of C.I.F. value and landed cost of specific importation by certain companies. To get the aggregate of import values (requiring estimates of C.I.F. value, based on landed cost and vice versa), the following were assumed:

    1. Divide available data on landed cost by C.I.F. value or vice versa, of all importations, to get factors of existing import values.

    2. For a particular company without one of the two values, the mean of the available factors of the same company for the same month was derived. This factor was used to derive either C.I.F. value or landed cost of the company's importation.

    3. For companies without historical data, the mean of the available factors of the other companies for the same month was derived. This factor was used to derive either C.I.F. value or landed cost of these companies' importation.

In using the IMS Pacific, Ltd. data to determine the demand level and trend for anti-tuberculosis medicines, the following methodology was used:

- o from the IMS, Pacific Ltd., of November, 1989, different brands of the same generic family were grouped together.

- o using the Philippine Index of Medical Specialities (PIMS) information on the amounts of active ingredients in the different brands and forms of products, a standardized measure (kilogram) of the total usage of the active ingredient by each brand was determined.

- o by adding up the usage of each brand, the total consumption of the fine chemical for the period was arrived at.

- o given the per cent change in sales volume, the sales of the previous period was calculated and compared to the present sales figures. These results were also compared to the 1987 sales figures of the generic lines, provided in the Philippine Pharmaceutical Industry Development Study.

The study also looks into prospective export markets in the ASEAN region. The discussion includes a background on the pharmaceutical industry of the various ASEAN countries and the demand and supply indicators for each product.

Market data were mainly sourced from secondary data consisting of industry reports, trade statistics, periodicals, statistical yearbooks, and data from industry associations and government agencies. As a supplement, primary data were generated from selected key informant interviews of pertinent resource people from the private sector and government agencies such as the Department of Health, Drug Association of the Philippines, and various pharmaceutical companies.

SGV's regional offices and/or affiliates gathered the same set of data on a best effort basis from the pertinent government agencies and the private sector of their respective countries.

3. THE PHILIPPINE MARKET

3.1 BACKGROUND ON THE PHARMACEUTICAL INDUSTRY

3.1.1 Role in the Economy

Based on the latest figures of the Bureau of Food and Drug (BFAD) Licensing and Registration Section, the Philippine pharmaceutical industry has grown from an industry with less than 20 drug manufacturers after World War II, to encompass 360 pharmaceutical laboratories, 1,034 drug departments of companies, and 9,467 drug stores and hospital pharmacies.

Once composed primarily of sales outlets of finished products of multinational pharmaceutical companies, the industry now has five major components, namely:

- o Manufacturers with plant facilities;
- o Drug producers using local contract manufacturers;
- o Importers;
- o Distributors; and
- o Retailers.

The industry has continued to enjoy consistent revenue growth, despite the periods of recession and economic and political turmoil during the late 1970s and early 1980s. From a ₱2.9 billion in gross revenues in 1980, revenues grew at an average annual rate of 21 per cent to reach ₱13.156 billion by 1988. Furthermore, the industry, as a whole, has always been profitable. From 1980 to 1987, the industry enjoyed an average return on sales of 7.8 per cent and an average return on equity of 19.3 per cent. (See Table 1.)

Table 1
FINANCIAL HIGHLIGHTS OF THE PHARMACEUTICAL INDUSTRY IN THE PHILIPPINES

	Gross Revenues (₱000)	Net Income (₱000)	Net Sales (₱000)	Return on Sales	Return on Equity	Current Ratio
1980	2,899,361	182,926	2,854,966	6.4073	18.3513	1.7300
1981	3,539,800	209,592	3,493,829	5.9989	17.4342	1.7000
1982	4,182,868	275,522	4,122,522	6.6833	20.1419	1.8300
1983	4,264,211	349,132	4,183,783	8.3449	23.1190	1.8100
1984	5,938,509	464,005	5,857,046	7.9222	22.0852	1.9600
1985	8,063,941	686,655	7,919,099	8.6961	24.9984	1.92C0
1986	8,772,126	748,143	8,528,105	8.7727	13.0456	2.2422
1987	11,092,358	1,005,147	10,805,927	9.3018	15.5036	2.1311

Source: Business World Files.

In 1988, the major 38 pharmaceutical manufacturers included in the top 2000 corporations in the Philippines earned ₱13.157 billion in gross revenues and ₱1.198 billion in net income for a net income ratio of 9.1 per cent, making the pharmaceutical industry one of the most profitable industries in the manufacturing sector.

Revenues from the retail distribution of pharmaceutical products also grew at an attractive annual rate of 20.3 per cent, from ₱1.132 billion in gross revenues in 1980 to ₱4.123 billion by 1988. On the other hand, revenues from the wholesale distribution of medicinal and pharmaceutical products grew at an even higher average annual growth rate of 39.6 per cent, from ₱0.843 billion in 1980 to ₱8.697 billion by 1988. (See Figure 1.)

3.1.2 Industry Structure

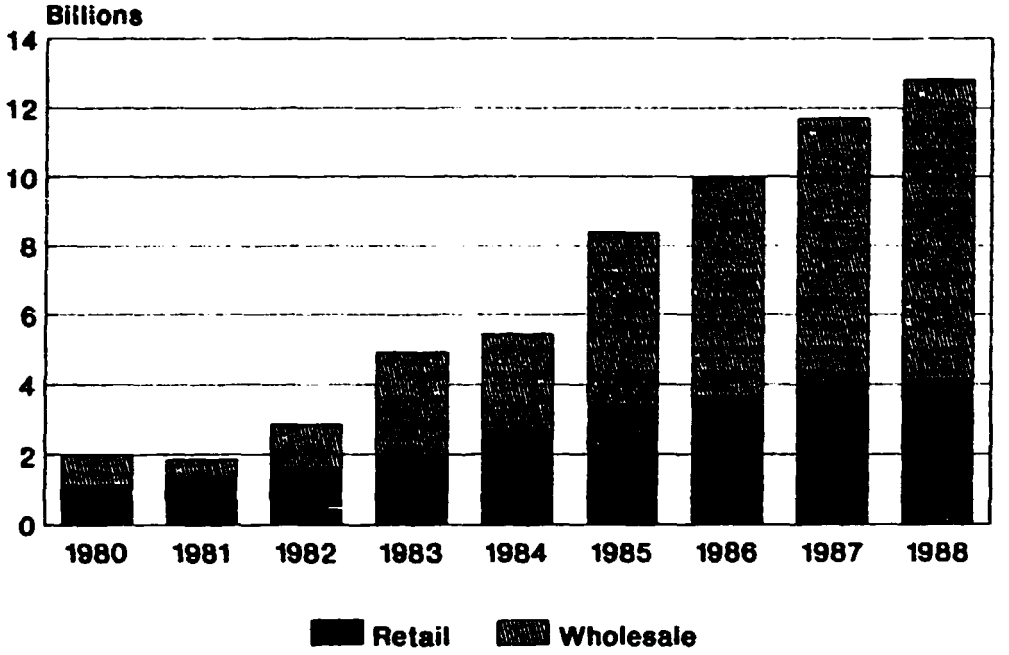
Multinational corporations continue to dominate the pharmaceutical industry. While the industry's market share leader is United Laboratories, Inc., a 100 per cent Filipino owned company, with a market share of 20 per cent, close to 70 per cent of the revenues of the top pharmaceutical corporations come from foreign owned firms. Other Filipino pharmaceutical companies account for a little over 10 per cent of the market. A breakdown of the top firms showing the distribution of the nationalities of the multinationals and their respective market shares is seen in Figure 2.

The retail distribution of pharmaceutical products is dominated by Filipino firms, the largest of which is the Mercury Drug Corp., with close to a 95 per cent share in the pharmaceutical retail market. The wholesale of pharmaceutical products is dominated by the market leader, Metro Drug Corp., with a 34 per cent market share.

3.1.3 Production and Technology

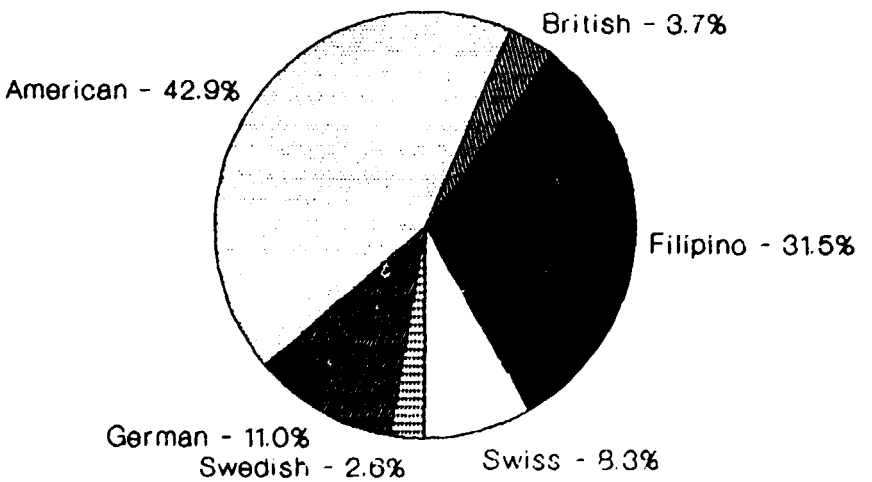
A 1989 study of the pharmaceutical industry stated that there are only 32 large scale drug manufacturing plants in operation. This may seem surprising, given that there are over 1000 registered pharmaceutical laboratories and drug departments. Most of these pharmaceutical laboratories are dedicated to the production of their respective company's products. However, there are a number of manufacturing facilities,

Figure 1
GROSS REVENUE OF DISTRIBUTION OUTLETS



Source: Top 1000 Corporations of the Philippines, 1989 ed.

Figure 2
MARKET SHARE OF MAJOR PHARMACEUTICAL CORPORATIONS
By Nationality



Source: Philippines Best 1000 Corporations, 1989 ed.

such as Drugmakers, Inc. and InterPhil, which operate exclusively as contract manufacturers for companies registered as manufacturers but have no production facilities. Marsman, Metro Drug, Hizon, and Boie also act as contract manufacturers in addition to producing their own brands. Despite this small number of manufacturing facilities, the study states that the industry's capacity utilization ranges from 60 to 70 per cent.

The Philippine pharmaceutical industry remains a compounding or converting industry. While close to 100 per cent of the pharmaceutical products sold in the country are locally manufactured, as much as 95 per cent of the active ingredients or raw materials are imported by the manufacturers. Locally produced materials, such as distilled water, glucose, glycerine, refined alcohol, sugar, and flour, are used mainly as extenders, fillers, diluents, and other inactive components of drugs.

The manufacturing activities of most of the pharmaceutical companies in the Philippines are limited to one or a combination of the following:

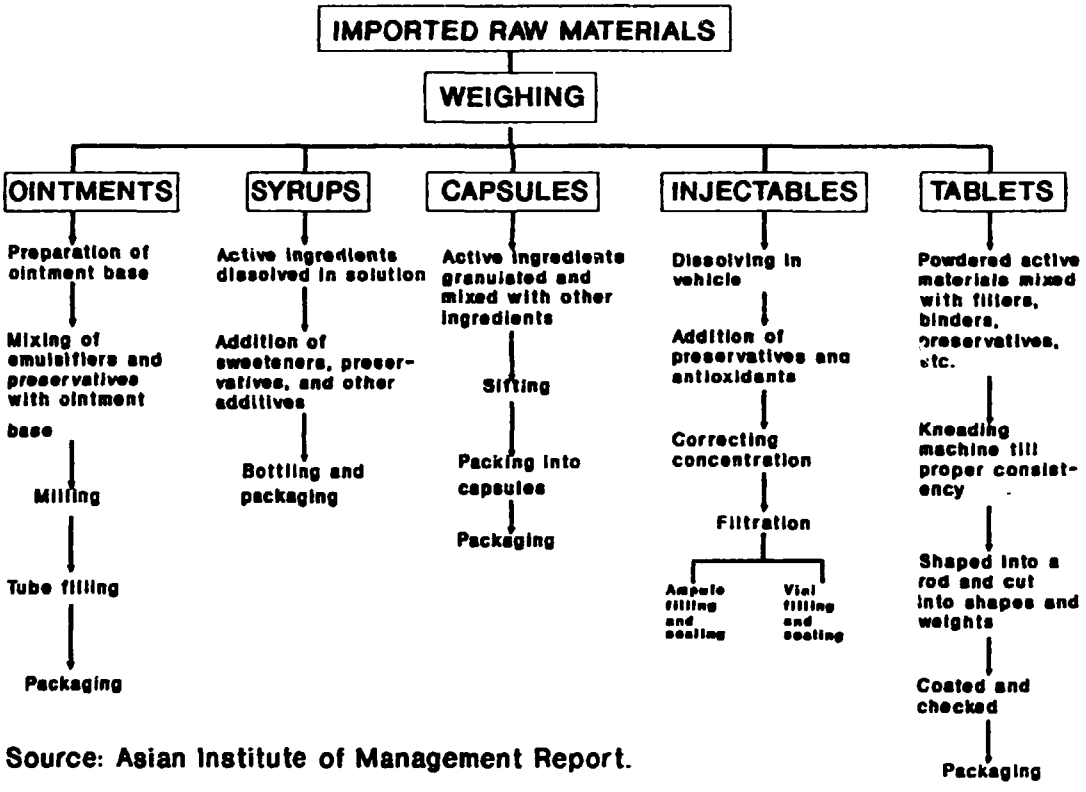
- o compounding and packaging of imported active substances with some locally procured inactive ingredients into final finished dosage forms such as syrups, tablets, capsules, ointments, or injectibles.

- o diluting of concentrated extracts or solutions to marketable strengths for dispensing in the retail trade.

- o packaging of imported bulk pharmaceuticals into their final dosage form.

Figure 3 illustrates the typical processes involved in pharmaceutical manufacture in the Philippines.

Figure 3
PRODUCTION FLOWCHART



Source: Asian Institute of Management Report.

The dependence on imports by pharmaceutical manufacturers and consequently, the narrowness of their scope of manufacturing operations are attributed to the absence of facilities to manufacture essential pharmaceutical ingredients.

This dependence is further manifested by the absence of fundamental research and development (R&D) activities and facilities in most of the country's pharmaceutical companies. Research is often limited to clinical trials of new pharmaceutical components or products. Local drug companies, in general, depend on breakthroughs from their respective parent companies or from licensing agreements for technological and product development and improvement.

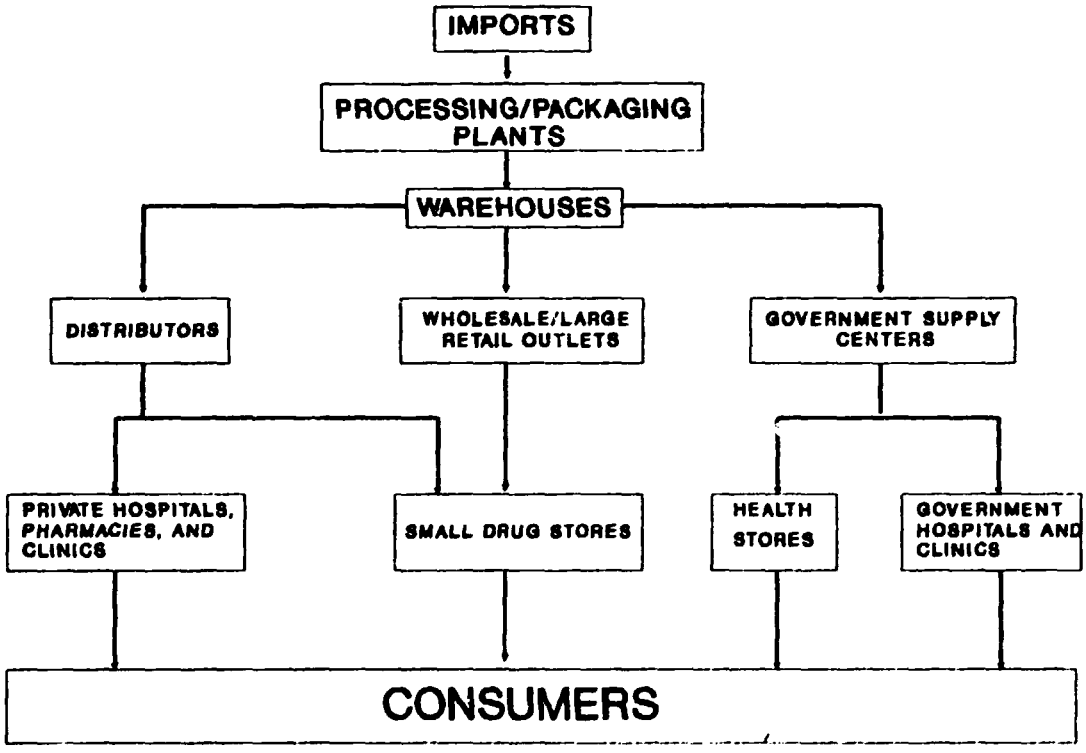
3.1.4 Distribution

As shown in Figure 4, the three stages of pharmaceutical distribution are as follows:

- o the transfer of finished products from the manufacturing plants to company warehouses or to large, national distributors and wholesalers.

- o the transfer from these warehouses to localized distributors and wholesalers, retailers, and government centers (for government accounts).
- o the transfer from distributors and wholesalers to consumer channels such as drug stores, hospital pharmacies, dispensing physicians, and other outlets and the transfer from government centers to government hospitals and clinics.

Figure 4
DISTRIBUTION OF PHARMACEUTICAL PRODUCTS



Source: Asian Institute of Management Research Paper.

A research paper studying the distribution process of pharmaceutical products showed the share of sales by the different types of drug distribution channels to be as follows:

Table 2
SHARES OF SALES, BY TYPE OF DISTRIBUTION CHANNEL

Wholesalers and distributors	53.0
Direct Sales Outlets:	
Large Drug Stores	37.0
Hospitals, clinics and medical centers	3.5
Government Institutions	2.5
Physicians	2.4
Industrial Institutions	1.0
Others	0.6
	100.0

Source: Asian Institute of Management Research Paper

There are fifteen pharmaceutical wholesalers and distributors in the top 2000 corporations in the Philippines in 1988. Many of these companies are the traditional importers/ distributors which used to market the imported products of foreign manufacturers in the 1950s and early 1960s. Through backward integration, many of these companies now have their own manufacturing facilities, their own product lines, and brands. They may also distribute the products of other manufacturers, either local or foreign based. In 1988, these wholesalers and distributors earned close to P9 billion in total revenues with a net income of P170 million. Table 3 lists the major wholesalers and distributors as well as the respective shares in the pharmaceutical wholesale market.

Modern company chains and outlets dominate the pharmaceutical retail market. There were seven drugstore chains listed in the top 2000 corporations in the Philippines in 1988. Pharmaceutical retailing grossed P4.2 billion in 1988 and the largest and the most dominant figure in retailing is Mercury Drug Co. which has a 95 per cent share in the retail market. (See Table 4.)

3.1.5 Advertising and Promotions

Unlike over-the-counter drugs which are promoted like most consumer products, ethical products require the explicit permission of a duly licensed medical professional before the drug can be purchased. Consequently, the advertising and promotion of prescription products are focused on this select group of people. The principal methods of advertising and promoting ethical products are:

Table 3
LIST OF PHARMACEUTICAL WHOLESALERS IN THE PHILIPPINES

Drug Stores	Gross Revenue		Net Income		Profitability Ratio (%) (Net Income/Net Sales)		Market Share (%)	
	1988	1987	1988	1987	1988	1987	1988	1987
Metro Drug Corporation	3,060,444	2,596,466	58,129	52,690	1.96	2.11	34.27	35.62
Zuellig Pharma Corporation	2,192,631	1,721,867	25,897	26,434	1.18	1.54	24.55	23.62
Zuellig Distributors, Inc.	1,390,655	1,177,579	10,565	15,744	0.76	1.34	15.57	16.16
Marsman and Co., Inc.	1,129,553	819,256	21,483	17,428	1.91	2.14	12.65	11.24
Hoechst Far East Marketing Corp.	385,732	350,292	8,511	15,021	2.31	4.50	4.32	4.81
Philusa Corporation	287,410	271,731	13,086	17,821	4.56	6.58	3.22	3.73
The Cathay Drug Co., Inc.,	135,596	160,422	926	4,989	0.68	3.18	1.52	2.20
Rorer Philippines, Inc.	115,735	78,843	27,180	15,548	23.48	19.72	1.30	1.08
Medical Center Trading Corp.	56,374	49,485	3,629	3,252	6.62	6.68	0.63	0.68
Inphilco, Incorporated	48,510	42,018	211	84	0.44	0.20	0.54	0.58
Med-Asia, Incorporated	27,409	20,972	84	114	0.36	0.73	0.31	0.29
Unicor, Incorporated	26,420	-	199	-	0.76	-	0.30	0.00
Dyna Drug Corporation	25,441	-	265	-	1.04	-	0.28	0.00
La Naval Drug Corporation	25,065	-	-	-	-	-	0.28	0.00
Lorma, Incorporated	24,587	-	92	-	0.38	-	0.28	0.00
Total/Average	8,931,562	7,288,931	170,262	169,128	1.93	2.36	100.00	100.00

Source: Top 1000 Corporations of the Philippines, 1989 ed.

Table 4
LIST OF PHARMACEUTICAL RETAILERS IN THE PHILIPPINES

Drug Stores	Gross Revenue		Net Income		Profitability Ratio (%) (Net Income/Net Sales)		Market Share (%)	
	1988	1987	1988	1987	1988	1987	1988	1987
Mercury Drug Corporation	4,022,337	3,675,402	70,454	64,142	1.76	1.76	94.70	95.49
Merced Co., Incorporated	100,842	76,529	145	75	0.14	0.10	2.37	1.99
Sto. Rosario Drug Corp.	28,137	26,815	207	68	0.74	0.26	0.66	0.70
Puerto Princesa Drug Corp.	26,109	23,401	187	89	0.72	0.38	0.61	0.61
E.A. Northam Pharma Corp.	24,242	-	294	-	1.22	-	0.57	0.00
Rocca Drug Corporation	23,649	25,415	13	13	0.06	0.05	0.56	0.66
Baliuag Drug Corporation	22,267	21,501	142	61	0.64	0.29	0.52	0.56
Total/Average	4,247,583	3,849,063	71,444	64,452	1.69	1.68	100.00	100.00

Source: Top 1000 Corporations of the Philippines, 1989 ed.

