SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D. C. 20549

FORM 10-K

Annual Report Pursuant to Section 13 or 15(d) of
the Securities Exchange Act of 1934

For the fiscal year ended December 31, 1977 — Commission file number 1-2516

MONSANTO COMPANY

(Exact name of registrant as specified in its charter)

DELAWARE	43-0420020
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)
800 NORTH LINDBERGH BLVD., ST. LOUIS, MO.	63166
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code (314) - 694-1000

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
$2.75 Cumulative Convertible Preferred Stock	New York Stock Exchange
Common Stock, $2 par value	New York Stock Exchange
9¼% Sinking Fund Debentures due 2000	New York Stock Exchange
8¼% Sinking Fund Debentures due 2000	New York Stock Exchange
8% Notes due 1985	New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Act:

None

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ✓ No_

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the close of the period covered by this report.

Class	Outstanding at December 31, 1977
Common Stock, $2 par value	36,280,720 shares

PART I

Monsanto Company ("the Company") was incorporated in 1933 under Delaware law and is the successor to a Missouri corporation, Monsanto Chemical Works, organized in 1901. Except where otherwise indicated, the term "Monsanto," as used in this report means the Company and all subsidiaries in which it has more than a 50% interest taken as a whole.

Item 1. BUSINESS AND PRODUCTS

Monsanto is a multi-national company engaged directly and through subsidiaries in the manufacture and sale of a widely diversified line of products derived principally from petroleum, natural gas and phosphate ore, along with other raw materials. Monsanto chemicals, plastics and fibers are marketed as raw materials and intermediate products, and also are converted by Monsanto into finished products. Within the Company, there are six unincorporated operating units known as operating companies: Monsanto Agricultural Products Company, Monsanto Chemical Intermediates Company, Monsanto Commercial Products Company, Monsanto Industrial Chemicals Company, Monsanto Plastics & Resins Company, and Monsanto Textiles Company.

Monsanto's Operating Company and World Area data for 1977 and 1976 as shown herein have been restated to reflect new reporting requirements of the Financial Accounting Standards Board. The restatement consisted of separating eliminations and certain corporate expenses from the operating companies' results, which amounts had previously been allocated. Financial data for 1975, 1974, and 1973 have not been restated.

Operating Company Data

Selected Financial Information (Dollars in millions)

	Net Sales	Operating Income (Loss)	Total Assets	Depreciation, Obsolescence and Depletion	Capital Expenditures	Research and Development
1977						
Agricultural Products	$ 654.0	$273.4	$ 576.6	$ 29.6	$ 81.2	$ 19.6
Chemical Intermediates	505.0	138.3	715.4	41.0	208.4	15.9
Commercial Products	385.4	(15.2)	280.8	48.5	22.0	24.0
Industrial Chemicals	1,054.6	209.7	691.7	43.5	80.2	23.0
Plastics & Resins	1,111.2	76.3	891.9	50.4	89.4	24.2
Textiles	884.3	(39.0)	1,011.2	82.0	127.2	25.6
Eliminations		(1.1)	(3.1)			
Unallocated corporate expenses		(26.7)		1.0		
Total Operating	4,594.5	609.7	4,164.5	296.0	605.4	132.3
Income charges (credits)		86.0				
Nonoperating assets			185.6		1.7	
Total Consolidated	$4,594.5	$523.7[1]	$4,350.1	$296.0	$607.1	$132.3
1976						
Agricultural Products	$ 573.2	$340.6	$ 460.6	$ 13.2	$127.0	$ 15.7
Chemical Intermediates	476.2	152.6	593.9	43.7	175.9	12.8
Commercial Products	398.2	(0.1)	291.2	27.5	32.1	21.4
Industrial Chemicals	980.4	206.6	586.6	35.1	79.1	21.7
Plastics & Resins	1,018.7	100.6	752.9	36.6	82.2	17.9
Textiles	853.5	(1.2)	947.5	69.2	147.8	24.8
Eliminations		(6.8)	(0.7)			
Unallocated corporate expenses		(24.7)		0.5		
Total Operating	4,270.2	667.8	3,634.0	226.0	644.1	114.3
Income charges (credits)		50.1				
Nonoperating assets			325.1		2.7	
Total Consolidated	$4,270.2	$617.7[1]	$3,959.1	$226.0	$646.8	$114.3

[1] Income before income taxes

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The principal product lines included in each operating company are shown in the "Sales by Product Group" data that follows. Total sales between operating companies made on a market basis were $195.0 and $181.7 for 1977 and 1976, respectively. These sales were not significant for any operating company except Chemical Intermediates ($127.2 for 1977; $123.8 for 1976) and Industrial Chemicals ($40.5 for 1977; $36.2 for 1976).