- o representatives of pharmaceutical manufacturers calling on doctors and pharmacists;
- o advertisement and/or scientific articles published in medical journals and papers;
- o direct mail advertising and sampling; and
- o medical conventions, exhibits, and symposia.

3.1.6 Pricing

While the consumer price includes the profit requirements of both the wholesaler/distributor and the retail outlet, the level of drug prices cannot be blamed solely on distribution practices. In 1988, the pharmaceutical distribution industry's return on sales was only 1.9 per cent for wholesalers and distributors and only 1.7 per cent for drugstore companies. In fact, cost of sales was the largest component of the major distributors and retailers' expense outlay. In 1987, industry leaders, Mercury Drug Corp., Metro Drug Inc., and Zuellig Pharmaceuticals allocated an average of 96.8 per cent of gross income to cost of sales alone. These companies attributed this to the high prices of the merchandise they obtain from the manufacturers.

Many reasons for the level of drug prices have been proposed by industry analysts. The more prevalent are:

- o the cost of imported raw materials, aggravated by currency fluctuations;
- o transfer pricing practices between the local subsidiaries and the foreign parent companies; and
- o marketing and promotional costs which account for more than 30 per cent of the drug's price to the consumer, according to the Philippine Chamber of Health, Inc.

On the other hand, the Pollard Index, prepared by the IMS Pacific Ltd. shows that the yearly change in drug prices is less than the change in the Consumer Price Index (CPI), allowing drug manufacturers to claim that drug price increases are primarily due to macroeconomic changes and not due to pricing strategies and other marketing practices. This Index shows that as the CPI increased at an annual rate of 15.37 per cent per year, from 1979 to 1987, the Index of pharmaceutical prices rose at a proportionate rate of 15.28 per cent per year. Unfortunately, the purchasing power of the peso decreased at an annual rate of -13.32 per cent, making drug purchases more difficult for consumers.

A comparison of the Pollard Index vs. the CPI and the purchasing power of the peso is presented in Table 5.

Table 5
THE POLLARD INDEX OF PHARMACEUTICAL PRICES VS THE CPI AND THE PURCHASING POWER OF THE PESO
(1972 Base Year)

	Total Market	Ethicals	Proprietaries	CPI	PPP
1979	110.34	109.99	112.23	117.50	0.8511
1980	123.13	122.51	126.38	138.90	0.7199
1981	133.47	132.51	138.58	157.10	0.6365
1982	143.60	142.85	147.70	173.20	0.5774
1983	185.30	186.85	177.26	190.50	0.5249
1984	257.84	257.07	263.57	286.40	0.3492
1985	280.97	278.30	296.46	352.60	0.2836
1986	318.16	316.46	329.53	355.30	0.2815
1987	344.22	342.61	355.47	368.70	0.2712
1988*	355.79	354.94	364.57	391.20	0.2556
1989**	362.76	361.33	374.16	397.20	0.2518

* - First Quarter
** - Second Quarter
CPI - Consumer Price Index
PPP - Peso Purchasing Power

Source: IMS Pacific Ltd.

3.1.7 Legislative Framework

Since pharmaceutical products have become less and less affordable, the Generics Law was approved and was put into effect last January 1, 1990. The law requires the following:

- o that doctors prescribe pharmaceutical products by their generic name and may only suggest particular brands;
- o that drug manufacturers print the generic names of their products more prominently than their brand names in the labels; and
- o that pharmacists and drug store clerks inform their customers of all available products under the same generic name as the doctor had prescribed with their corresponding prices.

In line with the implementation of the law, an education campaign was launched to inform the public about the law as well as the generic names of the pharmaceutical products commonly used.

This law is aimed at allowing the public to choose the most affordable product among different brands of the same generic family. This law also promotes the marketing of generic products, reducing the expense, and consequently, the burden on the consumer, of brand name promotions.

Among drug manufacturers, a lot of uncertainty and apprehension has been caused by the implementation of the Generics Law and various scenarios resulting from the implementation have been proposed:

- o a number of companies will be set up to produce generic drugs. Existing companies will develop their own generic lines of products. Larger drugstores and hospitals will manufacture their own drugs resulting in more smaller companies operating in the market place and more drugs proliferating in an enlarged market.
- o more drugs companies will turn to the over-the-counter market to permit the advertising and mass promotion of their branded products.

- o multinationals may either cut back on production or pull out of the country because their branded products will not be as profitable.

- o pharmacists will become an important force in the final selection of drugs by the consumer. Consequently, promotion expenses of drug manufacturers will increase as these companies cater not just to doctors but to pharmacists and sales clerks as well.

- o dispensing physicians will have easier access to drugs and the number of dispensing physicians may increase. These physicians may even form cooperatives that will dispense drugs.

- o the Drug Association of the Philippines sees pharmaceutical companies caught between the pressure to reduce drug prices to remain competitive and the increasing demands for higher wages from labor unions.

- o IMS Pacific, Ltd. sees companies caught in a cost squeeze. Promotional costs will increase since it becomes necessary to promote products to pharmacists aside from doctors; on the other hand, drug manufacturers will be unable to raise prices due to increased competition.

The controversial law has raised countless criticisms and objections, ranging from the problem of educating consumers about unfamiliar generic names to the issue of giving untrained store clerks an influence in the purchase decision of the consumer to the danger of substandard and fake pharmaceutical products from the anticipated proliferation of small manufacturers.

Despite all these issues, the increased availability of pharmaceutical products to a greater per cent of the population at more affordable prices can be expected as a result of the implementation of the Generics Law. Small manufacturing firms without known brand names can now compete with the larger companies and find their own niches in the market.

Appendix A contains a copy of the Generics Act of 1988.

3.2 DEMAND

The level of demand for pharmaceutical products is generally influenced by the size of the population. Based on the population trends presented by the Philippine Statistical Yearbook, the Philippine population has been growing at a rate of 2 to 2.5 per cent per year and is expected to reach 75.22 million people by the year 2000.

Another influential demographic factor is the general health of the population. While life expectancies of men and women have increased, from 51.2 years for men and 55 years for women in 1960 to 62.2 years and 66 years respectively in 1988, improvements in the health quality and status of the population have taken place at a much slower rate.

The major diseases affecting the population are still respiratory infections, gastro-enteritis, and tuberculosis while endemic diseases, like malaria which has made a comeback in the past years, continue to affect a number of people. These major diseases remain unchecked primarily due to urban over-congestion, poverty, the poor state of public sanitation and garbage disposal as well as the lack of progress in heath education, immunization, and disease treatment.

Unfortunately, despite the obviously increasing requirements for medical care, the demand for pharmaceutical products had been repressed by the following factors:

- the low disposable income of a majority of the population makes drugs, according to a report by the Department of Health, inaccessible to 70 per cent of the population.

- coupled with the first factor is the high cost of drugs to the consumer. This is attributed to the promotional and distribution activities of manufacturers as well as the lack of competitive forces in the industry.

- also related to the first two factors is the dwindling purchasing power of the income of the majority of the population.

- the over-concentration of distribution channels in urban areas deprives the rural population of sources of needed medicines.

- o the fear of fake, substandard, and ineffective drugs inhibits the demand for medicines even when they are needed.

- o the lack of information and education on the use of medicines particularly in the more remote areas of the country also prevents the growth of the pharmaceutical market.

Ideally, the Generics Law should be able to remove some, if not all of these obstacles to demand growth in the pharmaceutical market.

To get a macro-perspective on the demand for the particular categories of fine chemicals being studied, this report will show disease trends and try to anticipate changes in the demand for the pertinent products based on these trends.

To get an estimation of the level and trend of the demand for specific products, three indicators were used: the level and trends of imports, the level and trend of sales of products that use the fine chemicals under consideration, in particular that of anti-tuberculosis medicines, and the level and trend of government purchases of the pertinent drugs.

The first indicator of demand this report utilizes is the level and trend of imports, which indicates apparent demand, since there is no local production and exports of the fine chemicals under consideration.

It must be mentioned that there are some limitations with the use of import data to determine demand levels and more important, demand trends. Certain factors may cause erratic movements in the import volume and value of the selected fine chemicals. Some of these factors include:

- o importer's buying patterns
  - irregular, large-volume purchases
  - co-mingling of other importers or products in a container;
- o quality of data
  - inaccurate and/or incomplete recording of importations;

- o non-inclusion of data on end-product importations; and,
- o import price differential.

During the course of the research, IMS Pacific, Ltd. data were obtained, showing the value and volume of drugstore sales. However, the information was limited to the sales of pharmaceutical products used to treat tuberculosis.

The demand for certain fine chemicals can also be assessed from the level and trend of government purchases of medicines under the generic line of the chemical. The trend of these purchases, to certain extent, reflects the trend of the health and medical needs of the population and by inference, projects the trend of the requirement for the generic line of products.

It is important to note that most of the fine chemicals under consideration, except for those in the analgesic group and furazolidone, were listed priority chemicals for synthesis and manufacture by the Department of Health's Formulary for Hospitals and Primary Health Care and the corresponding Formulary for Rural Health Units as well as by the Philippine Medical Association's Formulary for Medical Practice in the Philippines. The chemicals in these lists are considered to be of prime interest considering the health needs of the country and consequently, there must be a significant requirement for the pertinent fine chemical.

3.2.1 Group One: Analgesics

The analgesic/antipyretic products under consideration are not considered priority items for synthesis and use by both the government and the private sector, primarily because more common and lower priced substitutes such as aspirin and paracetamol/ acetaminophen are readily available in the market.

In fact, the government has made no purchase of either mefenamic acid or glaphenine-based drugs and bought only minimal quantities of ibuprofen-based medicines throughout the period 1986 to 1989. Furthermore, sources at the Department of Health's Procurement Division have stated that these types of analgesic products will be not be purchased as part of any government program because of their relatively high prices.

In 1986, importation of the analgesics covered in the study, totalled 16,000 kilograms, valued at US$575,000; increasing to 29,000 kilograms, valued at US$1.0 million, the following year. In 1988, this further increased to 31,000 kilograms, valued at US$852,000. For the first 10 months of 1989, analgesic imports totalled 30,000 kilograms, valued at US$968,000. From 1986 to the first 10 months of 1989, mefenamic acid and ibuprofen accounted for 47.2 and 46.5 per cent of total imports. (See Table 6.)

3.2.1.1 Mefenamic acid

In 1986, mefenamic acid imports totalled 12,000 kilograms, amounting to US$377,000. This increased in 1987, to 15,000 kilograms, valued at US$384,000. The following year, there was a slight decline in imports, at 13,000 kilograms, valued at US$323,000. From January to October 1989, the import volume was 12,000 kilograms, valued at US$330,000. (See Table 7.)

3.2.1.2 Ibuprofen

As shown in Table 8, there was a steady increase in the imports of ibuprofen from the 1986 level of 5,000 kilograms, at US$112,000 to the 1988 import level of 17,000 kilograms, amounting to US$456,000. From January to October of 1989, import volume was 17,000 kilograms, valued at US$497,000.

3.2.1.3 Glaphenine

The 1986 imports of glaphenine amounted to 1,200 kilograms, valued at US$86,000; increasing to 3,548 kilograms, valued at US$348,000 the following year. There was a substantial decline, the following year, to 711 kilograms, amounting to US$73,000 brought about by the significant reduction in the importation of its leading importer. From January to October of 1989, imports exceeded the previous year's figures, registering 1,420 kilograms valued at US$142,000 respectively. (See Table 9.)

Table 6

Imports by the Philippines of Analgesics

(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

PRODUCTS	1986			1987			1988			1989 (Jan.-Oct.)			Total		
	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.
Mefenamic acid	11,630	377	8,853	14,745	384	9,430	13,150	323	7,745	11,750	329	8,365	51,274	1,413	34,393
Ibuprofen	5,000	112	2,778	10,850	298	8,030	17,500	456	13,007	17,145	497	12,317	50,495	1,363	36,130
Glaphenine	1,200	86	2,202	3,548	348	8,186	711	73	1,684	1,420	142	3,687	6,879	649	15,759
	17,830	575	13,831	29,143	1,030	25,646	31,361	852	22,436	30,315	968	24,369	108,648	3,425	86,282

Source: BSM.

Table 7
Imports by the Philippines of Mefenamic Acid
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Spain	10,900	365	8,495	93.72	10,700	313	7,680	72.57	8,500	251	5,936	84.64	-	-	-	-	30,100	929	22,110	58.70
South Korea	700	12	146	6.02	3,820	64	1,585	25.91	3,850	61	1,498	27.76	2,100	29	829	17.87	10,270	165	4,238	20.03
United States	-	-	-	-	-	-	-	-	-	-	-	-	7,250	274	6,839	81.70	7,250	274	6,839	14.14
Others	30	0	12	0.26	225	7	185	1.53	1,000	11	311	7.60	2,400	28	696	20.43	3,655	46	1,204	7.13
	11,630	377	8,853	100.00	14,745	384	9,430	100.00	13,150	323	7,745	100.00	11,750	330	8,364	100.00	51,275	1,414	34,391	100.00

Source: BSM.

Table 8

Imports by the Philippines of Ibuprofen

By Country of Origin

(Volume in kgs., C.I.F. value in US$000, L.C. value in P000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
F.R. Germany	-	-	-	-	2,700	73	1,832	24.88	8,750	232	5,656	50.00	9,925	282	6,867	57.89	21,375	587	14,355	42.33
Japan	-	-	-	-	6,300	165	4,793	58.06	8,650	219	7,241	49.43	-	-	-	-	14,950	384	12,034	29.61
Finland	5,000	112	2,776	100.00	1,500	45	1,064	13.82	-	-	-	-	4,000	121	3,125	23.33	10,500	278	6,964	20.79
Others	-	-	-	-	350	15	341	3.23	100	5	110	0.57	3,220	94	2,325	18.78	3,670	114	2,776	7.27
	5,000	112	2,776	100.00	10,850	298	8,030	100.00	17,500	456	13,007	100.00	17,145	497	12,317	100.00	50,495	1,363	36,129	100.00

Source: BSM.

Table 9
Imports by the Philippines of Glaphenine
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
F.R. Germany	1,200	86	2,202	100.00	3,348	325	7,665	94.36	-	-	-	-	-	-	-	-	4,548	411	9,867	66.11
Italy	-	-	-	-	-	-	-	-	711	73	1,684	100.00	1,300	130	3,372	91.55	2,011	203	5,056	29.23
France	-	-	-	-	200	23	520	5.64	-	-	-	-	120	12	315	8.45	320	35	835	4.65
	1,200	86	2,202	100.00	3,548	348	8,186	100.00	711	73	1,684	100.00	1,420	142	3,687	100.00	6,879	649	15,758	100.00

Source: BSM.

There is an increasing trend in the importation of analgesics reflected in the 76 per cent increase from 1986 to 1988. The increase of imports from 1986 to 1988 was mainly brought about by the increase in the importation of ibuprofen for the period. The imports for mefenamic acid and glaphenine showed no trend, for the same period.

3.2.2 Group Two: Anti-bacterials

Metronidazole, like most other generic lines under consideration, is included in the list of priority chemicals for manufacture and synthesis by both the government institutions and the private sector. The product is primarily used to treat anaerobic bacterial infections such as septicemia, peritonitis, or subphrenic or pelvic abscesses as well as amoebic infections.

Although bacterial and amoebic infections are not given as much attention as tuberculosis or respiratory tract infections, the incidence of the disease is significant enough to warrant concern. Septicemia is among the top ten causes of death among infants. Furthermore, increasingly poor sanitation and garbage collection, overcrowded urban areas and unhygienic water and food supplies are just a few of the many factors which promote bacterial and amoebic disease. Unfortunately, government efforts to address these sources of disease remain inadequate. Consequently, the incidence of bacterial and amoebic infections should remain at its existing level, if not increase in the medium term.

Imports of metronidazole amounted to 1,536 kilograms, valued at US$20,000 in 1986. This significantly dropped to 600 kilograms, valued at US$27,000 the following year, due mainly to the reduction in the importation of a leading importer. In 1988, there was a substantial rise in imports, to 4,045 kilograms, valued at US$242,000, largely brought about by an increase in the importation of the leading importers. For the first 10 months of 1989, import volume was 1,770 kilograms, valued at US$48,000.

There seems to be no trend in the volume of imports of metronidazole and further research into other demand indicators is necessary to determine the demand profile of the product.

Government purchases of metronidazole-based products have grown steadily throughout the years. In 1986, only 254 kilograms of the product was purchased by the Procurement Division of the Department of Health. The volume almost doubled in the next year; purchases reached 473 kilograms. In 1988 and 1989, the government purchased 1,845 kilograms and 1,505 kilograms respectively. This volume is expected to increase in the coming years, primarily because of the planned increase of government health programs and facilities in rural areas.

3.2.3 Group Three: Anti-bacterials/respiratory tract infections treatment

Acute Respiratory Infections (ARI) continue to be the leading cause of death in the country. In 1986, the number of deaths caused by pneumonia increased by 10 per cent from the previous year's level. The incidence of respiratory infections, bronchitis, upper respiratory infection, and influenza has been increasing.

Furthermore, pneumonia persists as the most frequent cause of death among infants; in 1986, 27.7 per cent of total infant deaths were attributed to the disease. Six respiratory infection-related diseases (pneumonia, measles, bronchitis, influenza, pertussis, and diphtheria) caused 45 per cent of total deaths of those under five years of age. (See Table 10

Table 10
RESPIRATORY INFECTION-RELATED DISEASES
IN THE PHILIPPINES

Pneumonia - Mortality and Morbidity Rate
(Rate per 100,000)

Year	CASES		DEATHS	
	Number	Rate	Number	Rate
1983	123,420	237.1	48,650	93.5
1984	179,587	336.6	47,513	89.1
1985	193,502	354.0	48,554	88.2
1986	196,759	351.3	53,500	95.5

Bronchitis - Morbidity Trends
(Rate per 100,000)

Year	CASES	
	Number	Rate
1983	123,420	237.1
1984	179,587	336.6
1985	193,502	354.0
1986	196,759	351.3

Upper Respiratory Tract Infection - Morbidity Trends
(Rate per 100,000)

Year	CASES	
	Number	Rate
1983	a	a
1984	a	a
1985	358,663	656.1
1986	526,397	939.9

a - not included in the top ten for the year

Influenza - Morbidity Trends
(Rate per 100,000)

Year	CASES	
	Number	Rate
1983	256,534	492.8
1984	416,634	780.9
1985	401,102	733.7
1986	541,062	966.1

Source: Philippine Yearbook, 1983 to 1986 issues.

In response to these alarming disease trends, particularly among children, a standardized acute respiratory infection management program has been included in the planned Comprehensive Child Care Program of the government. This program shall implement a simplified procedure for detection and management of ARI cases, where cases diagnosed as "MODERATE" shall be treated with cotrimoxazole for the duration of the disease (up to five days).

This program proposes to allocate up to a total of 758,000 doses of cotrimoxazole, spread out in the next five years, for ARI treatment. The government intends to purchase 45,000 doses in the first year of implementation, increasing to 102,000 doses, 152,000 doses, 204,000 doses and 255,000 doses in years two to five respectively. The total budget allocated for this series of purchases is ₱ 8.7 million spread out in the next five years.

Imports of sulfamethoxazole, trimethoprim, and cotrimoxazole (classified as anti-bacterial/respiratory tract infections treatments), totalled 5,614 kilograms in 1986, valued at US$824,000 slightly decreasing to 5,370 kilograms, valued at US$665,000 the following year. In 1988, there was a significant increase in imports, registering 11,000 kilograms, valued at US$1.1 million, brought about by the substantial increase in trimethoprim imports. From January to October 1989, total imports of these products were 9,883 kilograms, valued at US$1.1 million. For the period, sulfamethoxazole accounted for 45.9 per cent of total imports. There seems to be an increasing trend in the use of cotrimoxazole, registering a 320 per cent increase over the period. (See Table 11.)

3.2.3.1 Sulfamethoxazole

As shown in Table 12, the importation of sulfamethoxazole increased from 3,041 kilograms, valued at US$118,000 in 1986, to 3,100 kilograms, valued at US$68,000 the following year. This increased further, the following year, to 4,119 kilograms, amounting to US$100,000. For the first 10 months of 1989, import volume and value registered 4,210 kilograms and US$183,000 respectively.

Table 11

Imports by the Philippines of Anti-Bacterial/Respiratory Infections

(Volume in kgs.; value in US$000, L.C. value in P000)

PRODUCTS	1986			1987			1988			1989 (Jan.-Oct.)			Total		
	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.
Sulfamethoxazole	3,041	118	3,366	3,100	68	1,432	4,119	99	2,397	4,210	183	4,451	14,470	468	11,646
Trimethoprim/Sulfamethoxazole	1,065	101	2,729	1,508	322	7,255	2,813	571	11,073	4,472	626	13,716	9,858	1,620	34,773
Trimethoprim	1,508	605	14,990	762	275	6,809	3,709	480	11,925	1,201	259	6,345	7,180	1,619	40,069
	5,614	824	21,085	5,370	665	15,496	10,641	1,150	25,395	9,883	1,068	24,512	31,508	3,707	86,488

Source: BSH.

Table 12

Imports by the Philippines of Sulfamethoxazole
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	198. (Jan.-Oct.) Volume	198. (Jan.-Oct.) Value C.I.F.	198. (Jan.-Oct.) Value L.C.	198. (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
F.R. Germany	-	-	-	-	950	33	597	30.85	1,650	43	1,048	40.08	1,650	48	1,143	39.19	4,250	125	2,788	29.37
United Kingdom	1,866	82	2,360	61.36	1,100	9	125	35.48	-	-	-	-	635	56	1,343	15.08	3,601	146	3,827	24.89
Spain	-	-	-	-	300	8	175	9.68	500	14	344	12.14	700	12	273	16.63	1,500	33	792	10.37
Netherland	1,000	33	941	32.88	300	7	237	9.68	-	-	-	-	-	-	-	-	1,300	41	1,178	8.98
Belgium	-	-	-	-	-	-	-	-	1,000	19	454	24.28	-	-	-	-	1,000	19	454	6.91
Singapore	-	-	-	-	-	-	-	-	-	-	-	-	900	14	351	21.38	900	14	351	6.22
Others	175	2	66	5.75	450	11	298	14.52	969	23	552	23.53	325	54	1,341	7.72	1,919	90	2,257	13.26
	3,041	118	3,366	100.00	3,100	68	1,432	100.00	4,119	100	2,397	100.00	4,210	183	4,451	100.00	14,470	468	11,647	100.00

Source: BSM.