Included in Commercial Products' operating loss for 1977 was a $35.6 charge related to the Cycle-Safe® container. Textiles' and Plastics & Resins' operating results for 1977 included $11.7 and $7.0 charges, respectively, related to terminating or divesting certain product lines. Included in Textiles' operating loss for 1976 was a $12.4 charge resulting from the closing of a plant. Commercial Products' operating loss for 1976 included a $9.4 charge resulting from the acceleration of provisions for obsolescence of certain machinery and equipment.

Intercompany receivables and profit derived from intercompany sales were the principal items reflected as eliminations in arriving at the consolidated totals. Certain corporate expenses, primarily those related to the overall management of the Company, were not allocated to the operating companies. Nonoperating assets principally include cash, short-term securities and time deposits, and investments.

World Area Data

Selected Financial Information (Dollars in millions)

	Net Sales				
	Outside Customers	Inter-Area	Operating Income	Total Assets	Capital Expenditures
1977					
United States	$3,409.8	$317.0	$614.1	$3,030.4	$494.6
Europe	706.0	43.4	5.5	910.8	162.7
Other Ex-USA	479.0	15.2	18.9	385.8	18.1
Eliminations		(376.5)	(5.1)	(162.5)	
Unallocated corporate expenses			(26.7)		
Total Operating	4,594.5	—	609.7	4,164.5	605.4
Income charges (credits)			86.0		
Nonoperating assets				185.6	1.7
Total Consolidated	$4,594.5	$ —	$523.7[1]	$4,350.1	$607.1
1976					
United States	$3,165.7	$283.5	$616.1	$2,660.4	$473.8
Europe	669.4	54.5	54.8	752.0	143.3
Other Ex-USA	435.1	22.4	15.0	354.6	27.3
Eliminations	—	(360.4)	6.6	(133.3)	
Unallocated corporate expenses			(24.7)		
Total Operating	4,270.2	—	667.8	3,634.0	644.1
Income charges (credits)			50.1		
Nonoperating assets				325.1	2.7
Total Consolidated	$4,270.2	$ —	$617.7[1]	$3,959.1	$646.8

[1] Income before income taxes

Inter-area sales, which are sales from one Monsanto location to another Monsanto location in a different world area, were made on a market basis. Export sales included in the United States net sales to outside customers were as follows:

	Europe	Other Ex-USA	Total
1977	$49.6	$198.8	$248.4
1976	33.5	169.6	203.1

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United States operating income for 1977 included a charge of $35.6 related to the Cycle-Safe® container. Europe operating income for 1977 included a $12.2 charge from terminating or divesting certain product lines. Included in United States operating income for 1976 were charges of $12.4 and $9.4 relating to the closing of a plant and accelerated provisions for obsolescence of certain machinery and equipment, respectively.

Inter-area receivables and profit derived from inter-area sales are the principal items reflected as eliminations in arriving at the consolidated totals. Unallocated corporate expenses and nonoperating assets are the same as those described for the Operating Company Data.

Following is a reconciliation of the Europe and Other Ex-USA operating income and total assets shown above to the Company's equity in the net loss and net assets of consolidated Ex-USA subsidiaries:

	1977	1976		1977	1976
Operating income	$ 27.4	$ 69.8	Total assets	$1,296.6	$1,111.7
Income charges — net	51.0	54.0	Total liabilities	764.2	619.6
Income taxes	14.7	30.0			
Net loss	$(68.3)	$(14.2)	Net assets	$ 532.4	$ 492.1

Sales and Equity in Net Income — 1973 to 1975 (Dollars in millions)

Total sales of Ex-USA subsidiaries and the Company's equity in net income were as follows:

	Sales	Equity in Net Income
1975	$966.1	$ 8.0
1974	971.4	62.3
1973	719.6	43.4

Sales and Operating Income Data — 1973 to 1975 (Dollars in millions)

The following table compares net sales and operating income (i.e., income before other income, interest charges, other income charges, and provision for income taxes) for Monsanto's six lines of business:

	Sales			Operating Income[1]		
	1975	1974	1973	1975	1974	1973
Agricultural Products	$ 547.4	$ 410.7	$ 283.4	$232.9	$176.7	$118.3
Chemical Intermediates	390.3	416.8	247.3	90.2	82.2	30.0
Commercial Products	318.7	299.0	239.3	(11.1)	(15.6)	(9.6)
Industrial Chemicals	852.8	788.8	553.5	193.8	143.3	84.0
Plastics & Resins	766.3	812.6	622.4	36.8	98.4	74.0
Textiles [2]	747.2	770.0	701.8	(17.2)	65.2	119.5
Total Consolidated	$3,624.7	$3,497.9	$2,647.7	$547.4	$550.2	$408.8

[1] Management believes that allocation of other income, interest charges, and other income charges to lines of business would be arbitrary since these revenues and expenses do not specifically relate to the operations of Monsanto's operating units.

[2] Includes net sales of $69.7 and an operating loss of $3.8 in 1974 contributed by Olympia Industries, Inc., the assets of which were acquired in July 1974.

PRINCIPAL PRODUCTS

The following is a list of major products within Monsanto's six lines of business:

Agricultural Products

Herbicides, Insecticides and Other Products: Herbicides and insecticides; nitrogenous fertilizer materials such as anhydrous ammonia, ammonium nitrate, and blended mixed fertilizers; ammonium nitrate based industrial blasting agents; animal breeding stock; nitric acid; and a plant growth regulator.

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Chemical Intermediates

Petrochemicals (including Textiles Intermediates): Chemicals derived from oil or gas, including styrene monomer, acrylonitrile, phenol, acetic acid, benzene, methanol, ethylene and propylene, used by Monsanto or its customers to make plastics, man-made fibers, synthetic rubber and other chemicals; adipic acid, adiponitrile, hexamethylenediamine, and nylon salt used by Monsanto or its customers to make flavorings, coatings, plastics and nylon fiber.

Process Chemicals: Phthalic anhydride, maleic anhydride and fumaric acid for use as intermediates in coatings, drugs, dyes, plastics and flavorings; defoamers; phosphorous pentasulfide; phosphorous trichloride, phosphorous oxychloride, monochlorobenzene, nitrochlorobenzenes and their derivatives; sulfuric acid; hydrochloric acid; caustic potash; and sodium sulfite.

Oil & Gas Production and Exploration: Crude oil and natural gas.

Commercial Products

Process Controls and Electronics: Process control electronic instrumentation, valves, gas regulators and other similar products; semiconductor materials; and optoelectronic devices.

Chemical and Environmental Systems: Pollution abatement systems, engineering and construction services and vanadium catalyst.

Industrial Chemicals

Detergents and Phosphates: Phosphoric acid and its sodium, calcium, ammonium and potassium salts for synthetic detergents, dentifrices and many other uses; other detergent intermediates such as biodegradable alkylbenzenes and nonionic actives, germicides and soap bacteriostats.

Specialty Chemicals: Flavorings and fragrances; aspirin and other pharmaceuticals; lactic, fumaric and adipic acids; phosphate leavening agents and food ingredients; animal feed supplements and antioxidants; functional fluids including energy transfer fluids; bleaching compounds; silicate esters and silica sols for a wide variety of industrial uses; bone ash; lampblack; print paste thickeners; and ammonium phosphate formulations for wildfire control.

Rubber Chemicals: Accelerators, antioxidants and other chemicals for processing natural and synthetic rubbers; test instruments and specialized production equipment for the rubber processing industry.

Plasticizers: Plasticizers used to impart flexibility to plastics and fire retardants.

Plastics & Resins

Plastic Materials: Thermoplastics including polystyrene, ABS, SAN, polyethylene, nylon and Fome-Cor® board used to make appliance housings, automotive parts, foamed products, construction materials, packaging and consumer products.

Resin Products: Polyvinyl butyral sheet used to make laminated glass; specialty resins including phenolic, melamine, urea and vinyl acetates used to make surface coatings, adhesives and bonding materials; and fortified rosin and rosin sizes, wet strength resins and specialty coatings for paper.

Fabricated Products: Plastic end products including bottles, molded products and plastic coated fabrics; low density polyethylene film; and AstroTurf® functional surfaces.

Textiles

Man-Made Fibers and Fabrics: Nylon 6,6, acrylic, modacrylic and polyester fibers for use either singly or in combination with other man-made or natural fibers and Ceres® and other spun-bonded fabrics in a wide range of consumer and industrial applications.