3.2.3.2 Trimethoprim

In 1986, imports of trimethoprim totalled 1,508 kilograms, amounting to US$505,000, dropping to 762 kilograms, valued at US$275,000, the following year. This was brought about by a decrease in the importation levels of the product by its major importers. In 1988, import volume and value significantly increased to 3,709 kilograms, valued at US$480,000, a result of the large importations by two non-pharmaceutical companies which did not buy the product in 1986 and 1987. For the first 10 months of 1989, import volume and value were 1,201 kilograms and US$257,000, respectively. (See Table 13.)

3.2.3.3 Cotrimoxazole

The importation of cotrimoxazole, which combines trimethoprim and sulfamethoxazole was increasing throughout the period: 320 per cent from 1986 to the first 10 months of 1989.

As shown in Table 14, the 1986 importation of cotrimoxazole was 1,065 kilograms, valued at US$101,000; slightly increasing to 1,508 kilograms, valued at US$322,000 the following year. This increased further, the following year, to 2,813 kilograms, amounting to US$571,000. From January to October of 1989, import volume and value exceeded the previous year's levels, registering 4,473 kilograms and US$627,000, respectively; a result of the significant increase in the cotrimoxazole imports of its leading importer.

There is an increasing trend in the importation of the anti-bacterial/ respiratory infection drugs. From almost the same level of imports in 1986 and 1987, there was a doubling of the volume in 1988, and the figure for 1989 will likely attain the same level as in 1988. The substantial increase in import volume was brought about by the increase in the importation of sulfamethoxazole and cotrimoxazole.

Table 13
Imports by the Philippines of Trimethoprim
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Hong Kong	75	1	208	4.97	-	-	-	-	1,500	15	872	40.44	250	1	18	21.72	1,825	16	898	25.60
Spain	-	-	-	-	-	-	-	-	1,050	35	959	28.31	200	28	661	17.38	1,250	62	1,640	17.53
United Kingdom	569	270	5,635	37.73	100	70	1,696	13.12	325	151	3,671	8.78	-	-	-	-	994	491	12,003	13.94
F.R. Germany	116	11	285	7.69	140	9	380	18.37	150	14	340	4.04	250	1	18	21.72	656	36	1,024	9.20
Sweden	273	185	4,562	18.10	248	111	2,718	32.55	108	82	1,958	2.91	-	-	-	-	629	378	9,236	8.82
Indonesia	225	108	2,574	14.92	-	-	-	-	189	88	2,039	5.10	190	84	2,016	16.51	604	280	6,629	8.47
Italy	100	6	140	6.63	100	5	112	13.12	300	17	485	8.09	-	-	-	-	500	28	737	7.01
Others	150	24	586	9.95	174	80	1,905	22.83	87	76	1,800	2.35	261	142	3,534	22.68	672	322	7,825	9.42
	1,509	605	14,990	100.00	762	275	6,809	100.00	3,709	479	11,925	100.00	1,151	255	6,268	100.00	7,130	1,613	39,992	100.00

Source: BSN.

Table 14
Imports by the Philippines of Cotrimoxazole
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Switzerland	750	90	2,412	70.42	1,508	322	7,255	100.00	1,808	370	6,423	64.27	3,091	587	12,680	69.10	7,157	1,368	28,770	72.59
F.R. Germany	-	-	-	-	-	-	-	-	-	-	-	-	1,237	6	160	27.65	1,237	6	160	12.55
France	-	-	-	-	-	-	-	-	1,005	201	4,650	35.73	-	-	-	-	1,005	201	4,650	10.19
Others	315	11	318	29.58	-	-	-	-	-	-	-	-	145	34	876	3.24	460	45	1,192	4.67
	1,065	101	2,729	100.00	1,508	322	7,255	100.00	2,813	571	11,073	100.00	4,473	627	13,716	100.00	9,859	1,620	34,773	100.00

Source: BSN.

Government purchases of trimethoprim, sulfamethoxazole, and cotrimoxazole to combat respiratory tract infections took place only in 1989. Prior to that year, there was no record of purchase by the Department of Health's Procurement Office, of the three products. This should not be taken to mean that the government has been negligent in trying to eliminate respiratory tract infections since many other medicines can be considered substitutes for the three drugs.

In 1989, the Department of Health purchased 249 kilograms of trimethoprim, 1126 kilograms of sulfamethoxazole, and 209 kilograms of cotrimoxazole. These figures were provided by the Procurement Division of the Health Department. It may be possible that the government has started only recently to use these products in its programs. For example, there is a plan to purchase a large amount of cotrimoxazole in line with a drive to reduce the incidence of respiratory tract infections among children. Should this be the case, government sector demand for the three products should increase.

3.2.4 Group Four: Anti-diarrheals

The number of diarrhea cases has risen dramatically in the past few years, primarily due to the increase in over-congested areas and the resulting deterioration of sanitation and hygiene. While death rates have been reduced, the disease continues to be one of the top 10 causes of death in the country and is still the third leading cause of deaths among infants. As long as the government is unable to improve living conditions, particularly in impoverished areas, the incidence of diarrhea will remain high. (See Table 15.)

Table 15
DIARRHEA - MORTALITY AND MORBIDITY TRENDS
(Rate per 100,000)

Year	CASES Number	Rate	DEATHS Number	Rate
1980	199,574	413.0	13,492	27.9
1981	239,117	482.7	16,196	32.7
1982	221,170	435.6	12,735	25.1
1983	275,068	529.2	15,090	29.0
1984	551,560	1036.9	11,553	21.7
1985	522,762	956.2	11,516	21.7
1986	552,613	1076.4	10,839	19.4

Source: Philippine Statistical Yearbook, 1980-1986 issues.

As the table shows, the incidence of diarrhea has been increasing since 1980, making the sickness a serious concern. Furthermore, these figures represent only those cases that were reported. Almost certainly, a large number of cases each year is not reported. From this trend alone, it is easy to foresee an increase in the demand for anti-diarrhea drugs.

Furazolidone, however, is not considered a priority chemical for synthesis by both the public and private sectors because there are many other anti-diarrheals which may be more effective or cheaper. The government did not purchase any drugs that contain this generic product during the period 1986 to 1989.

Furthermore, based on the import statistics, furazolidone was imported primarily by animal feed companies and traders that serve other feed mills while hardly any of the pharmaceutical manufacturers imported the chemical. Animal feed producers add furazolidone to their feeds to prevent infections among livestock. Consequently, it is possible that the market for this chemical, should furazolidone be manufactured in the country, would be primarily the livestock growers and feed mills.

The 1986 import volume and value of furazolidone was 63,000 kilograms, valued at US$435,000; significantly decreasing to 58,000 kilograms, valued at US$418,000 the following year. This declined further the following year, to 48,000 kilograms, amounting to US$341,000 as the importation of one major trader-importer substantially decreased. From January to October of 1989, import volume and value exceeded the previous year's levels at 51,000 kilograms, valued at US$414,000, a result of the substantial rise in the importation of a particular trader-importer.

3.2.5 Group Five: Anti-tuberculosis drugs

Despite technological advances in tuberculosis control and treatment, the disease continues to be a major health problem, affecting a sizable proportion of the population. Throughout the past decade, tuberculosis has remained one of the top 10 causes of mortality and morbidity and has accounted for approximately 10 per cent of total deaths in the past five years. Urban congestion and crowding, poor sanitation, poverty and malnutrition, the high cost of treatment, particularly for the poor have all contributed to the prevalence of the disease.

Table 16 charts the trend in tuberculosis cases in the country.

Table 16
TUBERCULOSIS - MORTALITY AND MORBIDITY TRENDS
(Rate per 100,000)

	CASES		DEATHS	
Year	Number	Rate	Number	Rate
1980	112,307	232.4	28,798	59.6
1981	116,821	235.8	27,317	55.1
1982	104,715	206.2	28,309	55.7
1983	106,300	204.5	28,580	55.0
1984	151,867	285.5	27,320	51.4
1985	151,028	276.3	31,650	57.9
1986	153,129	273.4	30,604	54.6

Source: Philippine Statistical Yearbook, 1980-1986 issues.

Past efforts to control the disease have been hampered by inadequate program resources, weak institutional support, insufficient quantities of the needed drugs at service points, and other factors.

In line with the government's Health Development Program, a Tuberculosis Control Program has been proposed. During the implementation of the program, once the patient has identified, the drugs needed for a six-m treatment shall be allotted for each patient. This six-month supply of drugs per patient shall be provided at health centers and distributed to the patients in weekly supplies by the rural or urban health officer, nurse, or mobile medical technologist. This Tuberculosis Control Program proposes an allocation of P129.5 million to be spent for drug purchases during the five year length of the program.

The anti-tuberculosis agents (isoniazid, ethambutol, and pyrazinamide) imports totalled 33,000 kilograms, amounting to US$1.5 million, in 1986. This increased to 46,000 kilograms, valued at US$1.6 million, the following year. In 1988, there was a significant decrease in import volume and value, registering 36,000 kilograms and US$1.1 million, respectively. This was brought by about the substantial reduction in ethambutol importation. For the first 10 months of 1989, imports totalled 20,000 kilograms, amounting to US$689,000. For the period, isoniazid and ethambutol imports accounted for 42.6 and 33.5 per cent, respectively. (See Table 17.)

3.2.5.1 Isoniazid

In 1986, imports of isoniazid amounted to 13,000 kilograms, valued at US$125,000. This significantly rose to 21,000 kilograms, valued at US$221,000, the following year, as the importation of its leading importer doubled. In 1988, imports slightly decreased to 18,000 kilograms, valued at US$214,000. For the first 10 months of 1989, import volume was 5,100 kilograms, valued at US$61,000. (See Table 18.)

3.2.5.2 Pyrazinamide

In 1986, imports of pyrazinamide totalled 9,210 kilograms, amounting to US$730,000. This decreased to 6,975 kilograms, valued at US$515,000 the following year; slightly increasing to 7,600 kilograms, valued at US$411,000 in 1988. For the first ten months of 1989, import volume and value has already exceeded the 1988 levels, at 8,480 kilograms and US$359,000, respectively. (See Table 19.)

3.2.5.3 Ethambutol

As shown in Table 20, the 1986 import volume and value of ethambutol were 11,000 kilograms, valued at US$632,000; increasing to 17,000 kilograms, valued at US$836,000 the following year. The substantial increase was brought about by the increase in the import level of several importers. This decreased significantly, the following

Table 17
Imports by the Philippines of Anti-Tuberculosis Agents
(Volume in kgs.; value in US$000, L. C. value in ₱000)

PRODUCTS	1986			1987			1988			1989 (Jan.-Oct.)			Total		
	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.	VOLUME	VALUE C.I.F.	VALUE L.C.
Isoniazid	13,150	124	3,325	21,370	221	5,531	17,820	214	5,592	5,100	61	1,455	57,440	620	15,903
Ethambutol	11,065	631	17,802	17,300	836	21,638	10,315	435	10,304	6,432	270	6,851	45,112	2,172	56,395
Pyrazinamide	9,210	730	15,917	6,975	515	12,583	7,600	411	10,623	6,480	358	9,035	32,265	2,014	49,158
	33,425	1,485	37,044	45,645	1,572	39,752	35,735	1,060	26,519	20,012	689	17,341	134,817	4,806	121,456

Source: BSN.

Table 18
Imports by the Philippines of Isoniazid
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Japan	1,400	14	341	10.65	18,350	188	4,614	85.87	10,250	112	3,114	57.52	-	-	-	-	30,000	314	8,069	52.23
F.R. Germany	6,000	56	1,541	45.63	1,020	10	339	4.77	3,040	34	817	17.06	2,000	26	802	39.22	12,060	127	3,300	21.00
Netherlands	5,000	48	1,301	38.02	-	-	-	-	-	-	-	-	-	-	-	-	5,000	48	1,301	8.70
China	-	-	-	-	-	-	-	-	3,450	35	813	19.38	1,400	16	377	27.45	4,850	51	1,190	6.44
Others	750	7	142	5.70	2,000	23	578		1,080	33	847	6.06	1,700	20	476	33.33	5,530	83	2,043	9.63
	13,150	125	3,325	100.00	21,370	221	5,531	90.64	17,820	214	5,592	100.00	5,100	61	1,455	100.00	57,440	622	15,903	100.00

Source: BSN.

Table 19
Imports by the Philippines of Pyrazinamide
By Country of Origin
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
South Korea	650	33	789	7.36	775	29	880	11.11	1,550	68	2,305	20.39	3,300	130	3,213	38.92	6,275	259	7,186	19.45
Spain	-	-	-	-	-	-	-	-	3,800	224	5,344	50.00	1,500	79	2,104	17.69	5,300	303	7,449	18.43
Switzerland	2,900	238	5,619	31.49	1,600	200	4,566	22.94	650	47	1,093	8.55	-	-	-	-	5,150	486	11,278	15.96
Japan	1,000	62	1,452	10.86	2,500	123	3,013	35.84	-	-	-	-	1,000	45	1,207	11.79	4,500	230	5,673	13.95
India	-	-	-	-	800	41	937	11.47	800	35	824	10.53	1,480	53	1,272	16.51	3,000	129	3,033	9.30
Others	4,660	397	9,057	50.60	1,300	122	3,188	18.64	800	37	1,057	10.53	1,280	51	1,238	15.09	8,040	607	14,540	24.92
	9,210	730	16,917	100.00	6,975	515	12,583	100.00	7,600	411	10,623	100.00	8,480	359	9,035	100.00	32,265	2,014	49,158	100.00

Source: BSN.

Table 20
Imports by the Philippines of Ethambutol
By Country of Origin
(Volume in kgs.; value in US$000, L.C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Netherland	5,865	353	9,695	53.00	3,800	199	5,585	21.97	2,700	144	3,362	26.18	1,196	64	1,509	18.59	13,561	761	20,151	30.06
Italy	-	-	-	-	8,546	387	8,828	49.40	[illegible]	82	1,940	19.39	3,000	109	2,983	46.64	13,546	578	13,751	30.03
India	350	16	388	3.16	1,050	33	791	6.07	3,125	108	2,595	30.30	1,500	56	1,417	23.32	6,025	213	5,192	13.36
Switzerland	2,000	106	3,438	18.08	600	32	1,025	3.47	700	34	810	6.79	-	-	-	-	3,300	173	5,272	7.32
Others	2,850	156	4,081	25.76	3,304	185	5,409	19.10	1,790	66	1,597	17.35	736	40	942	11.44	8,680	447	12,029	19.24
	11,065	632	17,602	100.00	17,300	836	21,638	100.00	10,315	435	10,304	100.00	6,432	289	6,851	100.00	45,112	2,172	56,395	100.00

Source: BSM.

year, to 10,000 kilograms, amounting to US$435,000; a result of the decrease in importation of the top two leading importers. From January to October of 1989, import volume was 6,432 kilograms, valued at US$269,000.

There is clearly a decreasing trend in the importation of the anti-tuberculosis agents. After a significant increase in imports from 1986 to 1987, there has been a steady decrease as reflected in the trend of the importation of isoniazid and ethambutol, even as purchases of pyrazinamide have been increasing.

Based on the available IMS data, in 1989, a total amount of ₱ 321.9 million was spent for drugstore purchases of anti-tuberculosis medicines, particularly for products that contained ethambutol, isoniazid, pyrazinamide, and/or combinations of the three fine chemicals. This total figure can be broken into purchases of the following generic lines:

Generic Line:	Pesos:
Isoniazid	144,153,000
Isoniazid + Pyrazinamide	36,159,000
Pyrazinamide	41,805,000
Ethambutol	5,012,000
Ethambutol + Isoniazid	94,795,000

The consumption volume of these purchases can be broken down as follows:

Chemical:	Drugstore Sales Volume: (kgs.)
Isoniazid	31,785.02
Pyrazinamide	5,572.60
Ethambutol	10,861.90

To establish a trend in consumption, data from a report on the Philippine Pharmaceutical Industry Development Study was used as the basis of the 1987 level of consumption. Furthermore, the 1988 consumption level was calculated from the given per cent change in 1989 purchases from the past year's level. Approximate trends in the consumption of the fine chemicals under this group are shown in Table 21.

Table 21
CONSUMPTION TRENDS OF ANTI-TUBERCULOSIS AGENTS
(Volume in kgs)

Chemical	DRUGSTORE SALES VOLUME 1987	1988	1989
Isoniazid	30,271.90	32,704.90	31,785.02
Pyrazinamide	6,817.00	6,341.56	5,572.60
Ethambutol	12,190.70	11,788.44	10,861.90

As can be seen, the consumer demand for anti-tuberculosis products using the three fine chemicals under consideration has been fairly constant through out the past three years. It is possible that the lack of growth in this market, despite the still high level of tuberculosis incidence is caused by consumers' budget constraints, insufficient distribution systems, particularly in the rural areas and other factors which repress demand growth.

This lack of growth in the sales of anti-tuberculosis products in a way, confirms the declining demand profile reflected in the decreasing levels of import volumes discussed earlier.

For each of the generic lines, the best selling brands are the following:

Generic Line	Brand	Manufacturer	Sales (in pesos)
Isoniazid	Rimactazid	Ciba-Geigy	41,739,000
	Rifinah	Merrell-Dow	14,608,000
	Odinah	Medichem	14,470,000
	Trisofort	Westmont	13,482,000
	Trisovit	Westmont	12,878,000
	Comprilex	Pediatrica	8,489,000
	Nicetal	Wander	8,176,000

* sales of these 7 brands account for 79 per cent of the total sales of the generic line.

Generic Line	Brand	Manufacturer	Sales (in pesos)
Isoniazid + Pyrazinamide	Rifater	Merrell-Dow	19,903,000
	Pyrina	Westmont	16,090.000

* sales of these 2 brands account for 99 per cent of the total sales of the generic line.

Generic Line	Brand	Manufacturer	Sales (in pesos)
Pyrazinamide	Rimactazid/PZA	Ciba-Geigy	20,772,000
	PZA/CIBA	Ciba-Geigy	13,049,000

* sales of these 2 brands account for 81 per cent of the total sales of the generic line.

Generic Line	Brand	Manufacturer	Sales (in pesos)
Ethambutol + Isoniazid	EMB	Lederle	23,827,000
	Rambutol	Abbott	14,182,000
	Myambutol+ INH + B6	Lederle	10,034,000
	Abbutol + INH	Abbott	6,870,000
	Ethamizid	Biomedis	6,381,000
	Ronah 500	AH Robbins	6,151,000

* sales of these 6 brands account for 71 per cent of the total sales of the generic line.

Generic Line	Brand	Manufacturer	Sales (in pesos)
Ethambutol	Odetol	Medichem	1,823,000
	Myambutol	Lederle	1,729,000
	Ethambin	United American	773,000

* sales of these 3 brands account for 86 per cent of the total sales of the generic line.

Products from multinational pharmaceutical firms still dominate the consumer market for anti-tuberculosis drugs. A change in this market structure may occur with the entry of new, smaller, low-cost manufacturers as a result of the Generics Law. Should this be the case, then the presence of cheaper and more available anti-tuberculosis medicines should stimulate consumer demand which in turn would increase the demand for the pertinent fine chemicals.

While the government remains deeply committed to reducing the incidence of tuberculosis, because of its own budget constraints, government purchases of anti-tuberculosis drugs account for a small proportion of the total sales of the different generic lines.

To arrive at the data in Table 22, figures on government purchases of each generic line were gathered. Because product concentrations and forms of purchase were different, these figures were standardized into kilograms. These figures do not include purchases by government hospitals since these institutions have their own purchasing programs. Unfortunately, data on government hospital purchases are not available.

Table 22
GOVERNMENT PURCHASES OF ANTI-TUBERCULOSIS AGENTS
(Purchase volume in kgs)

Generic Line	1986	1987	1988	1989
INH	786	1,829	3,895	1,041
Pyrazinamide	210	987	795	350
Ethambutol	0	3,086	0	0

Source: DOH Procurement Division.

The only generic lines of anti-tuberculosis medicine purchased regularly are isoniazid and pyrazinamide. However, there seems to be no trend in the purchase of both products, particularly since the purchase volumes of both items decreased drastically in 1989. There seems to be a limited use of ethambutol in government programs.

3.2.6 Group Six: Intravenous fluid components

Both dextrose/glucose monohydrate and high grade salt (NaCl) are used in the manufacture of intravenous fluids and hydrating solutions. Importation of both products covered in the study totalled 377,000 kilograms in 1986, slightly decreasing to 330,000 kilograms the following year. This sharply declined to 97,000 kilograms in 1988; a result of the significant decrease in the importation of dextrose/glucose monohydrate. For the first ten months of 1989, importation of such components totalled 241,000 kilograms as imports of dextrose/glucose monohydrate increased. (See Table 23.)

3.2.6.1 Dextrose/glucose monohydrate

As shown in Table 24, the import volume of dextrose/glucose monohydrate decreased from 373,000 kilograms, in 1986, to 310,000 kilograms, the following year. This significantly dropped, the following year, to 77,000 kilograms, as its major importer had a substantial decline in its importation. For the first 10 months of 1989, import volume registered was already 231,000 kilograms, with the same major importer gearing towards the attainment of its previous importation level.

Table 23

Imports by the Philippines of Intravenous Fluid Components

(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

PRODUCTS	1986 VOLUME	1986 VALUE C.I.F.	1986 VALUE L.C.	1987 VOLUME	1987 VALUE C.I.F.	1987 VALUE L.C.	1988 VOLUME	1988 VALUE C.I.F.	1988 VALUE L.C.	1989 (Jan.-Oct.) VOLUME	1989 (Jan.-Oct.) VALUE C.I.F.	1989 (Jan.-Oct.) VALUE L.C.	Total VOLUME	Total VALUE C.I.F.	Total VALUE L.C.
Dextrose/glucose monohydrate	373,000	n.a.	n.a.	309,996	n.a.	n.a.	77,000	36	983	231,000	120	2,885	990,996	n.a.	n.a.
High grade NaCl	4,420	2	56	20,250	7	n.a.	20,000	7	189	10,000	4	100	54,670	n.a.	345
	377,420	n.a.	n.a.	330,246	n.a.	n.a.	97,000	43	1,172	241,000	124	2,985	1,045,666	n.a.	n.a.

Source: BSM.

Table 24

Imports by the Philippines of Dextrose/Glucose Monohydrate

By Country of Origin

(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Netherland	291,200	n.a.	3,382	78.07	267,967	13	n.a.	86.44	77,000	36	983	100.00	101,000	57	n.a.	43.72	737,167	106	4,365	74.39
Belgium	38,000	n.a.	515	10.19	19,200	8	206	6.19	-	-	-	-	76,800	35	937	33.25	134,000	43	1,658	13.52
F.R. Germany	-	-	-	-	19,200	8	208	6.19	-	-	-	-	53,200	27	822	23.03	72,400	35	1,030	7.31
France	43,000	n.a.	n.a.	11.53	-	-	-	-	-	-	-	-	-	-	-	-	43,000	n.a.	n.a.	4.34
Others	800	n.a.	1	0.21	3,629	n.a.	n.a.	1.17	-	-	-	-	-	-	-	-	4,429	n.a.	1	0.45
	373,000	n.a.	n.a.	100.00	309,996	n.a.	n.a.	100.00	77,000	36	983	100.00	231,000	119	n.a.	100.00	990,996	n.a.	n.a.	100.00

Source: BSM.

3.2.6.2 High grade NaCl

There were no available estimates on the sales of high grade NaCl and the best estimates for the demand of the product come from the level of importations of the fine chemical. Table 25 shows the trend of importations from 1987 to 1989.

Government purchases of saline solution have increased in volume since 1986. However, in 1989, the volume of government purchase dropped slightly, indicating that the government demand for the product may have stabilized at the 1988 level. This observation may support the apparent decline in demand shown by the import data. Table 26 below shows the trend of government purchases.

Unfortunately, no data on the level of sales of the product to the private sector, were available. However, from the data presented in the Tables 25 and 26 below, the demand for high grade NaCl may have reached its peak.

Table 25
IMPORTS BY THE PHILIPPINES OF HIGH GRADE NaCl

	1987	1988	1989
Volume (kgs)	20,250	20,000	10,000
Value (US$)	7,000	7,000	4,000

* January-October.

Source: BSM.

Table 26
GOVERNMENT PURCHASES OF SALINE SOLUTION IN THE PHILIPPINES

	1986	1987	1988	1989
Volume (000 ml.)	16,788	50,356	63,126	63,041
Value (000)	1,139	3,986	5,648	4,831

Source: Department of Health Procurement Division.

3.3 SUPPLY

3.3.1 Source of Supply

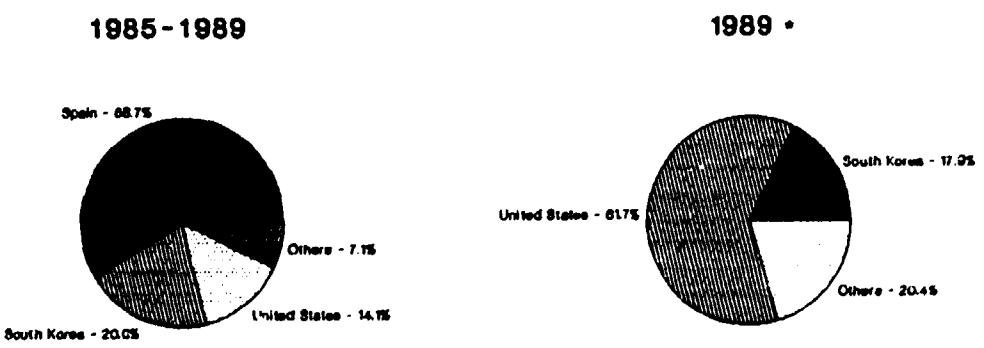
The Philippine supply of bulk and/or intermediate fine chemicals used for the pharmaceutical industry is dependent on importation.

3.3.1.1 Group 1: Analgesics

Mefenamic acid

As shown in Figure 5, from 1986 to 1988, mefenamic acid was mainly imported from Spain, which accounted for 58.7 per cent of total imports. Other sources were South Korea and the United States. From January to October 1989, Spain did not supply the Philippines with mefenamic acid, as the leading country supplier was the United States, accounting for 61.7 per cent of total imports.

Figure 5
IMPORTS OF MEFENAMIC ACID
By Country of Origin



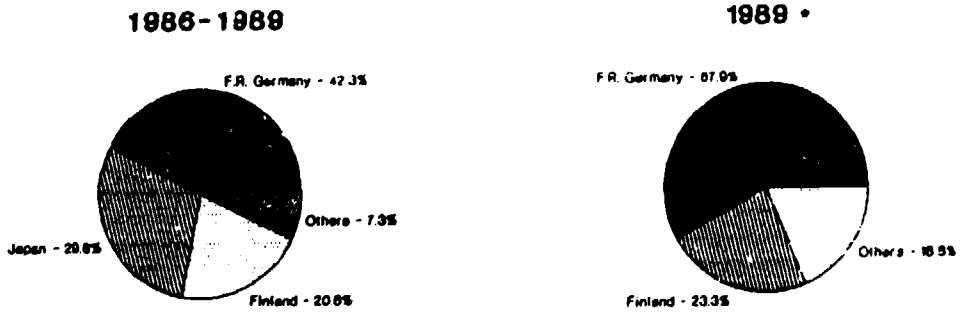
* January - October.
Source: BSM.

As shown in Table 27, Warner Lambert Phils., Inc. was the main importer of this product from 1986 to the first 10 months of 1989, accounting for 72.8 per cent of total imports. However, its share of 93.7 per cent in 1986 steadily decreased to a 61.7 per cent share in 1989.

Ibuprofen

From 1987 to the first ten months of 1989, the Federal Republic of Germany was the country's main source of ibuprofen, as it accounted for 42.3 per cent of total imports. Other main sources of the product were Japan and Finland (the country's lone supplier in 1986.) For the first 10 months of 1989, the Federal Republic of Germany led all country suppliers, accounting for 57.9 per cent of all imports. (See Figure 6.)

Figure 6
IMPORTS OF IBUPROFEN
By Country of Origin



* January - October.
Source: BSM.

Table 27
Leading Importers of Mefenamic Acid in the Philippines
(Volume in kgs.; value in US$000, L.C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Warner Lambert Phils.	10,900	365	8,495	93.72	10,700	313	7,680	72.57	8,500	251	5,936	84.84	7,250	274	6,839	61.70	37,350	1,203	28,949	72.84
United Labs.	730	12	358	6.28	3,500	60	1,440	23.74	4,000	86	1,842	30.42	1,800	27	745	15.32	10,030	185	4,184	19.56
Others	-	-	-	-	545	11	310	3.70	650	6	168	4.94	2,700	28	781	22.98	3,895	45	1,259	7.60
	11,630	377	8,853	100.00	14,745	384	9,430	100.00	13,150	323	7,745	100.00	11,750	329	8,365	100.00	51,275	1,413	34,392	100.00

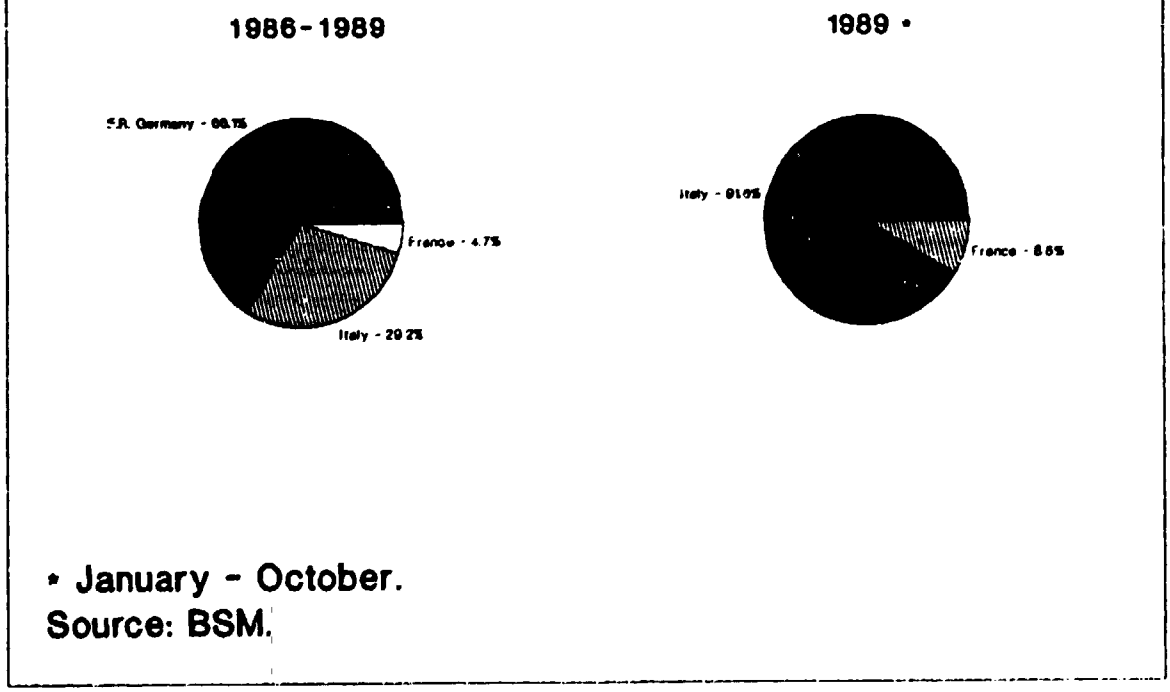
Source: BSN.

Unilab dominated the country's importation of this product, as it accounted for 99.1 per cent share of total imports, during the period. The only other importer during the period, the Boots Co., had minimal importation in 1987 and 1988. (See Table 28.)

Glaphenine

In 1986 and 1987, the Federal Republic of Germany was the country's main source of glaphenine with 100 and 94.4 per cent shares, respectively. After 1987, it stopped supplying the country with the product. For 1988 and the first 10 months of 1989, Italy had 100 and 91.6 per cent shares, respectively. The only other supplier was France which had minimal exports to the country in 1987 and in 1989. (See Figure 7.)

Figure 7
IMPORTS OF GLAPHENINE
By Country of Origin



* January - October.
Source: BSM.

Table 28
Leading Importers of Ibuprofen in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
United Labs.	5,000	112	2,778	100.00	10,500	283	7,689	96.77	17,400	451	12,897	99.43	17,145	497	12,317	100.00	50,045	1,343	35,676	99.11
The Boots Co.	-	-	-	-	350	15	341	3.23	100	5	110	0.57	-			-	450	19	451	0.89
	5,000	112	2,778	100.00	10,850	298	8,030	100.00	17,500	456	13,007	100.00	17,145	497	12,317	100.00	50,495	1,362	36,129	100.00

Source: BSM.

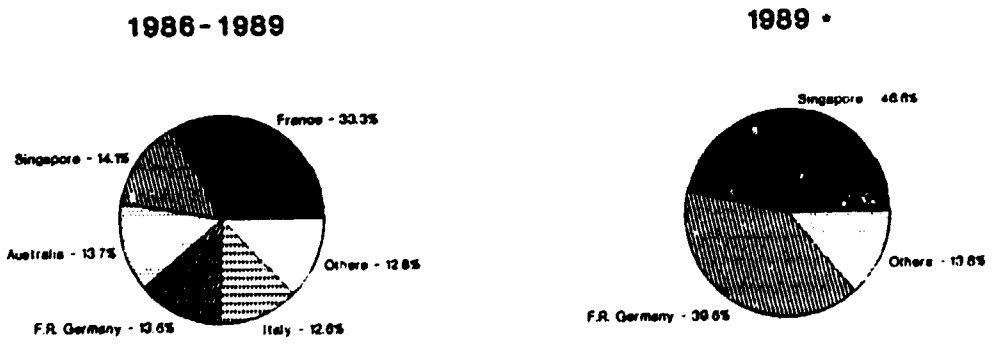
Unilab was the leading importer of glaphenine during the period, accounting for 93.4 per cent. The company's share throughout the period ranged from 91.6 to 100 per cent. (See Table 29.)

3.3.1.2 Group 2: Anti-bacterial

Metronidazole

As shown in Figure 8, for the period, metronidazole was mainly sourced from France, with its highest share in 1988, at 56.9 per cent. Other sources of the material were Singapore, the Federal Republic of Germany, and Italy. From January to October 1989, Singapore was the main source of the product with a 46.6 per cent share.

Figure 8
IMPORTS OF METRONIDAZOLE
By Country of Origin



* January - October.
Source: BSM.

Table 29
Leading Importers of Glaphenine in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
United Labs.	1,200	86	2,202	100.00	3,348	325	7,665	94.36	711	73	1,684	100.00	1,300	130	3,372	91.55	6,559	614	14,923	95.35
Hoechst Phils., Inc.	-			-	200	23	520	5.64	-			-	120	12	315	8.45	320	35	835	4.65
	1,200	86	2,202	100.00	3,548	348	8,186	100.00	711	73	1,684	100.00	1,420	142	3,687	100.00	6,879	649	15,758	100.00

Source: BSN.

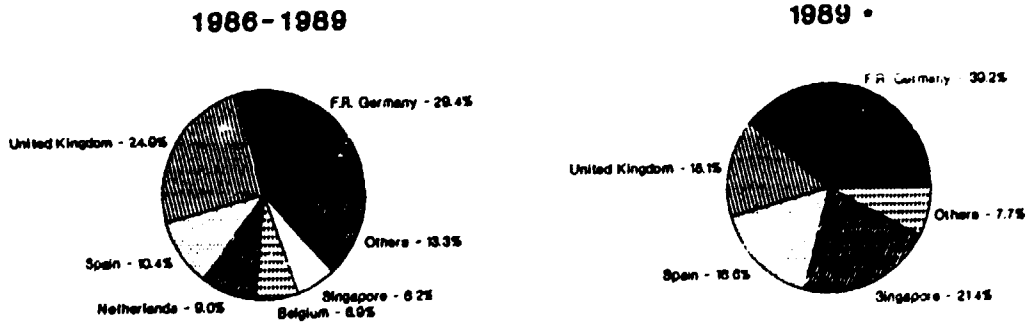
As shown in Table 30, Rhone Poulenc Phils. Inc. was the main importer of metronidazole, from 1986 to the first ten months of 1989, accounting for 33.3 per cent of total imports. Its 1988 share of 56.9 per cent was its highest.

3.3.1.3 Group 3: Anti-bacterial/respiratory tract infections treatment

Sulfamethoxazole

The Federal Republic of Germany and the United Kingdom were the country's leading sources of sulfamethoxazole for the period, with shares of 29.4 and 24.9 per cent, respectively. Other major sources of the product were Spain, Netherlands, Belgium, and Singapore. For the first 10 months of 1989, the Federal Republic of Germany was the main source of the product, accounting for 39.2 per cent of total imports. (See Figure 9.)

Figure 9
IMPORTS OF SULFAMETHOXAZOLE
By Country of Origin



* January - October.
Source: BSM.

Table 30
Leading Importers of Metronidazole in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Rhone Poulenc Natterman	50	4	113	3.26	100	10	230	16.67	2,300	180	4,906	56.86	200	21	534	11.30	2,650	215	5,784	33.33
GB Searle Phils., Inc.	1,236	10	254	80.47	200	10	233	33.33	400	18	419	9.89	-			0.00	1,836	37	906	23.09
Pascual Labs	150	4	178	9.77	300	13	287	50.00	1,000	37	509	24.72	-			0.00	1,450	53	975	18.24
Nova Chem. Ins.	-			0.00	-			0.00	-			0.00	825	15	901	46.61	825	15	901	10.38
Others	100	3	84	6.51					345	7	182	8.53	745	13	331	42.09	1,190	23	597	14.97
	1,536	21	630	100.00	600	32	750	100.00	4,045	242	6,018	100.00	1,770	49	1,766	100.00	7,951	344	9,162	100.00

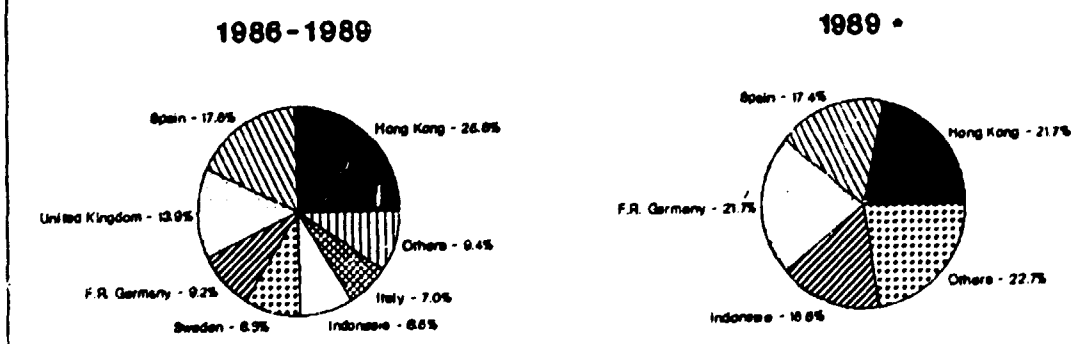
Source: BSM.

United Laboratories (Unilab) and Wellcome, Phil. were the leading importers of sulfamethoxazole, during the period, with shares of 34.3 and 24.9 per cent, respectively. Unilab's share from 1986 to 1989 ranged from 20.2 to 48.4 per cent. Wellcome Phils. share of 61.4 per cent in 1986, was its highest. It did not import the product in 1988. From January to October 1989, Pharmachemica Distribution Center, an importer/trader, was the top importer of sulfamethoxazole, accounting for 23.8 per cent of total imports. (See Table 31.)

Trimethoprim

As shown in Figure 10, from 1986 to the first 10 months of 1989, the main sources of trimethoprim imports were Hong Kong and Spain, accounting for 25.6 and 17.5 per cent respectively. Other major sources were the United Kingdom, the Federal Republic of Germany, Sweden, Indonesia, and Italy. From January to October 1989, Hong Kong and the Federal Republic of Germany were the main sources of trimethoprim imports, both accounting for 21.7 per cent of total imports.

Figure 10
IMPORTS OF TRIMETHOPRIM
By Country of Origin



* January - October.
Source: BSM.

Table 31
Leading Importers of Sulfamethoxazole in the Philippines
(Volume in kgs.; value in US$000, L. C. value in P000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
United Labs.	1,000	33	941	32.86	1,500	47	1,025	48.39	1,619	46	1,112	39.31	850	38	896	20.19	4,969	164	3,873	34.34
Wellcome Phils.	1,866	82	2,360	61.36	1,100	9	125	35.48	-			-	635	56	1,343	15.08	3,601	146	3,827	24.89
Pharmachemica	-	-	-	-	-			-	1,000	19	454	24.28	1,000	17	390	23.75	2,000	36	843	13.82
Pascual Labs.	-	-	-	-	500	12	283	16.13	500	14	344	12.14	700	12	273	16.63	1,700	38	899	11.75
Others	175	2	86	5.75					1,000	20	488	24.28	1,025	82	1,549	24.35	2,200	84	2,103	15.20
	3,041	118	3,386	100.00	3,100	68	1,432	100.00	4,119	99	2,397	100.00	4,210	183	4,451	100.00	14,470	469	11,646	100.00

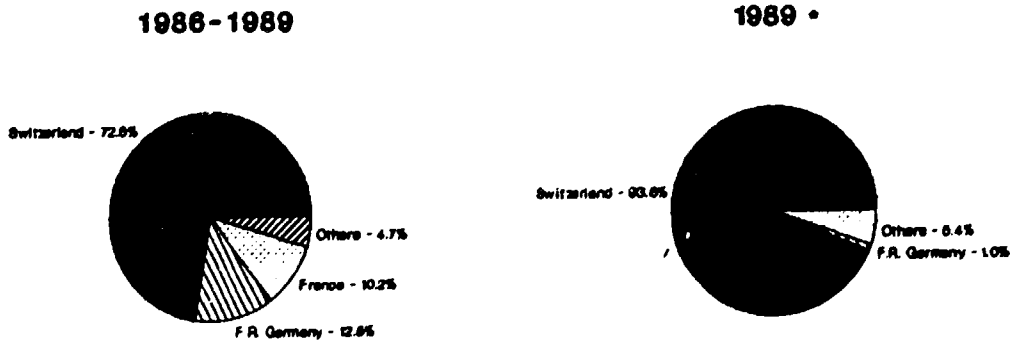
Source: BSM.

As shown in Table 32, Wellcome, Phils. was the main importer of trimethoprim, from 1986 to the first ten months of 1989, accounting for 18.1 per cent of total imports. However, its share of 34.8 per cent in 1986 steadily decreased until 1988, when it had a mere 6.1 per cent share. For the first 10 months of 1989, the company had a 25.1 per cent share of total imports.

Cotrimoxazole

For the period, Switzerland was the country's main source of cotrimoxazole with a 72.6 per cent share. Other major sources of the product were the Federal Republic of Germany and France. For the first 10 months of 1989, Switzerland had a 69.1 per cent share of total imports. (See Figure 11.)

Figure 11
IMPORTS OF COTRIMOXAZOLE
By Country of Origin



* January - October.
Source: BSM.

Table 32
Leading Importers of Trimethoprim in the Philippines
(Volume in kgs.; value in US$000, L. C. value in ₱000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Wellcome Phils.	525	258	8,264	34.81	249	139	3,317	32.68	226	106	2,452	6.09	301	136	3,262	25.06	1,301	638	15,294	18.12
Federal Agr'l Corp.	-	-	-	-	-			-	1,000	3	83	26.96	250	1	18	20.82	1,250	4	101	17.41
Universal Robina Corp.	-	-	-	-	-			-	1,000	25	576	26.96	-			-	1,000	25	576	13.93
United Labs.	250	13	322	16.58	200	10		26.25	300	17	485	8.09	50	89	2,251	4.18	800	129	3,058	11.14
Coopers Animal Care	319	140	3,420	21.15	-			-	325	151	3,671	8.76	-			-	644	291	7,092	8.97
Astra Pharm	273	185	4,562	18.10	248	111	2,716	32.55	108	82	1,958	2.91	-			-	629	378	9,236	8.76
Others	141	9	422	9.35	65	15	776	8.53	750	96	2,700	20.22	600	34	814	49.96	1,556	154	4,712	21.67
	1,508	605	14,990	100.00	762	275	6,809	100.00	3,709	480	11,925	100.00	1,201	259	6,345	100.00	7,180	1,618	40,069	100.00

Source: BSN.