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Sales by Product Group (Dollars in millions)

The table below sets forth the dollar amount and percentage of Monsanto's net sales contributed by each product group during the last five years:

	Year Ended December 31,									
	1977		1976		1975		1974		1973	
Agricultural Products:										
Herbicides, Insecticides & Other Products	$ 654.0	14.2%	$ 573.2	13.4%	$ 547.4	15.1%	$ 410.7	11.7%	$ 283.4	10.7%
Chemical Intermediates:										
Petrochemicals	286.6	6.2	264.0	6.6	230.5	6.4	256.1	7.4	143.6	5.4
Process Chemicals	137.6	3.0	125.5	2.9	101.3	2.8	107.9	3.1	74.3	2.8
Oil & Gas Production and Exploration	80.8	1.8	67.0	1.6	58.5	1.6	50.8	1.5	29.5	1.1
	505.0	11.0	476.5	11.1	390.3	10.8	416.8	12.0	247.3	9.3
Commercial Products:										
Process Controls & Electronics	334.4	7.3	286.3	6.7	237.9	6.6	213.4	6.1	194.3	7.4
Chemical & Environmental Systems and Other Products	51.0	1.1	111.9	2.6	80.8	2.2	86.6	2.5	45.0	1.7
	385.4	8.4	398.2	9.3	318.7	8.8	299.0	8.6	239.3	9.1
Industrial Chemicals:										
Detergents & Phosphates	338.4	7.3	310.5	7.3	315.4	8.7	254.5	7.3	173.9	6.6
Specialty Chemicals	293.7	6.4	254.9	6.0	206.3	5.7	196.5	5.6	143.8	5.4
Rubber Chemicals	228.8	5.0	199.0	4.7	172.4	4.7	169.7	4.8	127.3	4.8
Plasticizers	203.7	4.4	186.0	4.4	158.7	4.4	166.1	4.8	108.6	4.1
	1,064.6	23.0	950.4	22.4	852.8	23.5	786.8	22.5	553.5	20.9
Plastics & Resins:										
Plastic Materials	589.9	12.8	514.4	12.0	360.5	9.9	395.4	11.5	289.5	10.9
Resin Products	321.1	7.0	291.5	6.8	223.5	6.2	227.9	6.5	184.8	7.0
Fabricated Products	200.9	4.4	212.8	5.0	184.3	5.1	189.3	5.4	148.7	5.6
	1,111.9	24.2	1,018.7	23.8	768.3	21.2	812.6	23.2	622.4	23.5
Textiles:										
Man-Made Fibers [1]	864.3	18.9	853.5	20.0	747.2	20.6	770.0	22.0	701.8	26.5
Total Consolidated	$4,594.5	100.0%	$4,270.5	100.0%	$3,624.7	100.0%	$3,497.9	100.0%	$2,647.7	100.0%

[1] Includes $69.7 (2.0%) in 1974 contributed by Olympia Industries, Inc., the assets of which were acquired in July 1974.

International Operations

The Company is engaged in manufacturing, sales or research operations through subsidiary and affiliated companies in Europe, Canada, Latin America, Australia, Asia and Africa. A substantially full line of products is manufactured abroad. Monsanto has investments, either directly or through affiliated companies, in 98 manufacturing plants in 21 foreign countries, and it maintains 76 sales offices in 42 foreign countries. In addition, certain manufacturing facilities in continental Europe are being expanded and major new manufacturing facilities are nearing completion in the United Kingdom and, through an affiliate, are starting up in Australia. As of December 31, 1977, Monsanto had approximately 17,850 employes located outside the United States, virtually all of whom were foreign nationals.

Export and foreign subsidiary sales were $1,433.4 million in 1977 and $1,306.6 million in 1976, representing approximately 31% of Monsanto's worldwide net sales in both of those years. The rate of profitability on export sales was greater than on domestic sales in 1977 and 1976. The rate of profitability on foreign subsidiary sales and other foreign investments in 1977 and 1976 was lower than the

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rate of profitability on domestic sales reflecting the slow economic recovery and soft demand outside of the United States. In 1977 foreign operations incurred losses, principally because of the poor results of European textile fibers and plastic materials businesses. Monsanto does not receive a current tax benefit as a result of certain of these losses. Included in these losses were write-offs of several small unprofitable segments of the textile fiber and plastics businesses.