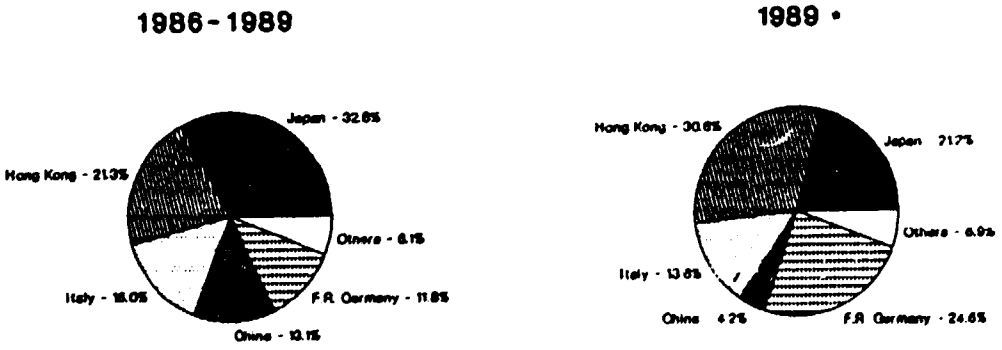
Roche Phils., Inc. was the leading importer of cotrimoxazole, during the period, with a share of 84.3 per cent. The company was the lone importer of the product in 1987 and 1988. From January to October 1989, Roche accounted for 72.3 per cent of total imports. (See Table 33.)

3.3.1.4 Group 4: Anti-diarrheals

Furazolidone

For the period, Japan was the country's main source of furazolidone, accounting for 32.8 per cent of total imports. Other main sources of the product were Hong Kong, Italy, China, and the Federal Republic of Germany. For the first 10 months of 1989, Japan had a 21.2 per cent share of total imports. (See Figure 12.)

Figure 12
IMPORTS OF FURAZOLIDONE
By Country of Origin



* January - October.
Source: BSM.

Table 33
Leading Importers of Cotrimoxazole in the Philippines
(Volume in kgs.; value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Roche Phils., Inc.	750	90	2,412	70.42	1,508	322	7,255	100.00	2,813	571	11,073	100.00	3,235	620	13,556	72.34	8,303	1,603	34,296	84.26
Marsman & Co., Inc.	-			0.00	-			0.00	-				1,237	6	160	27.66	1,237	6	160	12.55
Central Dev. Co	315	11	316	29.58	-			0.00	-				-			0.00	315	11	316	3.20
	1,065	101	2,729	100.00	1,508	322	7,255	100.00	2,813	571	11,073	100.00	4,472	626	13,716	100.00	9,858	1,620	34,773	100.00

Source: BSM.

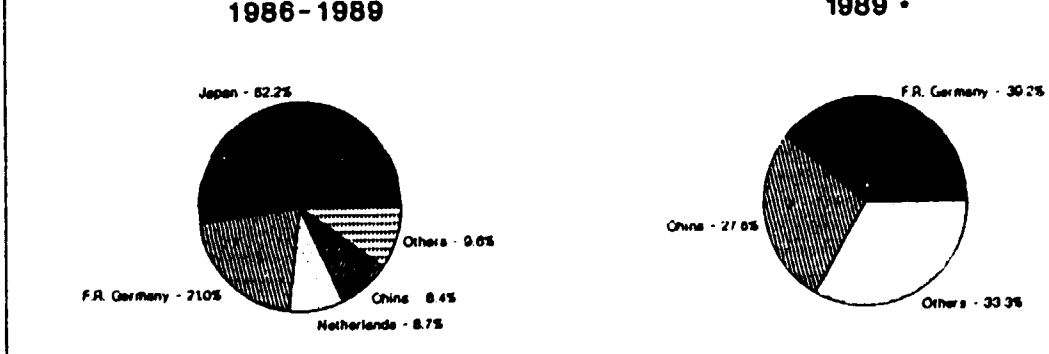
As shown in Table 34, the leading importers of furazolidone during the period, were not pharmaceutical companies, as the product is a mainly an ingredient of animal feed. Most of these companies were either feed manufacturers or trading firms. During the period, Vitarich Corp. and Simon Enterprises were the leading importers, with shares of 13 and 12.3 per cent, respectively. For the first 10 months of 1989, Himmel Industries, Inc. was the leading importer, accounting for 23.4 per cent of total imports.

3.3.1.5 Group 5: Anti-tuberculosis drugs

Isoniazid

As shown in Figure 13, for the period, isoniazid was mainly sourced from Japan, which accounted for 52.2 per cent of total imports. Another leading source was the Federal Republic of Germany. From January to October 1989, the Federal Republic of Germany was the main source of isoniazid with a 39.2 per cent share, with no imports from Japan.

Figure 13
IMPORTS OF ISONIAZID
By Country of Origin



* January - October.
Source: BSM.

Table 34
Leading Importers of Furazolidone in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Vitarich Corp.	5,500	43	1,051	8.79	7,000	51	1,388	12.14	10,000	77	1,823	20.95	6,000	49	1,267	11.68	28,500	219	5,510	12.99
Simon Ent.	13,600	96	2,288	21.74	11,000	75	1,915	19.07	2,300	14	334	4.82	-			-	26,900	185	4,538	12.26
Himmel Ind., Inc.	1,500	12	270	2.40	5,000	31	813	8.67	1,000	8	210	2.10	12,000	100	2,470	23.36	19,500	152	3,762	8.89
RFM Corp.	6,000	47	1,164	9.59	6,780	48	1,136	11.76	6,000	40	1,099	12.57	-			-	18,780	135	3,399	8.56
Gen. Milling	12,000	94	2,319	19.18	-			-	5,000	39	907	10.48	-			-	17,000	133	3,225	7.75
Others	23,970	144	3,404	38.31	27,890	214	5,226	48.36	23,425	162	4,466	49.08	33,380	265	15,284	64.97	108,665	785	28,382	49.54
	62,570	435	10,496	100.00	57,670	418	10,458	100.00	47,725	341	8,841	100.00	51,380	414	19,021	100.00	219,345	1,609	48,816	100.00

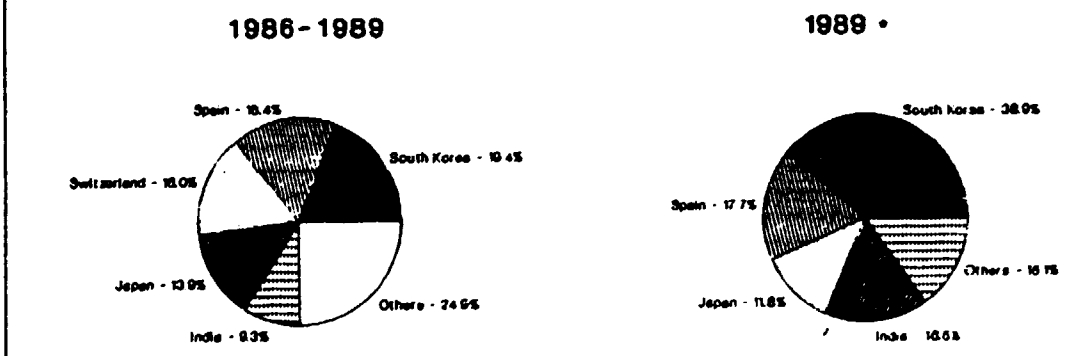
Source: BSN.

As shown in Table 35, Unilab was the main importer of isoniazid, from 1986 to the first ten months of 1989, accounting for 60.8 per cent of total imports. Its highest share of 74.9 per cent in 1987 steadily decreased to a 39.2 per cent share for the first 10 months of 1989.

Pyrazinamide

As shown in Figure 14, from 1986 to the first 10 months of 1989, the main sources of pyrazinamide were South Korea, Spain, Switzerland, and Japan, accounting for 19.4, 16.4, 16.0, and 14.0 per cent of total imports, respectively. From January to October 1989, South Korea was the main source of pyrazinamide with a 38.9 share.

Figure 14
IMPORTS OF PYRAZINAMIDE
By Country Of Origin



* January - October.
Source: BSM.

Table 35
Leading Importers of Isoniazid in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
United Labs.	8,000	74	2,077	60.84	16,000	162	3,978	74.87	8,950	98	2,722	50.22	2,000	28	602	39.22	34,950	358	9,379	60.85
Cyanamid Phils., Inc.	2,150	20	489	18.35	2,550	27	636	11.93	2,350	26	825	13.19	1,400	18	377	27.45	8,450	90	2,120	14.71
A.H. Robbins Inc.	1,000	10	237	7.60	1,020	10	339	4.77	2,040	24	562	11.45	1,700	20	476	33.33	5,760	64	1,615	10.03
Others	2,000	20	528	15.21	1,800	22	578	8.42	4,480	88	1,684	25.14					8,280	110	2,790	14.42
	13,150	124	3,325	100.00	21,370	221	5,531	100.00	17,820	216	5,592	100.00	5,100	61	1,455	100.00	57,440	621	15,903	100.00

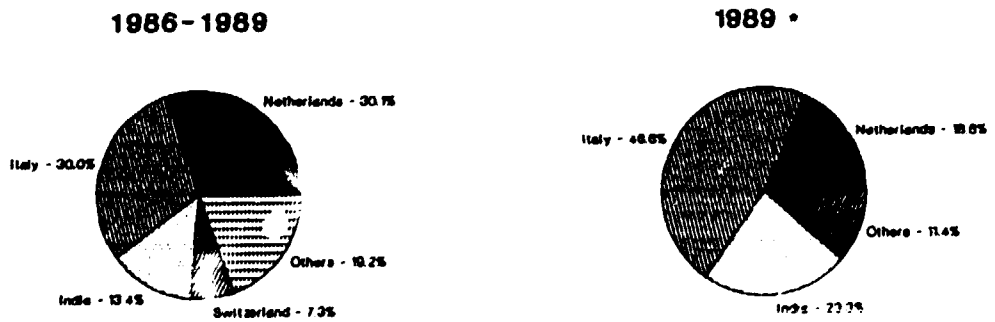
Source: BSN.

As shown in Table 36, Unilab (accounting for 33.1 per cent share) and Ciba Geigy Phils., Inc. (accounting for a 31.5 per cent share) were the main importers of the product from 1986 to the first 10 months of 1989. Unilab had the largest share of total imports from 1987 to 1989, highest in 1988 (50.7 per cent) and lowest in 1989 (33.0 per cent).

Ethambutol

For the period, the Netherlands was the country's main source of ethambutol accounting for 30.1 per cent of total imports. Even if there were no imports from Italy in 1986, it accounted for 30.0 per cent of total imports for the period. Other main sources of the product were India and Switzerland. For the first 10 months of 1989, Italy had a 46.6 per cent share of total imports, while India had a 23.3 per cent share. (See Figure 15.)

Figure 15
IMPORTS OF ETHAMBUTOL
By Country of Origin



* January - October.
Source: BSM.

Table 36
Leading Importers of Pyrazinamide in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
United Labs.	1,500	92	2,232	16.29	2,525	125	3,058	36.20	3,850	227	5,444	50.86	2,800	135	3,918	33.02	10,675	579	14,652	33.09
Ciba-Giegy Phils., Inc.	4,200	358	6,281	45.60	2,500	301	6,918	35.84	1,300	75	1,752	17.11	2,150	89	2,114	25.35	10,150	823	19,064	31.46
Cyanamid Phils, Inc.	2,000	184	3,942	21.72	800	41	1,289	11.47	1,800	66	2,195	21.05	2,000	75	1,644	23.56	6,400	366	8,969	19.84
Others	1,510	96	2,462	16.40	1,150	48	1,319	16.49	850	42	1,233	11.18	1,530	59	1,459	18.04	5,040	245	6,473	15.62
	9,210	730	16,917	100.00	6,975	515	12,583	100.00	7,800	411	10,623	100.00	8,480	358	9,035	100.00	32,265	2,014	49,158	100.00

Source: BSN.

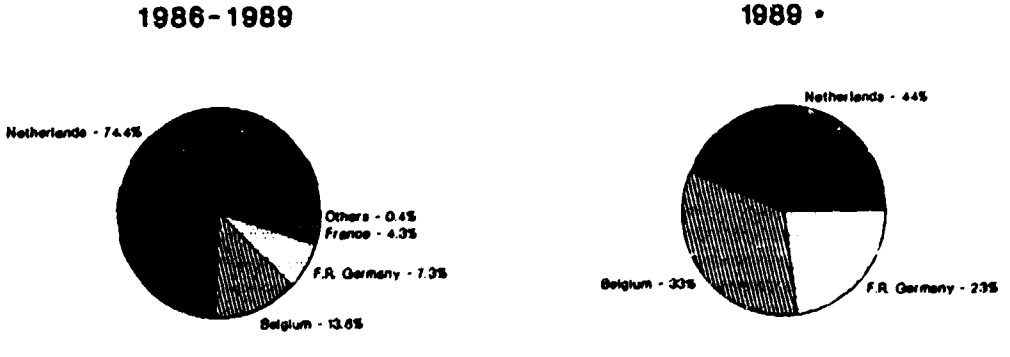
Cyanamid Phils., Inc. and Unilab were the leading importers of ethambutol during the period, both with shares of 35.4 per cent. Cyanamid Phils., Inc. was the leading supplier in 1986 and 1988, with shares of 44.7 and 26.2 per cent, respectively. In 1987 and the first 10 months of 1989, Unilab was the leading supplier, accounting for 40.3 and 49.8 per cent of total imports for these years. (See Table 37.)

3.3.1.6 Group 6: Intravenous fluid components

Dextrose/glucose monohydrate

Netherlands was the country's leading source of dextrose/glucose monohydrate, accounting for 74.4 per cent of total imports. Other sources of the product were Belgium, the Federal Republic of Germany, and France. For the first 10 months of 1989, Netherlands was the main source of the product, accounting for 43.7 per cent of total imports. (See Figure 16.)

Figure 16
IMPORTS OF DEXTROSE/GLUCOSE MONOHYDRATE
By Country of Origin



* January - October.
Source: BSM.

Table 37
Leading Importers of Ethambutol in the Philippines
(Volume in kgs.; value in US$000, L. C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Cyanamid Phils., Inc.	4,950	279	8,401	44.74	8,396	386	9,354	36.97	2,700	144	3,382	28.18	1,932	104	2,451	30.04	15,978	894	23,588	35.42
United Labs.	3,500	207	5,688	31.83	6,975	300	7,807	40.32	2,300	93	2,237	22.30	3,200	116	3,169	49.75	15,975	716	18,900	35.41
Abbott Labs.	785	55	1,318	7.09	1,100	50	1,233	6.36	1,700	53	1,296	16.42	1,000	31	776	15.55	4,585	189	4,622	10.16
Others	1,830	90	2,196	16.54	2,829	119	3,245	16.35	3,615	145	3,409	35.05	300	19	455	4.66	8,574	373	9,305	19.01
	11,065	631	17,602	100.00	17,300	836	21,638	100.00	10,315	435	10,304	100.00	6,432	270	6,851	100.00	45,112	2,173	56,395	100.00

Source: BSN.

Abbott Laboratories was the country's leading importer of this product, during the period, with a 83.6 per cent share. From January to October 1989, it accounted for 77.0 per cent of total imports. (See Table 38.)

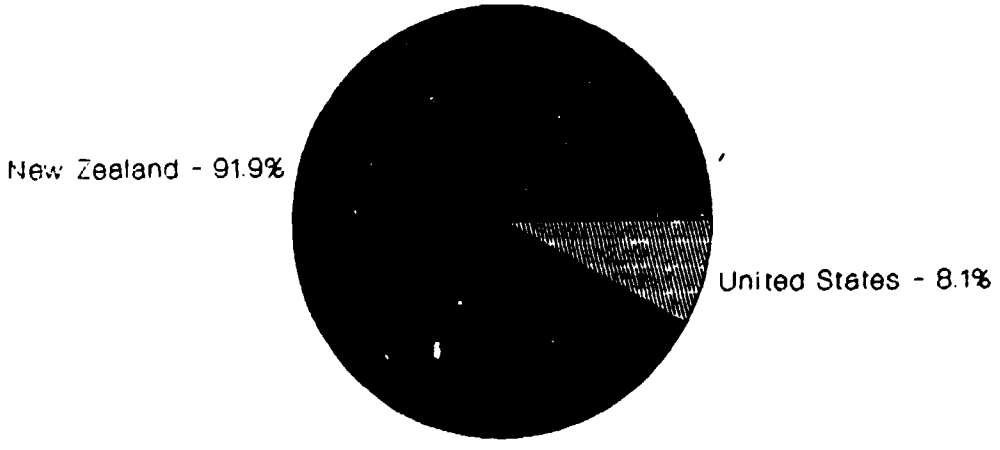
High grade NaCl

In 1986, there was only one importer of high grade NaCl, purchasing 4,420 kilograms. Since then, there has only been another lone importer of the product, with an importation level of 20,200 kilograms, in 1987. This slightly decreased the following year, to 20,000 kilograms. From January to October of 1989, import volume was 10,000 kilograms.

For the period, New Zealand was the country's main source of high grade NaCl, accounting for 91.9 per cent of total imports. The only other country supplier of the product was the United States. For the first 10 months of 1989, New Zealand was the lone country supplier of the Philippines. (See Figure 17.)

Figure 17
IMPORTS OF HIGH GRADE NaCl
By Country of Origin

1986-1989



Source: BSM.

Table 38
Leading Importers of Dextrose/Glucose Monohydrate in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in ₱000)

Companies	1986				1987				1988				1989 (Jan.-Oct.)				Total			
	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%	Volume	Value C.I.F.	Value L.C.	%
Abbott Labs.	346,000	n.a.	4,153	92.76	247,767	120	2,946	79.93	57,000	28	742	74.03	177,800	94	2,580	76.97	828,567	242	10,421	83.61
RP Chem., Inc.	7,000	n.a.	n.a.	1.88	-	-	-	-	20,000	8	242	25.97	33,000	14	n.a.	14.29	60,000	22	242	6.05
Sytengco Mdsg.	-	-	-	-	38,400	17	413	12.39	-	-	-	-	19,200	11	286	8.31	57,600	28	699	5.81
Apollo Labs Phils.	19,200	n.a.	227	5.15	19,200	9	230	6.19	-	-	-	-	-	-	-	-	38,400	9	456	3.87
Others	800	n.a.	1	0.21	4,629	n.a.	n.a.	1.49	-	-	-	-	1,000	1	19	0.43	6,429	255	21	0.65
	373,000	n.a.	4,381	100.00	309,996	n.a.	n.a.	100.00	77,000	36	983	100.00	231,000	120	2,885	100.00	990,996	556	11,839	100.00

Source: BSW.

Table 39
Leading Importers of High Grade NaCl in the Philippines
(Volume in kgs.; C.I.F. value in US$000, L.C. value in P000)

Companies	1986 Volume	1986 Value C.I.F.	1986 Value L.C.	1986 %	1987 Volume	1987 Value C.I.F.	1987 Value L.C.	1987 %	1988 Volume	1988 Value C.I.F.	1988 Value L.C.	1988 %	1989 (Jan.-Oct.) Volume	1989 (Jan.-Oct.) Value C.I.F.	1989 (Jan.-Oct.) Value L.C.	1989 (Jan.-Oct.) %	Total Volume	Total Value C.I.F.	Total Value L.C.	Total %
Abbott Labs	-	-	-	-	20,250	7	n.a.	100.00	20,000	7	189	100.00	10,000	4	100	100.00	50,250	18	289	91.92
Unilab	4,420	2	56	100.00	-	-	-	-	-	-	-	-	-	-	-	-	4,420	2	56	8.08
	4,420	2	56	100.00	20,250	7	0	100.00	20,000	7	189	100.00	10,000	4	100	100.00	54,670	20	344	100.00

Source: BSN.

As shown in Table 39, Abbott Laboratories was the sole importer of high grade NaCl, from 1967 to the first 10 months of 1989. The only other importation made was in 1986 by Unilab.

3.3.2 Profile of Major Suppliers

Based on import statistics, the major distributors of the fine chemicals covered in this study are the following:

- o Abbott Laboratories (Phils.), Inc.,
- o Ciba-Geigy, Phils., and
- o Cyanamid Phils.,
- o Rhone-Poulenc Phils. Inc.,
- o Roche Phils.,
- o United Laboratories,
- o Warner Lambert Phils.,
- o Wellcome Phils.,
- o Zuellig Pharma.

Abbott Laboratories (Phils.), Inc.

Abbott Laboratories (Phils.), Inc. was established in 1937, as the exclusive distributor of Abbott products. It is a subsidiary of Abbott Laboratories (Chicago.) Its domestic production started in 1957.

Its products include antibiotics, multivitamins, nutritional infant products, anesthetics, blood products, agro-veterinary products, hospital intravenous solutions, and equipment.

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	480,289	571,694	660,554	777,029
Net Income *	23,982	89,548	113,390	109,325
Return on Equity	0.19	0.26	0.30	0.26

* In thousand pesos.

Source: Philippine Company Profiles.

Ciba-Geigy (Phils.), Inc.

The firm started its operations in 1973. It is a wholly- owned subsidiary of Ciba-Geigy Ltd., an international organization which manufactures and markets organic chemicals. It has a plant in the Silangan Industrial Park, Canlubang, Laguna.

It is engaged in the distribution of pharmaceutical and agricultural products.

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	250,508	332,189	413,103	523,738
Net Income *	2,233	(26,484)	4,743	11,282
Return on Equity	0.03	(0.23)	0.04	0.08

* In thousand pesos.

Source: Philippine Company Profiles.

Cyanamid Phils.

Cyanamid is a wholly-owned subsidiary of the American Cyanamid Co. It was formerly known as Lederle Laboratories, Phils., as its major products were of this particular brand. The firm is primarily engaged in the manufacture and distribution of pharmaceuticals, veterinary and animal health products, and industrial chemicals. Pharmaceuticals account for more than half of total production.

It is affiliated with Cyanamid International Corp. (Zurich), Cyanamid (Taiwan), and Cyanamid (Far East) Ltd.

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	114,169	121,182	146,354	172,568
Net Income *	(3,192)	5,940	12,015	19,205
Return on Equity	(0.14)	0.21	0.30	0.32

* In thousand pesos.

Source: Philippine Company Profiles.

Rhone-Poulenc Phils. Inc.

The firm has been in operation for eight years mainly engaged in the indenting, importing, and exporting of inorganic chemicals, petrochemicals, polymers fine chemicals, health products, agro-chemicals, and synthetic fibers. It is a wholly owned subsidiary of Rhone-Poulenc S.A. of France.

It has an existing agreement with Zuellig Pharma Corp, which exclusively distributes the pharmaceutical specialties of Rhone-Poulenc and its affiliates.

Financial Highlights

	1984	1985	1986
Gross Revenue *	39,341	54,865	51,212
Net Income *	2,429	3,495	1,799
Return on Equity	0.20	0.22	0.10

* In thousand pesos.

Source: Philippine Company Profiles.

Roche (Phils.), Inc.

Incorporated in 1962, the company's principal activities include the manufacture, distribution, and indenting of pharmaceutical products.

Its major stockholders are Chemical Manufacturing and Trading Co. and Sapac Corporation Ltd., both Swiss companies.