Monsanto's foreign operations are subject to a number of potential risks and limitations, such as fluctuations in currency values, exchange control regulations, wage and price controls and domestic and foreign governmental policies affecting United States companies doing business abroad. Net after tax exchange losses resulting from foreign currency transactions, translation of foreign currency financial statements and currency hedging were $34.2 million in 1977 compared to $18.9 million in 1976. During the last two years European operations accounted for approximately 50% of Monsanto's foreign net sales and approximately 87% of its foreign capital expenditures and 83% of its foreign gross plant investment.

Sale of Products

Monsanto's products are sold directly to various industries, to distributors and jobbers and to the general public, principally by its own sales force.

Raw Materials and Energy Resources

Although Monsanto produces a significant portion of its raw material requirements internally, the major portion of its needs is purchased from outside sources. Monsanto does not consider itself dependent upon any one supplier for a material amount of its total fuels and raw material purchases, but certain important fuels and raw materials, including condensate, natural gas, benzene, cyclohexane, coal and various chemical intermediates, are obtained from a few major suppliers. While these fuels and raw materials are currently available and Monsanto has contracted with various suppliers to purchase a substantial part of its anticipated 1978 requirements, their continuing availability and price are subject to domestic and world market conditions.

As of October 1, 1977, the Company has also entered into an arrangement with the Continental Oil Company ("Conoco") to manufacture jointly additional quantities of ethylene and related products at the Company's Chocolate Bayou plant near Alvin, Texas and to process jointly crude oil at Conoco's Lake Charles, Louisiana refinery into feedstock suitable for the Chocolate Bayou ethylene facility. The expansions of both facilities are now expected to be completed in late 1980 or early 1981. Each party will provide its own crude oil for processing into feedstock at the Lake Charles facility, but Conoco will, for approximately ten years after the completion of the Lake Charles facility expansion, sell Monsanto a portion of its anticipated crude oil needs for feedstock manufacture.

Monsanto uses natural gas as an energy source in the operation of many of its production facilities and as a raw material. In recognition of a growing shortage of natural gas supplies in the United States, Monsanto has initiated a program of facility revisions to permit use of alternate fuels and also to reduce fuel consumption through an extensive energy conservation program. Final phases of this initial fuel conversion program will be substantially completed in 1978. Economics and government actions may require a continuing program of fuel conversions and substitutions in future years. The total impact of any such actions cannot be accurately predicted.

Monsanto's ability to obtain petroleum products and crude oil for domestic petrochemical feedstocks and fuels is subject to regulations administered by, among others, the Department of Energy. Although Monsanto's operations have not been significantly curtailed by these programs, the future impact of present allocation programs or any future programs cannot be accurately predicted. A number of previously existing federal allocation and price control programs affecting petroleum products have been suspended or radically modified. Current regulations, however, indicate that crude oil will continue under various controls at least through May of 1979.

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In addition, the President has proposed and the Congress is considering major new energy legislation, which includes significant energy related tax proposals. While adoption of all or a part of the President's program would likely have important consequences for Monsanto and many of its suppliers, it is impossible at this time to ascertain exactly how raw materials, fuels and energy availability and pricing may be affected. Neither can the precise impact of future raw material and energy shortages on Monsanto's business as a whole be accurately predicted for 1978 or future years. Operations and products may, at times, be adversely affected. Monsanto's operations in certain world areas may, at times, be affected more than in other areas depending on the extent of any such shortages.

Technology

Research, development, engineering and patent work constitute an important part of Monsanto's activities. In 1977, expenditures for such work totaled 3.8% of consolidated net sales. During the four preceding years this percentage ranged from 3.6% to 4.2%. As of December 31, 1977, Monsanto had approximately 4,300 employes engaged in these activities. Monsanto's technical efforts can be classified into three primary areas: *regenerative* — work which seeks to improve Monsanto's existing technology; *expansion* — work which extends Monsanto's participation in its present markets, either through the development of new products and processes or through the development of additional uses for present products; and *venture* — work which has as its object moving Monsanto into new fields or into a major departure from its present fields. Recently a Corporate Research and Development Staff was established with its principal responsibility being to identify opportunities for growth in areas unrelated to Monsanto's present businesses.

Monsanto is developing a number of products which generally are not yet profitable, or if profitable, only marginally so. Some of these products are a part of Monsanto's venture program, and some are in pilot or initial commercial production. Research and development costs associated with these activities are expensed in the period in which they are incurred.