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	166,657	203,336	265,848	316,016
Net Income *	23,243	33,211	17,945	24,196
Return on Equity	0.38	0.47	0.31	0.39

* In thousand pesos.

Source: Philippine Company Profiles.

United Laboratories, Inc.

Established in 1953, United Laboratories, Inc. (Unilab) manufactures drugs and pharmaceuticals. Unilab has put up plants in different Asian countries to manufacture and distribute its products. The company is Filipino-Chinese in ownership.

While it concentrates on the manufacture, distribution, research and development of its products, it has subsidiaries which handle the promotion of the company's products:

- Biomedis Inc.,
- Therapharma Inc.,
- United American Pharmaceuticals, Inc. (UAP),
- Dynavision,
- GD Searle Inc.,
- General Drug and Chemical Co.,
- International Pharmaceuticals Inc.,
- Westmont Pharmaceuticals Inc.,
- Pediatrica Inc., and
- Medichem Pharmaceuticals Inc..

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	1,521,525	1,786,780	2,293,834	2,739,231
Net Income *	93,086	103,550	184,989	201,058
Return on Equity	0.19	0.13	0.14	0.13

* In thousand pesos.

Source: Philippine Company Profiles.

Warner Lambert Phils., Inc.'

The company, which has its plant in Pasig, is majority- owned by American firms, Warner Lambert Company and Parke Davies and Company.

Founded in 1954, Warner-Lambert Phils. is a manufacturer and distributor of pharmaceutical, confectionery, and personal products. It manufactures and markets two important groups of products: professional products, composed of ethical and diagnostic products and consumer products, including personal and confectionery products.

In 1980, Adams Brands, Inc., Warner Chilcott Laboratories (Phils.), Inc., and Parke-Davis and Co., Inc. were consolidated to form Warner-Lambert Phils., Inc. These companies retained their respective product lines.

Financial Highlights

	1984	1985	1986
Gross Revenue *	293,706	429,603	516,912
Net Income *	40,988	79,774	124,677
Return on Equity	0.37	0.72	0.86

* In thousand pesos.

Source: Philippine Company Profiles.

Wellcome (Phils.), Inc.

The firm is a wholly-owned subsidiary of the Wellcome Foundation Ltd. of London. It is concerned with the manufacture and sales of pharmaceuticals and ethical drugs. More particularly, the company deals in medical and veterinary drugs, insecticides, and Calmic hygiene services.

The company sells its medical and consumer products through Zuellig Pharma Corp., which acts as its exclusive distributor.

Financial Highlights

	1984	1985	1986
Gross Revenue *	59,974	75,661	75,351
Net Income *	9,630	6,499	6,823
Return on Equity	0.42	0.22	0.20

* In thousand pesos.

Source: Philippine Company Profiles.

Zuellig Pharma Corp.

Founded in 1985, the Filipino-owned company is engaged in the following activities:

- o manufacturing - of its own product lines, which is subcontracted to Interphil, a contract manufacturer;
- o marketing/promotion - of its product lines which includes creating demand for these through promotions and importing of the active ingredients to be used for these products; and
- o distribution - involving the physical distribution of products of other pharmaceutical companies such as Ciba-Geigy, Squibb, and Wellcome.

Financial Highlights

	1985	1986	1987	1988
Gross Revenue *	398,414	1,177,579	1,177,579	1,390,655
Net Income *	5,723	15,745	15,744	10,565
Return on Equity	0.10	0.22	0.22	0.13

* In thousand pesos.

Source: Philippine Company Profiles.

3.3.3 Distribution and Other Trade Practices

The fine chemicals (end product form) covered in the study are ethical products requiring prescriptions, bearing the recommendation and permission of a licensed medical professional.

The major distributors of these products usually delegate the promotional and the physical distribution functions to separate divisions. It is usually the sales or promotions division, with its medical representatives, who handles the promotional activities directed towards the medical professionals. These medical representatives are generally detailed to different areas/territories.

The physical movement of the products from the plants or warehouses of the manufacturers to the wholesale/retail outlets is handled by another company division. Alternatively, the distribution function is done by another entity specializing in this business. These companies distribute other pharmaceutical companies' products, aside from their own.

Some fine chemical pharmaceutical companies which are registered as manufacturers, but do not have manufacturing facilities, engage the services of contract manufacturers. Some of these contract manufacturers also manufacture their own product lines.

The major pharmaceutical companies, which are mostly multinationals, usually have an agreement to source their requirement of basic or intermediate materials from their respective mother companies or affiliates. In such cases, prices are usually higher than those sourced from trading countries, such as Singapore and Hong Kong. The higher price is attributed to research and development costs which have to be borne by these manufacturing companies.

As learned from interviews, these companies follow the just-in-time concept in their importation schedule. Usually this results in monthly importations, effectively reducing inventory. Materials imported are mostly for the exclusive consumption of these companies.

There is a sector in the industry which engages solely in the trading of these fine chemicals. These companies import these chemicals from trading countries. The intermediate materials without brand names are then distributed to end-user and small dealers/pharmaceutical companies.

3.3.4 Prices

The import data gathered on volume and C.I.F. value reveal two factors affecting the wide range of import prices: country of origin and the existence of transfer pricing. These were later verified with some supplier interviews. The following were observed:

- o generally, the prices of the products sourced from traders (from countries such as Hong Kong and South Korea) are significantly lower than those from manufacturers and their affiliates;

- o the proximity of the country supplier from the product's destination (in terms of lower transportation cost) also determines the price, such that imports from nearby Asian countries are generally lower than those from the Western countries;

- o the existence of transfer pricing between parent- subsidiary firms and/or affiliates results in higher prices of fine chemicals, as compared with those from other sources; and

- o generally, the same companies consistently acquired the various fine chemicals at either the low or high end of the price range, from 1986 to 1989.

As shown in Table 40, it is not possible to show any trend in the movement of the available prices of the anti-respiratory tract infection treatments and the anti-tuberculosis agents. The high end of the price ranges are those borne by the subsidiary firms in the country from either their head companies or affiliates. Interviews indicate a decreasing trend in the prices of the single products, as research indicates the impending shift towards combination products, for these therapeutic categories. Specifically, for ethambutol, another factor affecting the wide range in the prices is the location of the source country. Data show that materials bought from Asian countries, like South Korea and India, are cheaper than those bought from European countries such as Italy and Netherlands.

For mefenamic acid, it is impossible to show any trend on the price movement. On the other hand, the import prices of glaphenine clearly show an increasing trend. Likewise, the prices for ibuprofen showed an increasing trend from 1986 to 1988, but decreased in 1989. For the three products, the high end of the price range also indicates transfer prices between parent-subsidiary firms or affiliates.

Table 40
IMPORT PRICE RANGE OF SELECTED FINE CHEMICALS

Products	Price Range (US$/kg) 1986	1987	1988	1989
ANTI-BACTERIAL/RESPIRATORY INFECTION				
Sulfamethoxazole	12.87 - 57.04	6.59 - 45.00	19.80 - 33.99	14.43 - 64.25
Trimethoprim	46.68 - 484.18	47.00 - 467.18	38.50 - 467.22	15.00 - 469.19
Cotrimoxazole	29.57 - 119.36	208.45 - 223.09	179.81 - 219.11	139.37 - 299.57
ANTI-TUBERCULOSIS AGENTS				
Isoniazid	9.30 - 10.00	9.00 - 17.94	9.80 - 58.67	11.00 - 12.78
Pyrazinamide	48.10 - 92.38	40.38 - 129.87	37.80 - 85.40	30.00 - 109.47
Ethambutol	30.63 - 69.75	31.00 - 70.89	30.90 - 53.64	30.90 - 61.41
ANALGESICS				
Mefenamic acid	15.82 - 33.36	11.65 - 29.26	9.00 - 33.15	8.00 - 43.13
Ibuprofen	21.15 - 27.46	25.43 - 47.46	23.73 - 46.83	11.65 - 34.10
Glaphenine	72.00	90.95 - 115.18	96.54 - 112.37	99.02 - 100.81
ANTI-DIARRHEA				
Furazolidone	1.50 - 11.79	1.50 - 15.50	1.50 - 25.00	1.50 - 42.42
ANTI-AMEOBIC				
Metronidazole	21.61 - 42.84	41.25 - 95.31	15.00 - 142.22	7.07 - 103.04
INTRAVENOUS FLUID COMPONENTS *				
Dextrose/glucose monohydrate **	11.81	11.75	12.77	12.49
High grade NaCl	0.45	0.35	0.35	0.40

* Average price of available data on importation volume and data.
** Prices quoted in Philippine peso.

Source: BSM.

Likewise, furazolidone shows an upward movement in its prices. The low end of the price range is the import price of the product bought from Hong Kong. On the other hand, the import prices of metronidazole indicate no trend.

The price based on the landed cost of dextrose/glucose monohydrate shows an erratic movement. The price of high grade NaCl showed a decrease from 1986 to 1987, levelled off in 1988, only to increase during the first ten months of 1989.

4. EXPORT OPPORTUNITIES: OTHER ASEAN COUNTRIES

In addition to the initial assessment of the Philippine market potential for selected fine chemicals used in the pharmaceutical industry, a further investigation of the market for such products in the other ASEAN countries was conducted. The commercial viability of local production facilities operating at optimum capacity will require other opportunities aside from the domestic market.

4.1 INDONESIA

4.1.1 Background on the Pharmaceutical Industry

The Indonesian pharmaceutical industry is still in its early stage, having started to develop only in the early 1960s, when the number of pharmaceutical companies increased from seven to 31 because of government programs and incentives to promote industrialization. With further government opportunities, such as the issuance of the Law on Domestic Capital Investment (PMDN) and the Law on Foreign Capital Investment (PMA), the number of drug manufacturers grew from 166 in 1970 to 269 by 1980. In 1986, the number of pharmaceutical companies in operation reached 280.

Pharmaceutical plants are now capable of producing almost all types of domestically required products. In 1986, these plants produced 9,246 medical preparations consisting of 2,890 drugs under generic names and 6,353 drugs under trade names. This represented an increase of about 3,000 preparations from the 1984 level.

In fact, production output has increased over the years. Production of tablets rose from 7.8 billion pieces in 1984 to 9.8 billion in 1986 while the production of capsules increased from 1.0 billion pieces to 1.6 billion pieces during the same period. (See Table 41.)

Table 41
INDONESIA'S PRODUCTION OUTPUT
OF PHARMACEUTICAL PRODUCTS

	1984	1985	1986
Tablets (million pcs)	7,787	7,913	9,832
Capsules (million pcs)	997	982	1,585
Syrups (000 liters)	8,662	n.a.	6,552
Powder (000 kgs)	233	n.a.	698
Ampules (000 pcs)	68,840	n.a.	74,381
Vials (000 pcs)	73,136	n.a.	81,557

Source: Indochemical Business Report.

However, like its Philippine counterpart, the Indonesian pharmaceutical industry's activities are still largely limited to the compounding or converting of imported active ingredients and raw materials to the final form of the product. While there currently are a number of fine chemical manufacturing plants in Indonesia, up to 95 per cent of the basic material requirements have to be imported by the drug manufacturers. However, the Indonesian government has taken steps to decrease this reliance on imports. For example, the government now requires that the PMA pharmaceutical plants produce at least one basic material. This ruling, however, has not been implemented strictly and is being followed by very few companies.

The limited number of basic or fine chemical manufacturing facilities has been attributed to the following reasons:

- The low demand for pharmaceutical products inhibits plans for backward integration of drug manufacturers. Furthermore, imports are readily available.
- There is the reluctance of many drug companies to rely on and even use the basic material outputs of rival firms, consequently, the market for basic chemicals is limited, making the production of these products uneconomical.
- The costs of technology, research, and development are too high to be absorbed by the market, particularly since demand is still limited.

The few existing fine chemical manufacturing plants produce base materials for antibiotics, analgesics, or anti-respiratory tract infection (including tuberculosis) treatments. (See Table 42.)

Table 42
INDONESIA'S FINE CHEMICALS
MANUFACTURING PLANTS

MANUFACTURER	PRODUCTS
PT Bayer Indonesia	Asetosal, Piperazin Citrate/ Hexahydrate
PT Riasima Abadi	Paracetamol Ethoxibenzamid
PT Meiji Indonesia	Kanamycin Sulfate/ Salicylamide
PT Carlo Erba	Erythromycin Stearate and Ethyl Succinate
PT Abbott	Ethambutol
PT Sandoz Biochemie Farma	Ampicilline, Amoxicilline 6-APA

Source: Indochemical Business Report.

Most of these facilities are "second stage" processors. For example, crude penicillin still has to be sourced from Biochemie (Austria) to make ampicilline. Also, many of these firms lack economies of scale, given the low production output. For example, the price of imported ampicilline is US$89 (Rp 150,000) per kilogram, less than the US$92 (Rp 155,000) per kilogram price of ampicilline produced locally.

Despite these drawbacks to backward integration, however, many foreign companies have signified their intention to put up facilities to produce basic chemicals for the Indonesian pharmaceutical industry. While one reason for this move to backward integrate is the increasing difficulty to import products into the country, another reason for this move is probably because companies realize that Indonesia has a large potential pharmaceutical market.

This potential is based on one hand, on the large Indonesian population which is growing at a rate of 2.2 per cent per year and estimated to presently be 175 million, but more on the fact that growing segments of the population have become aware of modern pharmaceutical products. More and more people have shifted from the use of traditional drugs to modern medicines. This increasing awareness and acceptance of modern medical products and processes are results of government health programs that bring modern medicines to the rural areas as well as the aggressive advertising and promotion campaigns of the drug manufacturers.

Indonesian pharmaceutical companies expect these activities to increase the demand for pharmaceutical products and provide the momentum for the further development of the industry.

In 1988, the per capita Gross Domestic Product stood at US$441, lowest in the ASEAN region. These economic difficulties have eroded consumer purchasing power resulting in lackluster pharmaceutical sales. However, in 1989, the various sectors in the economy, including the pharmaceutical industry, have started to recover from the recession of the previous year. The recovery is expected to continue well into the 1990s, as the pharmaceutical industry is expected to grow by 10 per cent.

Imports or apparent demand of pharmaceutical products have not increased significantly from the 1982 level. Given that almost all of the pharmaceutical industry's raw material requirement has to be imported, this absence of any upward trend shows that the Indonesian pharmaceutical market has remained constant throughout these six years. (See Table 43.)

Table 43
APPARENT DEMAND OF PHARMACEUTICAL PRODUCTS
IN INDONESIA
(Volume in kgs; value in US$000)

Year	Volume	Value
1982	4,611,764	151,215
1983	5,968,591	108,411
1984	4,538,609	85,736
1985	4,153,898	81,376
1986	5,482,201	90,063
1987	4,798,509	96,316

Source: Indochemical Business Report.

As shown in Table 44, the volume of almost all the major categories of pharmaceutical products imported into Indonesia has declined from the 1982 levels. The decline in antibiotic imports can be expected since antibiotics are currently produced in Indonesia; however, the decline in the import volume of the other product categories can only be explained by the lack of growth in the drug market, during the period.

There are no available data on the size of the Indonesian pharmaceutical market. Indochemical, the publication of P.T. Capricorn Indonesia Consult Inc., used the import level of 1987, the latest available data, to estimate the level of sales of pharmaceutical products. Using the average import value (CIF) as the base and after adding on factors for processing costs, taxes and wholesale and retail mark-ups, the research came up with a factor of 5.586 times the average CIF annual import value of US$107.5. (See Table 45.)

Table 44
IMPORTS OF PHARMACEUTICAL MATERIALS AND FINISHED
PRODUCTS BY TYPE GROUP, 1982 - 1987
(Volume in Kg., Value in US$'000)

Type Group	1982		1983		1984		1985		1986		1987	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Provitamins & Vitamins	1,262,354	58,200	1,630,507	15,617	1,152,022	12,139	500,106	12.797	1,151,018	12,574	764,987	13,215
Antibiotics	959,280	46,830	1,868,315	52,470	1,183,388	38,068	1,107.993	36,708	992,788	39,050	858,298	42,909
Vegetable Alkaloids	166,929	3,950	139,063	2,725	179,100	2,700	185,744	2,662	329,621	4,519	138,894	3,496
Hormones, glycocides, organotherapeutic glands, & antisera	516,703	14,888	717,116	16,143	794,797	20,035	824,507	17,057	655,117	18,014	391,211	16,082
Combination	1.706,498	27,347	1,613,590	21,456	1,229,302	12,804	1,535,999	12,152	2.353,657	15.906	2.644.519	20.614
TOTAL	4,611,764	151,215	5,968,591	108,411	4,538,609	85,736	4,154,348	81.376	5,482,201	90,063	4,798,509	96,316

Source: Indochem Business Report.

Table 45
CALCULATION OF THE MARKET VALUE OF PHARMACEUTICAL SOLD IN THE INDONESIAN DOMESTIC MARKET

The CIF (Basic) price		100.0
Import duty		5.0
		105.0
Value added tax (10%)		10.5
		115.5
Handling cost		5.0
Landed cost		120.5
Factory processing costs:		
Processing cost	50	
Cost of additional auxiliary materials	20	
Packaging	15	
Cost of marketing, including advertising	40	
	125	
Production cost (landed cost + factory processing cost)		245.5
Factory profit (plus 30%)		73.7
Factory sales price		319.2
Profit for wholesaler/distributor and retailer (75% of factory sales price)		239.4
Retail price		558.6

Source: Indochemical Business Report.

The resulting estimate for the Indonesian pharmaceutical market is US$600.495 million per year. Furthermore, this market size has not grown significantly in the past six years, despite the increase in both population and manufacturing capacities.

The demand for specific types of pharmaceutical products can be inferred from the mix of imports into the country. (See Table 46.)

Table 46
TYPE OF INDONESIAN DRUG IMPORTS
(In percentage)

TYPE	1976	1982	1987
Antibiotics	27.1	24.6	25.8
Vitamins and Minerals	12.5	10.3	11.4
Respiratory Preparations	9.0	8.8	8.9
Dermatological Preparations	4.8	7.5	6.2
Analgesics/Antipyretics	5.4	4.9	5.6
Hormones	4.3	3.6	4.0
Cardiovascular Drugs	3.0	4.5	3.8
Psychotropic Drugs	2.9	3.2	3.1
Anti-inflammatory Drugs	2.3	3.4	2.9
TB Therapy	2.2	3.0	2.6
Antacid	1.6	2.6	2.1
Anti-diarrhea	1.7	1.8	1.8
Others			

Source: Indochemical Business Report.

The import shares of these types of products have not changed significantly in the past ten years and it can be concluded that the market shares of each type of pharmaceutical product have remained constant. For example, antibiotic products continue to have the biggest import share and by inference, would have the largest share in pharmaceutical sales. The demand for each type of pharmaceutical product is assumed to have remained constant through out these past years since no significant change has occurred in either the level of total importations or the level of specific drugs.

The imports of pharmaceutical materials and of the few finished products that are allowed into the country are almost totally carried out by pharmaceutical plants and by pharmaceutical wholesalers and traders who are usually affiliated with pharmaceutical companies. Imports by non-affiliated traders and wholesalers are relatively insignificant in volume and frequency.

4.1.2 Estimated Market Size

Comprehensive and specific data on the Indonesian demand and supply of the fine chemicals under consideration could not be obtained. The only information available are: the domestic requirements of dextrose/glucose monohydrate and high grade NaCl and the importation of the other fine chemicals (used to indicate apparent demand) in 1988. (See Table 47.)

Table 47
ESTIMATED 1988 INDONESIAN DEMAND FOR SELECTED FINE CHEMICALS
(Volume in kgs)

PRODUCT	VOLUME
Group 1. Analgesics	
Mefenamic Acid	15,000
Ibuprofen	1,500
Glaphenine	1,500
Group 2. Anti-bacterials	
Metronidazole	7,000
Group 3. Anti-bacterials/respiratory tract infection treatment	
Sulfamethoxazole	20,000
Trimethoprim	5,000
Group 4. Anti-diarrheals	
Furazolidone	500
Group 5. Anti-tuberculosis drugs	
Isoniazid	53,000
Pyrazinamide	5,000
Ethambutol	30,000
Group 6. Intravenous fluid components	
Dextrose/glucose monohydrate	350,000
High grade NaCl	5,000

Source: Interview.

4.1.3 Demand Projections

Based on interviews, the pharmaceutical industry is expected to grow by 10 per cent in 1990. This trend is assumed to continue until 1992. The fine chemicals included in the study are expected to follow this growth trend during the period. (See Table 48.)

Table 48
PROJECTED INDONESIAN DEMAND FOR
SELECTED FINE CHEMICALS, 1989 - 1992
(Volume in kgs)

Product		1989	1990	1991	1992
Group 1.	Analgesics	9,800	21,780	23,985	26,354
	Mefenamic Acid	16,500	18,150	19,965	21,962
	Ibuprofen	1,650	1,815	1,197	2,196
	Glaphenine	1,650	1,815	1,997	2,196
Group 2.	Anti-bacterials				
	Metronidazole	7,700	8,470	9,317	10,249
Group 3.	Anti-bacterial/ respiratory tract infection treatment	27,500	30,250	33,275	36,603
	Sulfame-thoxazole	22,000	24,200	26,620	29,282
	Trimethoprim	5,500	6,050	6,655	7,321
Group 4.	Anti-diarrheals				
	Furazolidone	550	605	666	732
Group 5.	Anti-tuberculosis drugs	96,800	106,480	117,128	128,841
	Isoniazid	58,300	64,130	70,543	77,597
	Pyrazinamide	5,500	6,050	6,655	7,321
	Ethambutol	33,000	36,300	39,930	43,923
Group 6.	Intravenous fluid components	390,500	429,550	472,505	519,756
	Dextrose/glucose monohydrate	385,000	423,500	465,350	512,435
	High grade NaCl	5,500	6,050	6,655	7,321

Source: Interview.

4.1.4 Supply

Developments in Indonesia's demand/ supply profile include the shut-down of Abbott Laboratory's ethambutol manufacturing plant for undisclosed reasons and the issuance of a license to manufacture metronidazole in the country to Roche. The planned metronidazole manufacturing facility should be in operation this year.

Indonesian requirements for dextrose/glucose monohydrate are satisfied almost fully by five manufacturers using locally produced food grade dextrose. In fact, the biggest manufacturer, Otsuka, a Japanese based company, exports as much as 60 per cent of its output to the Middle East. Estimated annual requirements total 350 metric tons per year. An estimated 25 metric tons of the product are imported, the rest of the demand is produced locally.