Monsanto owns a large number of patents which relate to a wide variety of products and processes, has pending a substantial number of patent applications, and is licensed under a small number of patents. Monsanto does not consider that its business as a whole is dependent on any single patent or group of patents. Nevertheless, Monsanto's patents in the aggregate are of material importance in the operation of its business, particularly in the agricultural chemicals field where proprietary products, such as Polaris® plant growth regulator, Lasso®, Avadex®, Roundup® and Machete® herbicides, or their use, are covered by patents in many countries and are substantial contributors to sales and earnings. Such patents have expiration dates extending from 1978 through the early 1990's.

Competition

Monsanto encounters substantial competition in all of its lines of business. This competition is expected to continue in both United States and foreign markets from other manufacturers of the same products and different products designed for the same uses. Depending on the product involved, various types of competition are encountered including price, delivery, service and product performance and quality.

The number of Monsanto's principal competitors varies from product to product. It is not practical to estimate a precise number of all competitors because of the large variety of Monsanto's products, the markets served and the worldwide business interests of Monsanto. Overall, however, Monsanto regards its principal product groups to be competitive with many other products of other producers and believes that it is an important producer of many of such product groups.

Employe Relations

As of December 31, 1977, Monsanto had approximately 61,500 employes worldwide. Satisfactory relations have prevailed between Monsanto and its employes.

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Franchises and Concessions

Monsanto holds directly or by assignment numerous phosphate and oil and gas leases issued on behalf of the United States and various states, and petroleum exploration rights issued by foreign governments. In addition, Monsanto holds numerous phosphate and oil and gas leases granted by private parties. No one of these leases or exploration rights taken individually is deemed by the Company to be material. In 1977, Oil & Gas Production and Exploration contributed $80.8 million (1.8%) to Monsanto's net sales.

Environment

Monsanto is subject to various laws and governmental regulations concerning employe health and environmentally related matters. It can be anticipated that increasingly stringent requirements will be imposed upon Monsanto and industry in general. Recent examples of federal environmental legislation are the Toxic Substances Control Act (TOSCA) and the Resource Conservation and Recovery Act (RCRA), both enacted in 1976, and the 1977 amendments to the Clean Air Act and the Federal Water Pollution Control Act. TOSCA provides authority to the United States Environmental Protection Agency (EPA) to regulate the manufacture, use and disposal of chemical substances, while RCRA authorizes the EPA to regulate the transportation, storage and disposal of solid waste materials. Monsanto is also subject to regulations of the Occupational Safety and Health Administration (OSHA) concerning employe safety and health matters, and believes it is in compliance in all material respects with current applicable regulations. Under the above referenced and other statutes, the EPA, OSHA and other federal agencies have the authority to promulgate regulations which might result in costly and time-consuming testing of chemicals, discontinuance of certain products and operations, and substantial expenditures for pollution control, reduction of chemical exposures, waste treatment and plant modification.

On January 17, 1978 OSHA proposed a new permanent regulation for acrylonitrile, lowering the exposure limit from the previously existing level of 20 parts per million. (Monsanto is a major producer of acrylonitrile, a chemical compound used principally in the manufacture of plastics and fibers, including some of Monsanto's major products.) The proposed regulation contains three alternative exposure levels: two parts per million, one part per million and two-tenths of one part per million. Although Monsanto cannot accurately predict the impact of each of these three alternative levels on its operations, Monsanto anticipates that a level of two parts per million or one part per million could be attained, but may require substantial expenditures. Technology to attain a two-tenths part per million level may not be currently available. Compliance with such a level will require still greater expenditures to develop and implement such new technology. Monsanto believes that a final regulation on acrylonitrile exposure will be issued during the third quarter of 1978. At the same time the permanent standard was proposed, OSHA established an emergency temporary standard (ETS) at two parts per million. The ETS was appealed by Monsanto and other companies on the ground that it was not authorized by statute, and has been temporarily stayed by a federal court.

In addition, OSHA has established a new permanent standard for worker exposure to benzene, a major raw material in several Monsanto products. A federal court has temporarily stayed enforcement of this standard, but if the standard ultimately is effective, substantial expenditures may be required to achieve compliance.

In September 1977, the United States Food and Drug Administration (FDA) ordered amendments to food additive regulations having the effect of prohibiting the use of acrylonitrile copolymers in the fabrication of plastic containers for carbonated beverages, such as the Company's acrylonitrile/styrene co-polymer Cycle-Safe® container. The Company and others have filed petitions for review of the FDA's order in the U.S. Court of Appeals for the District of Columbia Circuit. The Company has provided for the impairment of the fixed assets previously used in its manufacturing operations for Cycle-Safe®. During 1977, the amount of such write-offs was $35.6 million.