High grade salt (NaCl) which is used in the manufacture of intravenous solutions still has to be imported from Japan. The estimated requirement is 5,000 kgs. per year. While high grade NaCl processors are currently producing in the country and more firms are expected to enter the market, none of the existing nor potential processors can or are interested in producing NaCl at a purity greater than 98 per cent because of the relatively limited requirements of the pharmaceutical industry. Pharmaceutical grade salt has to have a 99.9 per cent level of purity.

The sources of Indonesia's fine chemicals imports are shown in Table 49.

Table 49
SOURCES OF INDONESIAN IMPORTS
OF SELECTED FINE CHEMICALS
1988

PRODUCT	SOURCE
Group 1. Analgesics	
Mefenamic Acid	South Korea
Ibuprofen	Switzerland
Glaphenine	F.R. Germany
Group 2. Anti-bacterials	
Metronidazole	P.R.O.C./Poland
Group 3. Anti-bacterials/ respiratory tract infection treatment	
Sulfamethoxazole	P.R.O.C.
Trimethoprim	P.R.O.C.
Group 4. Anti-diarrheals	
Furazolidone	Italy
Group 5. Anti-tuberculosis drugs	
Isoniazid	F.R.Germany/ P.R.O.C.
Pyrazinamide	South Korea
Ethambutol	South Korea/India

Source: Interview.

4.2 MALAYSIA

4.2.1 Background on the Pharmaceutical Industry

The fine chemicals industry in Malaysia is still at its early stage of development. At present, the industry is more involved in assembling and repackaging basic substances and imported drugs. Only a few companies are involved in the manufacture of basic substances, such that domestic production of pharmaceuticals accounts for only 25 per cent of total demand.

The government is the biggest buyer of pharmaceuticals in the country. No taxes are imposed on imports making them readily available and cheaper for local companies to acquire. In this case, there is little incentive for backward integration within the industry. However, the policies of the government are gearing towards import substitution. Upon the implementation of these policies, domestic production is to satisfy 35 per cent of total demand by 1990 and 45 per cent by 1995. At present, the industry is operating at 30 per cent of its capacity.

The Malaysian pharmaceutical industry ended 1989 with a creditable 17.6 per cent growth on a total turnover of US$146 million. This is its second straight year of double digit growth. The industry grew at a record rate of 20.5 per cent with about US$134 million in sales in 1988.

As shown in Table 50, the domestic consumption for pharmaceuticals increased from US$105.8 million in 1985 to US$131.6 million in 1989, with an annual average growth rate of 8.2 per cent.

Table 50
DOMESTIC CONSUMPTION OF PHARMACEUTICALS
IN MALAYSIA
1985-1989
(Value in US$ million)

Year	Value
1985	105.8
1986	110.3
1987	118.8
1988	126.8
1989	131.6

Source: Malaysia Agricultural Directory.

Of the total output of the chemical industry in 1989 (at 1981 constant prices), the pharmaceutical sector accounted for 4.0 per cent. In 1995, the sector is expected to account for 3.9 per cent of the industry output.

As shown in Table 51, production output in the form of parenterals, increased from 1982 to

1985, only to decrease the following year. Meanwhile, the production output of galenicals decreased from 1982 to 1985 and slightly increased in 1986. The production output of intravenous fluids and tablets decreased from 1982 to 1985 and increased the following year. The increase in the production output of tablets from 1985 to 1986 was very significant.

Table 51
PRODUCTION OUTPUT OF PHARMACEUTICAL LABORATORIES IN MALAYSIA

Preparation	1982	1985	1986
Small volume parenterals (units)	2,425,908	3,378,131	2,717,803
Multidose parenterals (units)	224,554	232,390	222,387
Intravenous fluids (units)	664,758	611,443	614,467
Tablets (units)	559,309,810	524,387,430	702,224,790
Galenicals (kgs)	437,954	374,343	391,257

Source: Malaysian Pharmaceutical Trade and Manufacturers Association (MPTMA).

Of the 3,908 pharmaceutical products registered with the Drug Control Authority, as of December 1987, Malaysia accounted for 27.4 per cent. The United Kingdom and the Federal Republic of Germany accounted for 11.4 and 8.0 per cent, respectively. (See Table 52.)

Table 52
LIST OF MANUFACTURING COUNTRIES OF THE MALAYSIAN PHARMACEUTICAL PRODUCTS

Country	No. of Products	%
Malaysia	1,072	27.43
United Kingdom	445	11.39
Federal Republic of Germany	312	7.98
Switzerland	265	6.78
United States of America	199	5.09
Australia	174	4.45
India	155	3.97
Singapore	148	3.79
Thailand	137	3.51
Denmark	110	2.81
Others	891	22.80
	3,908	100.00

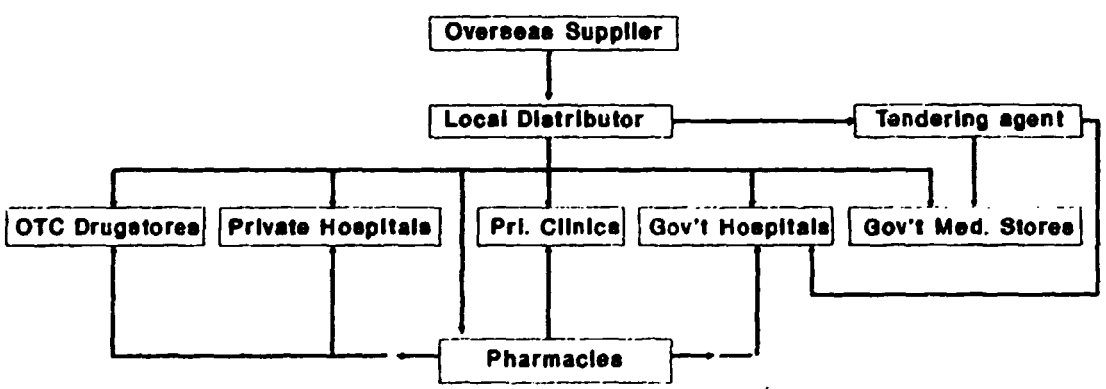
Source: MPTMA.

From the overseas supplier, the fine chemicals either go to the local distributors or to tendering agents. The local distributors then sell the products to any of the following:

- o over the counter drugstores;
- o private hospitals;
- o private clinics;
- o government hospitals; or
- o government medical stores.

The tendering agents may sell to government hospitals and medical stores. The local distributor may also distribute straight to the pharmacists, who sell the items to any of the abovementioned buyers. (See Figure 18.)

Figure 18
FLOW OF PHARMACEUTICAL BUSINESS IN MALAYSIA



Source: MPTMA.

4.2.2 Estimated Market Size

The only available data on demand for any of the fine chemicals included in the study is that for mefenamic acid. The main importer of this product is Parke Davis, which imports 500 kgs per month to make Ponstan, an analgesic.

For the year ending June 1989, the market for analgesic substances in Malaysia and its neighbor country, Singapore, was estimated at US$4.1 million.

To indicate the demand for anti-bacterials/ respiratory tract infection treatments and intravenous solutions in Malaysia, data on the annual sales of selected pharmaceuticals by some members of MPTMA were acquired.

As shown in Table 53, in 1983, 71 per cent of the members of MPTMA had cumulative sales of genito-urinary infection drugs amounting to US$454,000. Sales of genito urinary infection drugs steadily increased until 1986 to US$601 thousand, even as the percentage of members who participated in the survey decreased to an average of 53 per cent for the rest of the period. Sales slightly decreased in 1987 to US$591,000, but was estimated to amount to US$827,000 in 1987.

Meanwhile, 71 per cent of the members of MPTMA sold intravenous solutions amounting to US$59,000 in 1983. This increased significantly until 1985 to US$206,000. Sales decreased the following year to US$175,000 and further, to US$78,000 in 1987. Sales of the drug were expected to slightly increase from the 1987 level.

Table 53
MPTMA ANNUAL SALES SURVEY OF SELECTED PHARMACEUTICALS, 1983 - 1988
(In thousand US$)

	Genito-Urinary System	Intravenous Solutions
1983	454	59
1984	500	107
1985	566	206
1986	601	175
1987	591	78
1988 (est.)	827	80

Note:

	Number of Survey Participating Member Companies	Number of MPMTA Member Companies	Percentage
1983	37	52	71.1
1984	26	50	52.0
1985	26	50	52.0
1986	27	50	54.0
1987	28	52	53.8

Source: MPTMA.

To further indicate the demand for anti-diarrheals and anti-tuberculosis drugs, the incidence of tuberculosis and dysentery are presented.

As shown in Table 54, the incidence of tuberculosis increased from 9,056 in 1982 to 9,361, the following year. This decreased a little, in 1983, and further, to 8,904 cases in 1985. In 1986, tuberculosis cases increased to 9,421. The percentage of death in such cases, significantly dropped from 1.69 per cent in 1985 to 0.09 per cent in 1986. The demand for anti-tuberculosis preparations will be dictated by the pattern of tuberculosis incidence. The decreasing percentage of death indicates the increasing use of such drugs.

Table 54
INCIDENCE OF TUBERCULOSIS IN MALAYSIA, 1982-1986

Year	Incidence	Deaths
1982	9,056	102
1983	9,361	174
1984	9,156	133
1985	8,904	147
1986	9,421	89

Source: MPTMA.

The incidence of dysentery slightly decreased from 1,241 in 1982 to 1,182 the following year. The incidence increased to 1,545 cases in 1984, but significantly decreased to 785 the following year. In 1986, dysentery cases slightly increased to 846. The demand for anti-diarrheals drugs will be partially dictated by the pattern of dysentery cases. (See Table 55.)

Table 55
INCIDENCE OF DYSENTERY IN MALAYSIA, 1982-1986

Year	Incidence	Deaths
1982	1,241	-
1983	1,182	1
1984	1,545	3
1985	785	3
1986	846	1

Source: MPTMA.

The government accounts for 90 per cent of the intravenous fluid market. It is a ready market for the IV fluid components.

4.2.3 Demand Projections

Assuming an annual average growth rate of 7.4 per cent from 1990 to 1995 and a foreign exchange rate of M$2.7 to US$1, the estimated domestic consumption for pharmaceuticals (in US$ million) is expected to increase from US$143.8 million in 1990 to US$205.2 million in 1995. (See Table 56.)

Table 56
ESTIMATED DOMESTIC CONSUMPTION OF PHARMACEUTICALS IN MALAYSIA
1990-1995
(Value in US$ million)

Year	Value
1990	143.8
1991	154.0
1992	165.8
1993	178.6
1994	190.8
1995	205.2

Source: Malaysia Agricultural Directory.

As a whole, the pharmaceutical industry is expected to grow (in volume) by about 10 to 15 per cent in 1990. Primary production of basic pharmaceuticals substances is being encouraged. Several fine chemicals are expected to follow this trend. Assuming an annual average growth rate of 10 per cent for mefenamic acid, apparent demand for the product is expected to increase from 6,600 kilograms in 1990 to 8,785 kilograms in 1993. (See Table 57.)

Table 57
PROJECTED DEMAND FOR MEFENAMIC ACID IN MALAYSIA
(Volume in kgs.)

Year	Volume
1990	6,600
1991	7,260
1992	7,986
1993	8,785

4.2.4 Supply

Only dextrose and glucose are manufactured in Malaysia by a firm called Stanford Chemicals or CPC Products. Most of the consumption of these chemicals, however, go to the food industry.

The firms producing intravenous fluids in the country are: B. Braun of Germany and Optisol. Promedexharm is about to start its operation.

Malaysia's requirement of the fine chemicals covered in the study are sourced through imports. The major importers of the selected fine chemicals are as follows:

- Pfizer (Malaysia) Sdn. Bhd.;
- Hoechst Malaysian Sdn. Bhd.;
- Rhone Poulenc Malaysia Sdn. Bhd.,
- Behn Meyers and Co. (M) Sdn. Bhd.; and
- Parke Davis Sdn. Bhd.

According to the president of the Malaysian Pharmaceutical Society, in order of importance to the industry, the list of imported chemicals follows:

1. mefenamic acid;
2. ibuprofen;
3. sulfamethoxazole and trimethoprim;
4. furazolidone;
5. metronidazole, and
6. anti-tuberculosis drugs.

In 1988, the import volume of glucose in its dry state was 14,000 kilograms, valued at US$24,800. For the first 11 months of 1989, the import volume was 3,870 kilograms, valued at US$4,8000. (See Table 58.)

Table 58
IMPORTS BY MALAYSIA OF GLUCOSE, DRY STATE
(Containing less than 20 per cent by weight of fructose)
(Volume in kgs, value in US$ C.I.F.)

Country of Origin	1988			1989 (Jan.-Nov.)			Total		
	Volume	Value	%	Volume	Value	%	Volume	Value	%
P.R. of China	9,200	8,798	63.49	-	-	-	9,200	8,798	50.11
Singapore	5,000	14,198	34.51	-	-	-	5,000	14,198	27.23
France	-	-	-	3,500	3,030	90.44	3,500	3,030	19.06
F.R. Germany	110	552	0.76	230	908	5.94	340	1,460	1.85
United Kingdom	90	339	0.62	50	391	1.29	140	730	0.76
Japan	80	519	0.55	-	-	-	80	519	0.44
Switzerland	10	132	0.07	40	68	1.03	50	200	0.27
Australia	-	-	-	50	372	1.29	50	372	0.27
USSR	-	-	-	*	20	0.00	*	20	0.00
United States	*	278	0.00	*	18	0.00	*	296	0.00
	14,490	24,817	100.00	3,870	4,807	100.00	18,360	29,624	100.00

Source: Malaysian Trade Statistics.

The major sources of glucose, in its dry state were the People's Republic of China, Singapore, and France, accounting for 50, 27, and 19 per cent, respectively .

Parke Davis used to import mefenamic acid from PT Warner Lambert of Indonesia and Spain. It now procures from South Korea and the Federal Republic of Germany. Generally, South Korea is becoming a important supplier of fine chemicals in Malaysia, as it offers the product at one-third the price of other leading country sources.

4.3 SINGAPORE

4.3.1 Background on the Pharmaceutical Industry

As an effect of the free market economic system of Singapore, most of its imports including fine chemicals used for the pharmaceutical industry are for re-export to its neighboring countries. Ninety-seven per cent of its total sales in 1987 were exports. Its major markets were the United States, Japan, the European Community, and the ASEAN countries. In the domestic market, the major local buyer of pharmaceutical companies, dominated by the multinationals, is the government.

In 1985, the fine chemicals sector trade registered a deficit of US$131 million. However, among the ASEAN countries, it is only Singapore which has a surplus in its trade of fine chemicals specifically used for the pharmaceutical industry. In the same year, it had a total re-export figure of US$111 million, as against an import figure of US$99 million - for a surplus of US$12 million.

The output of the pharmaceutical industry grew by 16.7 per cent in 1987 spurred by increased overseas demand. The workers in the pharmaceutical industry attained the highest value added per worker, at US$423,000, in the manufacturing sector. This is attributed to the industry's high capital intensity, relatively high renumeration, and profitability.

As shown in Table 59, in 1987, Singapore had 18 establishments, employing 1,491 workers in the industry.

Table 59
SINGAPORE PHARMACEUTICAL INDUSTRY DATA
1987

NO. OF ESTABLISHMENTS	18
NO. OF WORKERS	1,491
DOMESTIC SALES (in US$000)	20,516
Wholesalers	15,782
Retailers	2,897
Direct consumption	1,707
Others	130
DIRECT EXPORTS (in US$000)	774,542
Malaysia	10,226
Other ASEAN Countries	21,528
Other overseas countries	742,788

Source: Research and Statistics Unit, Economic Development Board.

Of the total domestic sales of US$20.5 million, 76.9 per cent was made through wholesalers. The retailers and direct endusers accounted for 14.1 and 8.3 per cent, respectively.

Malaysia accounted for 1.3 per cent of Singapore's pharmaceutical exports. The other ASEAN countries made up 2.8 per cent of the country's exports.

In Singapore, the government strongly encourages the manufacturing, blending, assembling, and/or repacking of fine chemicals. It has an open economic policy for the sector, which allows foreign chemical companies to manufacture, blend, distribute. Still, the main target for these chemicals would be the export market, since the domestic market is too small.

4.3.2 Estimated Market Size

Except for trimethoprim, which is manufactured in its intermediate form, generally, the domestic demand for the other fine chemicals used in the pharmaceutical industry is too small to merit local production. As an example, based on an interview with the managing director of a leading pharmaceutical firm, Singapore (through his company) has the capacity to go into the production of trimethoprim and high grade NaCl, but would not venture into such an undertaking due to this particular demand situation. To indicate the demand for the products covered in the study, he ranked some of these according to import volume:

1. dextrose/glucose monohydrate
2. high grade NaCl
3. mefenamic acid
4. metronidazole
5. trimethoprim

He added, anti-tuberculosis drugs are not important since there is no incidence of the disease in Singapore.

4.3.3 Demand Projections

Based on interviews, Singapore would not be a good prospective export market primarily due to its small population, translating into a limited domestic demand.

Furthermore, both the government and the private sector provide comprehensive health care service (preventive, curative, and rehabilitative). Heavily subsidized government health services ensure that health care is available to all. Consequently, the incidence of diseases, particularly those that proliferate due to poor hygene, lack of medical education, and treatment will inevitably be lower than that of countries lacking in comprehensive health programs.

4.3.4 Supply

Due to the minimal imports of the products covered in the study, there were no available data on import statistics of these specific chemicals. These have been classified under very general categories. Furthermore, statistics on these chemicals are kept confidential due to the very stiff competition among its distributors.

Singapore sources its requirements of fine chemicals from the following countries:

Table 60
SOURCES OF SINGAPORE'S IMPORTS
OF SELECTED FINE CHEMICALS
1988

	PRODUCT	SOURCE
Group 1.	Analgesics	
	Mefenamic Acid	P.R.O.C.
	Ibuprofen	P.R.O.C.
Group 2.	Anti-bacterials	
	Metronidazole	Belgium
Group 3.	Anti-bacterials/ respiratory tract infection treatment	
	Sulfamethoxazole	P.R.O.C., Thailand, South Korea, India
Group 4.	Anti-diarrheals	
	Furazolidone	P.R.O.C., Israel, Spain
Group 5.	Anti-tuberculosis drugs	
	Ethambutol	India
Group 6.	Intraveneous fluid components	
	Dextrose/glucose monohydrate	Thailand, Malaysia

Source: Interview.

4.4 THAILAND

4.4.1 Background on the Pharmaceutical Industry

Thailand's fine chemicals industry is still in its early stage of development. Local production is limited to simple formulation of finished products, since the industry is still dependent on imported intermediate and technical grade materials. In 1985, the fine chemicals used for the pharmaceutical industry registered a trade deficit of US$99.0 million.

In 1987, the value added by the pharmaceutical industry was US$79.0 million, accounting for 2.02 per cent of the total chemical industry. This represented an increase from the US$70.0 million (accounting for 2.02 per cent), the previous year. (See Table 61.)

Table 61
VALUE ADDED BY THE PHARMACEUTICAL INDUSTRY
IN THAILAND
1986-1987

	1986	1987
Value Added (US$000)	69,537	78,955
Growth Rate (%)	10.06	11.05
Proportion to Total Chemical Industry (%)	2.02	2.02

Source: Bangkok Bank Monthly Review, August 1988.

As shown in Table 62, the trade deficit steadily increased from US$67.4 million in 1983 to US$94.3 million in 1985. This significantly dropped the following year to US$62.8 million; slightly increasing to US$71.2 million the following year.

Table 62
IMPORTS AND EXPORTS OF THE
PHARMACEUTICAL INDUSTRY IN THAILAND
(In US$ million)

	Imports	Exports	Trade Deficit
1983	79.7	12.3	67.4
1984	79.0	10.4	68.6
1985	104.4	10.1	94.3
1986	73.7	10.9	62.8
1987	84.1	12.9	71.2

Source: Bangkok Bank Monthly Review, August 1988.

In 1987, imports made by the pharmaceuticals industry accounted for 35 per cent of total intermediate materials required. (See Table 63.)

Table 63
FACTORS OF PRODUCTION AND PRODUCTION
OF THE PHARMACEUTICAL INDUSTRY IN THAILAND, 1987
(In US$)

Intermediate materials required	316,541
Imports	109,922
Amount locally produced	206,619
Proportion of imports (%)	34.73
Proportion of local production (%)	65.27

Source: Bangkok Bank Monthly Review, August 1988.

The slow growth of the industry is attributed to the high capital and technology it requires. However, the government recognizes the need for an efficient chemical industry for Thailand to become a newly-industrialized country. It has expressed its willingness to enter into joint ventures with the private sector.

As shown in Table 64, the government lists conditions for setting up various chemical plants engaged in the pharmaceutical and the industrial salt industries.

Table 64
CONDITIONS FOR PROMOTION OF THE PHARMACEUTICAL AND INDUSTRIAL SALT INDUSTRIES IN THAILAND

Industry	Condition
Pharmaceuticals	Capital not less than Baht 10 million exclusive (or about US$400,000).
Industrial salts	Capital not less than Baht 20 million exclusive (or about US$800,000). Only waiver of corporate income tax will be allowed.

Source: Bangkok Bank Monthly Review, August 1988.

Generally, the investment potential in the chemical industry is described as follows:

- o The domestic market is large and has potential for further growth.
- o Thailand is an attractive production base for the transfer of industries in high cost areas like Japan and the Asian NICs.
- o The country is suitable as a regional center for the industry in the Asia-Pacific area.

4.4.2 Estimated Market Size

There is no local production of the products covered in this study. All the chemicals are imported.

Trade statistics gathered are used to indicate apparent demand.

The various fine chemicals used for the pharmaceutical industry were classified under different headings from 1986 to 1987, and 1988. The re-classification of the fine chemicals did not necessarily lead to more specific headings since some of the 1988 classifications actually covered more products. (See Table 65.)

Table 65
PRODUCT CLASSIFICATION (SITC CODE)
FOR SELECTED FINE CHEMICALS IN THAILAND

	Product	1986,1987 Classification	1988 Classification
Group 3.	Anti-bacterials/ respiratory tract infection treatments		
	Trimethoprim	Isonicotinhydrazide and derivatives	Heteroyclic compounds with nitrogen hetero-atoms only, including trimethoprim and pyrazinamide (containing a pyrimidine ring or piperazine ring in the structure; nucleic acids and their salts)
Group 5.	Anti-tuberculosis drugs		
	Isonoiazid, Pyrazinamide	Isonicotinhydrazide and derivatives	Heteroyclic compounds with nitrogen hetero-atoms only, including isoniazid (containing an unfused ring in the structure)
	Ethambutol	Para-aminosalicylic acid and derivatives	Ethambutol including its salts, esters and derivatives
Group 6.	Intravenous fluid components		
	Dextrose/glucose monohydrate	Chemically pure sugar	Chemically pure sugar, excluding sucrose, lactose, maltose, glucose, and fructose
	High grade NaCl	Pure sodium chloride	Pure sodium chloride

Source: Foreign Trade Statistics, Thailand.