As part of its long-term environmental protection program, Monsanto spent, in the United States in 1977, approximately $66.7 million on capital projects and approximately $89.1 million for

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operation and maintenance costs. Although the exact amount is not currently determinable, the Company estimates that during 1978 approximately $54.8 million will be spent in the United States on additional capital projects for environmental protection with a portion of this amount being financed through industrial development bonds. The Company further estimates that the costs of operating and maintaining pollution control systems in 1978 and future years will exceed 1977 levels.

In July 1977, the Company established a Corporate Environmental Policy Staff to provide senior technical leadership for all health and environmental matters. A new advisory committee to the Staff will assist in establishing public positions, assessing impacts, setting consistent guidelines and evaluating results concerning environmental matters.

Legal Proceedings

Because of the size and nature of its business, Monsanto is a party to numerous legal proceedings. Most of these proceedings have arisen in the ordinary course of business and involve claims for money damages.

The Company is a defendant in various lawsuits alleging damages from products containing polychlorinated biphenyls (PCB's). Some of these lawsuits purport to be class actions, among which are the following: three class actions purport to be on behalf of those having alleged interests, such as ownership of property, business operations or utilization of certain water bodies as a source of food or a means of recreation, connected with the Coosa River and its tributaries and Weiss Lake located between the States of Georgia and Alabama. These suits were filed in the U.S. District Court for the Northern District of Georgia on September 20, 1976, the Superior Court of Fulton County, State of Georgia, on September 24, 1976, and the U.S. District Court for the Northern District of Alabama on December 29, 1976. Damages claimed in each of the first two of these suits are $500 million, and in the last is $1 billion. The State of Alabama, through its Attorney General, has intervened in the Northern District of Alabama suit alleging $100 million actual damages, $100,000 punitive damages and restoration and cleanup costs. These lawsuits claim that the Company failed to warn of the alleged dangers of PCB's. The Company will vigorously defend all of such lawsuits. It is possible that additional lawsuits related to PCB's may be instituted and may claim substantial damages.

On February 3, 1975, an action entitled *Villanueva Compania Naviera S.A. v. S.S. Edgar M. Queeny, et al.*, was commenced by the owners of S.S. Corinthos in the U.S. District Court for the Eastern District of Pennsylvania against S.S. Edgar M. Queeny, Bankers Trust Company, Keystone Shipping Company and the Company for damages arising out of a collision in the Delaware River on January 31, 1975, between S.S. Edgar M. Queeny and S.S. Corinthos. The Company is bareboat charterer of S.S. Edgar M. Queeny from Bankers Trust Company, and Keystone Shipping Company is bareboat charterer of the vessel from the Company. Keystone was operating the vessel at the time of the collision. Various other claims for property damage, personal injuries and deaths, and oil-spill cleanup have been made, which, along with the claim of Villaneuva Compania Naviera S.A., aggregate approximately $117 million before deducting duplicate claims which, the Company is advised, reduce the total claimed to approximately $84 million. Hull insurance includes coverage for damage to S.S. Corinthos and its cargo in the amount of $20 million, and protection and indemnity insurance includes coverage for any liability for death and personal injury claims and claims to the property of others, except S.S. Corinthos and its cargo, in the amount of $5 million, and there is oil-spill coverage in an amount exceeding the amount of oil-spill claims. There is excess insurance, including coverage for hull and protection and indemnity claims, aggregating $70 million. All such insurance is subject to specified deductibles. On February 7, 1975, a limitation of liability proceeding was commenced in the same court on behalf of Bankers Trust, Keystone Shipping and the Company seeking to limit liability for all claims to the value of S.S. Edgar M. Queeny following the collision, which is estimated to be approximately $11 million. The Company believes, based on the facts it now has and the advice of its admiralty counsel, Messrs. Krusen, Evans and Byrne, Philadelphia, Pa., that the final disposition of all claims will be within the limits of insurance insuring the Company, S.S. Edgar M. Queeny, Bankers Trust, and Keystone Shipping against damages arising out of this event.

MONS 003506

The Company intervened in November 1971 as a defendant in a suit brought in July 1971 by the State of Florida in the Federal District Court for the District of Columbia against Rogers C. B. Morton, then Secretary of the Interior, and others, seeking injunctive and declaratory relief against granting of leases for phosphate mining in the Osceola National Forest. The suit alleges failure to comply with the National Environmental Policy Act of 1969 and other environmental laws. The Company holds prospecting permits granted by the United States Department of the Interior which give the Company the right to obtain mining leases if valuable phosphate deposits are located. Although the Company intervened to protect this right, is has no present plans to engage in phosphate mining operations in the Osceola National Forest and believes that an adverse decision in this suit would have a minimal effect on Monsanto as a whole.