As shown in Table 66, the apparent demand for the products, under which the intravenous fluid components are classified, increased from 1986 to 1987. Likewise, the apparent demand for isonicotinhydrazide and its derivatives increased from 1986 to 1987. However, para-aminosalicylic acid and its derivatives significantly decreased for the same period.

Table 66
APPARENT DEMAND FOR FINE CHEMICALS
USED IN THE PHARMACEUTICAL INDUSTRY OF THAILAND,
1986-1987
(Volume in thousand kgs; value in US$000)

	1986		1987	
	Volume	Value	Volume	Value
ANTI-BACTERIALS/RESPIRATORY TRACT INFECTION TREATMENT AND ANTI-TUBERCULOSIS DRUGS				
Isonicotinhydrazide and derivatives (including trimethoprim, isoniazid, and pyrazinamide	2	16	6	89
Para-aminosalicylic acid and derivatives (including ethambutol)	20	589	7	260
INTRAVENOUS FLUID COMPONENTS				
Chemically pure sugars	2,583	2,168	2,978	2,611
High grade NaCl	112	88	183	140

Source: Foreign Trade Statistics, Thailand.

The apparent demand for chemically pure sugars, including dextrose/glucose monohydrate increased from 2.6 million kilograms, valued at US$2.2 million in 1986 to 3.0 million kilograms, valued at US$2.6 million in 1987. Likewise, the apparent demand for high grade NaCl increased from 112,000 kilograms, amounting to US$88,000 in 1986, to 183,000 kilograms, valued at US$140,000, the following year.

The apparent demand for isonicotinhydrazide and its derivatives (under which trimethoprim, pyrazinamide, and isoniazid were classified) was 2,000 kilograms, amounting to US$16,000 in 1986. This significantly increased to 6,000 kilograms in 1987, valued at US$89,000.

In 1986, the apparent demand for para-aminosalicylic acid and its derivatives (under which ethambutol is classified) was 20 thousand kilograms, valued at US$589 thousand. The following year, this dropped to 7,000 kilograms, amounting to US$260 thousand.

From 1988 on, these identified chemicals have been reclassified under the revised Harmonized System (H.S.) by the Customs Department under more specific headings. (See Table 67.)

Table 67
APPARENT DEMAND FOR FINE CHEMICALS USED IN THE PHARMACEUTICAL INDUSTRY OF THAILAND, 1988
(Volume in thousand kgs; value in US$000)

	1988 Volume	1988 Value
ANTI-BACTERIALS/RESPIRATORY TRACT INFECTION TREATMENT AND ANTI-TUBERCULOSIS DRUGS		
Heteroyclic compounds with nitrogen hetero-atoms only, including trimethoprim and pyrazinamide containing a pyrimidine ring or piperazine ring in the structure; nucleic acids and their salts)	121	2,344
Heteroyclic compounds with nitrogen hetero-atoms only, including isoniazid (containing an unfused ring in the structure)	1,766	14,703
Ethambutol including its salts, esters and derivatives	21	182
INTRAVENOUS FLUID COMPONENTS		
Chemically pure sugars, including dextrose/glucose monohydrate (excludes sucrose, lactose, maltose, glucose, fructose)	55	55
High grade NaCl	n.a.	113

Source of basic data: Foreign Trade Statistics, Thailand.

To further indicate demand for anti-bacterials and anti-tuberculosis drugs, number of inpatients of the following diseases are shown below (from 1986 to 1988):

Table 68
NUMBER OF INPATIENTS OF SELECTED DISEASES IN THAILAND, 1986-1988

	1986	1987	1988
Bacillary dysentery and amoebisls	15,186	28,425	28,911
Enteritis and other diarrheal diseases	173,373	217,366	220,392
Tuberculosis of respiratory system	40,048	39,549	37,500
Total population (000's)	53,398	54,961	55,538

Source: Interviews.

The number of inpatients with bacillary dysentery and ameobisls increased from 15,186 in 1986 to 28,911 in 1988. Likewise, inpatients with enteritis and other diarrheal diseases increased from 173,373 in 1986 to 220,392 in 1988. However, the number of inpatients due to tuberculosis has been steadily decreasing since 1986.

4.4.3 Demand Projections

International studies list pharmaceuticals, along with the surfactants, chemicals for the rubber industry, and insecticides as the products with high market potential.

Only specific data for ethambutol were available to make demand projection computations possible.

Assuming a 2.5 per cent annual average growth rate, apparent demand for ethambutol (based on apparent demand from 1986 to 1988) is estimated as follows:

Table 69
PROJECTED DEMAND FOR ETHAMBUTOL
AND ITS DERIVATIVES IN THAILAND
(Volume in kgs.)

Year	Volume
1990	21,525
1991	22,063
1992	22,615
1993	23,180
1994	23,760
1995	24,354
1996	24,962
1997	25,586
1998	26,226
1999	26,882
2000	27,554

Source of basic data: Foreign Trade Statistics, Thailand.

4.4.4 Supply

The country is highly dependent on imports for its basic and/or intermediate fine chemicals requirement.

As shown in Table 70, the major country suppliers of the Thailand of isonicotinhydrazide and its derivative used in the preparation of anti-bacterials and antituberculosis drugs including trimethoprim, pyrazinamide, and isoniazid from 1986 to 1987 are Japan and China, accounting for 22 and 11 per cent of total imports, respectively.

Table 70
IMPORTS BY THAILAND OF ISONICOTINHYDRAZIDE AND ITS DERIVATIVE USED IN THE PREPARATION OF ANTI-BACTERIALS AND ANTITUBERCULOSIS DRUGS, 1986-1987
(Volume in kgs, value in US$000)

Country of Origin	1986			1987			Total		
	Volume	Value	%	Volume	Value	%	Volume	Value	%
Japan	-	-	-	2,000	27	28.57	2,000	27	22.22
China	*	5	0.00	1,000	11	14.29	1,000	16	11.11
Others	2,000	11	100.00	4,000	51	57.14	6,000	62	66.67
	2,000	16	100.00	7,000	89	100.00	9,000	105	100.00

* Negligible.

Source: Foreign Trade Statistics, Thailand.

In 1988, under the new harmonized system of the trade statistics, trimethoprim and pyrazinamide, were classified under heterocyclic compounds with nitrogen hetero-atoms only, (containing a pyrimidine ring or piperazine ring in the structure; nucleic acids and their salts). The country's major suppliers were Japan, China, Sweden, and Spain, accounting for 26, 24, 20, and 15 per cent, respectively. (See Table 71.)

Table 71
IMPORTS BY THAILAND OF HETEROCYCLIC COMPOUNDS WITH NITROGEN HETERO-ATOMS ONLY (CONTAINING A PYRIMIDINE OR PIPERAZINE RING), 1988
(Volume in kgs, value in US$000)

Country of Origin	Volume	Value	%
Japan	32,000	649	26.02
China	30,000	710	24.39
Sweden	24,000	98	19.51
Spain	19,000	80	15.45
Korea, Rep. of	9,000	262	7.32
Others	9,000	579	7.32
	123,000	2,378	100.00

Source: Foreign Trade Statistics, Thailand.

Under the same system, isoniazid was classified under heteroyclic compounds with nitrogen hetero-atoms only, (containing an unfused ring in the structure). In 1988, Japan and China accounted for 55 and 31 per cent, respectively. (See Table 72.)

Table 72
IMPORTS BY THAILAND, HETEROCYCLIC COMPOUNDS WITH NITROGEN HETERO-ATOMS ONLY (CONTAINING AN UNFUSED RING) BY THAILAND, 1988
(Volume in kgs; value in US$000)

Country of Origin	Volume	Value	%
Japan	973,000	7,702	55.10
China	539,000	4,158	30.52
Sweden	238,000	1,870	13.48
Spain	5,000	90	0.28
Korea, Rep. of	2,000	9	0.11
Others	9,000	874	0.51
	1,766,000	14,703	100.00

Source: Foreign Trade Statistics, Thailand.

As shown in Table 73, the major supplier of Thailand of ethambutol and para-amino-salicylic acid and its derivatives for antituberculosis preparation 1986 to 1987 is India, accounting for 44 per cent of total imports.

Table 73
IMPORTS BY THAILAND OF ETHAMBUTOL AND PARA-AMINO-SALICYLIC ACID AND DERIVATIVES, 1986-1987
(Volume in kgs, value in US$000)

Country of Origin	1986			1987			Total		
	Volume	Value	%	Volume	Value	%	Volume	Value	%
India	8,000	260	40.00	4,000	122	57.14	12,000	382	44.44
Italy	*	6	0.00	1,000	61	14.29	1,000	67	3.70
Others	12,000	323	60.00	2,000	77	28.57	14,000	400	51.85
	20,000	589	100.00	7,000	260	100.00	27,000	849	100.00

* Negligible.

Source: Foreign Trade Statistics, Thailand.

In 1988, under the new harmonized system of the Thailand's trade statistics, ethambutol was classified under the heading: ethambutol including its salts, esters, and other derivatives for the production of antituberculosis preparations. The United States accounted for 76 per cent of total imports. (See Table 74.)

TABLE 74
IMPORTS BY THAILAND OF ETHAMBUTOL INCLUDING ITS SALTS, ESTERS, AND OTHER DERIVATIVES, 1988
(Volume in kgs, value in US$000)

Country of Origin	Volume	Value	%
United States	16,000	21	76.19
India	3,000	123	14.29
Others	2,000	38	9.52
Total	21,000	182	100.00

Scurce: Foreign Trade Statistics, Thailand.

The major sources of Thailand's supply of chemically pure sugar from 1986 to 1987 are the Netherlands and France, accounting for 43 and 27 per cent of total imports, respectively. Other major sources are New Zealand, Japan, and China. (See Table 75.)

Table 75
IMPORTS BY THAILAND OF CHEMICALLY PURE SUGAR, 1986-1987
(Volume in kgs, value in US$000)

Country of Origin	1986			1987			Total		
	Volume	Value	%	Volume	Value	%	Volume	Value	%
Netherlands	783,000	743	37.04	1,381,000	1,395	8.10	2,164,000	2,138	43.41
France	492,000	338	23.27	835,000	510	29.08	1,327,000	848	26.62
New Zealand	359,000	252	16.98	328,000	271	11.42	687,000	523	13.78
Japan	420,000	489	19.87	203,000	243	7.07	623,000	732	12.50
China	60,000	30	2.84	124,000	93	4.32	184,000	123	3.69
Others	470,000	318	22.23	114,000	109	3.97	584,000	427	11.72
	2,114,000	1,852	100.00	2,871,000	2,512	100.00	4,985,000	4,364	100.00

Source: Foreign Trade Statistics, Thailand.

In 1988, under the new harmonized system of the Thailand's trade statistics, the chemically pure sugar imports (excluding sucrose, lactose, maltose,glucose, and fructose) were mainly from the Netherlands, France, and New Zealand. (See Table 76.)

Table 76
IMPORTS BY THAILAND OF CHEMICALLY PURE SUGAR, 1988
(Volume in kgs; value in US$000)

Country of Origin	Volume	Value	%
Netherlands	19,000	16	33.93
France	18,000	12	32.14
New Zealand	18,000	23	32.14
China	1,000	7	1.79
	56,000	58	100.00

Source: Foreign Trade Statistics, Thailand.

As shown in Table 77, the major supplier of Thailand of pure sodium chloride from 1986 to 1988 is the Federal Republic of Germany, accounting for almost 50 per cent of total imports. In 1988, the Federal Republic of Germany supplied Thailand with 137 thousand kilograms, valued at US$97 thousand. This accounted for 67 per cent of imports.

Table 77
IMPORTS BY THAILAND OF PURE SODIUM CHLORIDE, 1986-1988
(Volume in kgs; value in US$000)

	1986			1987			1988			Total		
Country of Origin	Volume	Value	%	Volume	Value	%	Volume	Value	%	Volume	Value	%
P. R. Germany	86,000	56	41.15	109,000	76	42.59	137,000	97	67.49	332,000	229	49.70
New Zealand	15,000	7	7.18	70,000	30	27.34	40,000	18	19.70	125,000	55	19.71
Others	81,000	15	38.76	23,000	5	8.98	1,000	2	0.49	105,000	22	15.72
Japan	27,000	23	12.92	35,000	36	12.67	12,000	12	5.31	74,000	71	11.09
China	-	-	-	17,000	1	6.64	12,000	6	5.91	29,000	7	4.34
Italy	*	**	0.00	2,000	1	0.78	1,000	1	0.49	3,000	2	0.45
	209,000	101	100.00	256,000	149	100.00	203,000	135	100.00	668,000	386	100.00

* Negligible.
** Less than US$500.

Source: Foreign Trade Statistics, Thailand.

Republic of the Philippines
CONGRESS OF THE PHILIPPINES
Metro Manila

THE GENERICS ACT OF 1988
(Republic Act No. 6675)

AN ACT TO PROMOTE, REQUIRE AND ENSURE THE PRODUCTION OF AN ADEQUATE SUPPLY, DISTRIBUTION, USE AND ACCEPTANCE OF DRUGS AND MEDICINES IDENTIFIED BY THEIR GENERIC NAMES

Be it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:

Section 1. **Title.** - This act shall be known as the Generics Act of 1988.

Section 2. **Statement of Policy.** It is hereby declared the policy of the State:

To promote, encourage, and require the use of generic terminology in the importation, manufacture, distribution, marketing, advertising and promotion, prescription and dispensing of drugs;

To ensure the adequate supply of drugs with generic names at the lowest possible cost and endeavor to make them available for free to indigent patients;

To encourage the extensive use of drugs with generic names through a rational system of procurement and distribution;

To emphasize the scientific basis for use of drugs, in order that health professionals may become more aware and cognizant of their therapeutic effectiveness; and

To promote drug safety by minimizing duplication in medications and/or use of drugs with potentially adverse drug interactions.

Section 3. **Definition of Terms.** - The following terms are herein defined for purposes of this Act:

(1) "Generic Name or Generic Terminology is the identification of drugs and medicines by their scientifically and internationally recognized active ingredients or by their official generic name as determined by the Bureau of Food and Drugs of the Department of Health.

(2) "Active Ingredient" is the chemical component responsible for the claimed therapeutic effect of the pharmaceutical product.

(3) "Chemical Name" is the description of the chemical structure of the drug or medicine and serves as the complete identification of a compound.

(4) "Drug Product" is the finished product form that contains the active ingredients, generally but not necessarily is association with inactive ingredients.

(5) "Drug Establishment" is any organization or company involved in the manufacture, importation, repacking, and.or distribution of drugs or medicines.

(6) "Drug Outlets" means drugstores, pharmacies, and any other business establishments which sells drugs or medicines.

(7) "Essential Drugs List" or "National Drug Formulary" is a list of drugs prepared and periodically updated by the Department of Health on the basis of the health conditions obtaining in the Philippines as well as on internationally accepted criteria. It shall consist of a core list and a complementary list.

(8) "Core List" is a list of drugs that meets the health care needs of the majority of the population.

(9) "Complementary List" is a list of alternative drugs used when there is no response to the core essential drug or when there is a hypersensitivity reaction to the core essential drug or when, for one reason or another, the core essential drug cannot be given.

(10) "Brand Name" is the proprietary name given by the manufacturer to distinguish its product from those of competitors.

(11) "Generic Drugs" are drugs not covered by patent protection and which are labelled solely by their international non-proprietary or generic name.

Section 4. The Use of Generic Terminology for Essential Drugs and Promotional Incentives. - (a) In the promotion of the generic names for pharmaceutical products, special consideration shall be given to drugs and medicines which are included in the Essential Drugs List to be prepared within one hundred eighty (180) days from approval of this Act and updated quarterly by the Department of Health on the basis of health conditions obtaining in the Philippines as well as on internationally accepted criteria.

(b) The exclusive use of generic terminology in the manufacture, marketing, and sales of drugs and medicines, particularly those in the Essential Drugs List, shall be promoted through such a system of incentives as the Board of Investments jointly with the Department of Health and other government agencies as may be authorized by law, shall promulgate in accordance with existing laws, within one hundred eighty (180) days after approval of this Act.

Section 5. **Posting and Publication** - The Department of Health shall publish annually in at least two (2) newspapers of general circulation in the Philippines the generic names, and the corresponding brand names under which they are marketed, of all drugs and medicines available in the Philippines.

Section 6. **Who Shall Use Generic Terminology.** - (a) All government health agencies and their personnel as well as other government agencies shall use generic terminology or generic names in all transactions related to purchasing, prescribing, dispensing and administering drugs and medicines.

(b) All medical, dental, and veterinary practitioners, including private practitioners, shall write prescriptions using the generic name. The brand name may be included if so desired.

(c) Any organization or company involved in the manufacturing, importation, repacking, marketing, and/or distribution of drugs and medicines shall indicate prominently the generic name of product. In the case of brand name products, the generic name shall appear prominently and immediately above the brand name in all product labels as well as in advertising and other promotional materials.

(d) Drug outlets, including drugstores, hospital and non-hospital pharmacies and non-traditional outlets such as supermarkets and stores, shall inform any buyer about any and all other drug products having the same generic name, together with their corresponding prices so that the buyer may adequately exercise his option. Within one (1) year after approval of this Act, the drug outlets referred to herein, shall post in conspicuous places in their establishments, a list of drug products with the same generic name and their corresponding prices.

Section 7. **Provision on Equality, Manufacturer's Identity and Responsibility.** - In order to assure responsibility for drug quality in all instances, the label of all drugs and medicines shall have the following: name and country of manufacture, dates of manufacture and expiration. The quality of such generically labelled drugs and medicines shall be duly certified by the Department of Health.

Section 8. **Required Production.** - Subject to the rules and regulations promulgated by the Secretary of Health, every drug manufacturing company operating in the Philippines shall be required to produce, distribute, and make available to the general public the medicine it produces, in the form of generic drugs.

Section 9. **Rules and Regulations.** - The implementation of the provisions of this Act shall be in accordance with the rules and regulations to be promulgated by the Department of Health. Rules and regulations with penal sanctions shall be provided within one hundred eighty (180) days after approval of this Act and shall take effect fifteen (15) days after publication in the Official Gazette or in two (2) newspapers of general circulation.

Section 10. **Authority to Import.** - Within three (3) days from the effectivity of this Act, extendible by the President for another two (2) years and during periods of critical shortage and absolute necessity, the Department of Health is hereby authorized to import raw materials of which there is a shortage for the use of Filipino-owned or controlled drug establishments to be marketed and sold exclusively under generic nomenclature. The President may authorize the importation of raw materials tax and duty-free. The Secretary of Health shall ensure that the imported raw materials are allocated fairly and efficiently among Filipino-owned or controlled drug establishments. He shall submit to the Office of the President and to Congress a quarterly report on the quantity, kind, and value of the raw materials imported.

Section 11. **Education Drive.** The Department of Health jointly with the Department of Education, Culture, and Sports, Philippine Information Agency and the Department of Local Government shall conduct a continuous information campaign for the public and a continuing education and training for the medical and allied medical professions on drugs with generic names as an alternative of equal efficacy to the more expensive brand name drugs. Such educational campaign shall include information on the illnesses or symptoms which each generically named drug is supposed to cure or alleviate, as well as its contraindications. The Department of Health with the assistance of the Department of Local Government and the Philippine Information Agency shall monitor the progress of the education drive, and shall submit regular reports to Congress.

Section 12. **Penalty.** - A) Any person who shall violate Section 6 (a) or 6 (b) of this Act shall suffer the penalty graduated hereunder, viz:

(a) for the first conviction, he shall suffer the penalty of reprimand which shall be officially recorded in the appropriate books of the Professional Regulation Commission.

(b) for the second conviction, the penalty of fine in the amount of not or less than two thousand pesos (₱2,000) but not exceeding five thousand pesos (₱5,000) at the discretion of the court.

(c) for the third conviction, the penalty of fine in the amount of not less than five thousand pesos (₱5,000) but not exceeding ten thousand pesos (₱10,000) and suspension of his licenses to practice his profession for thirty (30) days at the discretion of the court.

(d) for the fourth and subsequent convictions, the penalty of fine of not less than ten thousand pesos (₱10,000) and suspension of his license to practice his profession for thirty (30) days at the discretion of the court.

B) Any juridical person who violates Section 6(c), 6(d), 7 or 8 shall suffer the penalty of a fine of not less than five thousand pesos (₱5,000) nor more than ten thousand pesos (₱10,000) and suspension or revocation of license to operate such drug establishment or drug outlet at the discretion of the Court: **Provided,** That its officers directly responsible for the violation shall suffer the penalty of fine and suspension or revocation of license to practice profession, if applicable, any by imprisonment of not less than six (6) months nor more than one (1) year or both fine and imprisonment at the discretion of the Court; and **Provided,** further, That if the guilty party is an alien, he shall be ipso facto deported after service of sentence without need of further proceedings.

C) The Secretary of Health shall have the authority to impose administrative sanctions such as suspension or cancellation of license to operate or recommend suspension of license to practice profession to the Professional Regulation Commission as the case may be for the violation of this Act.

Section 13. **Separability Clause.** - If any provision of this Act is declared invalid, the remainder of any provision hereof not affected thereby shall remain in force and effect.

Section 14. **Repealing Clause.** - The provisions of any law, executive order, presidential decree or any other issuances inconsistent with this Act are hereby repealed or modified accordingly.

Section 15. Effectivity. This Act shall take effect fifteen (15) days after its complete publication in the Official Gazette or two (2) newspapers of general circulation.

Approved,

(Sgd.) RAMON V. MITRA
Speaker of the House
Representatives

(Sgd.) JOVITO R. SALONGA
President of the Senate

This Act which is a consolidation of Senate Bill No. 453 and House Bill No. 10900 was finally passed by the Senate and the House of Representatives on August 25, 1988 and August 31, 1988, respectively.

(Sgd.) QUIRINO D. ABAD SANTOS, JR.
Secretary of the House of Representatives

(Sgd.) EDWIN P. ACOBA
Secretary of the Senate

Approved: September 13, 1988

(Sgd.) CORAZON C. AQUINO
President of the Philippines