The State of Texas has filed suit in the District Court of Galveston, Texas seeking a temporary injunction, permanent injunction and civil penalties for alleged violation of the Texas Water Quality Act and the provisions of a waste disposal permit issued to the Company. The civil penalties sought are in the maximum amount of $1,000 for each of an unspecified number of acts of violation and $1,000 for each day of violation.

The Illinois Environmental Protection Agency has filed a complaint before the Illinois Pollution Control Board alleging violation of Illinois environmental laws in that the Company was the owner of chlorosulfonic acid that was allowed to escape from a railroad tank car owned by GATX Leasing Corporation. The complaint seeks a monetary penalty not to exceed $10,000 and an order to cease and desist from further violations.

The Company has received an order from the U.S. Environmental Protection Agency issued pursuant to Section 309 of the Federal Water Pollution Control Act. The order states that the Company's Muscatine, Iowa plant has not been in compliance with certain provisions of the applicable National Pollution Discharge Elimination System permit and directs that the plant achieve compliance.

The Company does not believe these claims or the order or their ultimate disposition will have a material adverse effect on the Company's business.

For further information, see Note 10 of Notes to Financial Statements.

Item 2. SUMMARY OF OPERATIONS

The Statement of Consolidated Income of the Company and Subsidiaries for the five years ended December 31, 1977 and Management's Discussion and Analysis thereof are contained on pages S-3 through S-7 of the Financial Supplement filed as Exhibit I to this report and are incorporated herein by reference.

Item 3. PROPERTIES

The General Offices of the Company are located on a 285 acre tract of land in St. Louis County, Missouri. Monsanto has 64 plants in the United States as well as certain research laboratories and technical centers.

Monsanto's principal plants worldwide and the principal products made at such plants as of December 31, 1977, are described below. The plants described are owned in fee except as noted below.

Location, Approximate Size and Number of Employees	Principal Products
Addyston, Ohio. The plant occupies 75 acres of a 110 acre site and has approximately 950 employees.	Plastic materials including polystyrene, ABS, SAN, phenolics, styrene and latices; formaldehyde; foamed polystyrene board.
Alvin, Tex. The plant occupies approximately 500 acres of a 3,072 acre tract. Including research and development personnel, it has approximately 975 employees.	Petrochemicals, including ethylene, propylene, benzene, naphthalene, butylenes, xylenes, acrylonitrile, butadiene, phenol and alkylbenzene; formaldehyde and phenolic resins; sorbic acid.

MONS 003507

Location, Approximate Size and Number of Employees	Principal Products
Anniston, Ala. The plant occupies 40 acres of a 530 acre tract and has approximately 275 employees.	Parathion; phosphorus pentasulfide; biphenyl; parathion intermediates.
Columbia, Tenn. The plant occupies 315 acres of 7,365 acres of mineral lands or mined out mineral lands and has approximately 625 employees.	Elemental phosphorus.
Decatur, Ala. The plant occupies approximately 314 acres of a 670 acre tract. Including applications research and development personnel, it has approximately 2,300 employees.	Acrylic, modacrylic, nylon and polyester fibers and nylon intermediates.
Fayetteville, N. C. The plant occupies approximately 57 acres of a 225 acre tract and has approximately 225 employees.	Polyester fibers.
Greenwood, S. C. The plant occupies approximately 400 acres of a 1,580 acre tract and has approximately 1,750 employees.	Nylon 6,6 fiber.
Guntersville, Ala. (Sand Mountain). The plant occupies approximately 300 acres of an 864 acre tract and has approximately 1,050 employees.	Polyester fibers.
Luling, La. The plant occupies approximately 418 acres of a 1,449 acre tract and has approximately 850 employees.	Ammonia; ammonium nitrate; nitric, adipic and cyanuric acids; Avadex® and Roundup® herbicides; ACL® bleaching compounds; EMA® resins.
Marshalltown, Iowa. The plants occupy 50 acres of tracts totaling 270 acres and have approximately 3,350 employees.	Process control valves, regulators, control equipment and electronic instrumentation primarily for the chemical, utilities, petroleum and paper pulp industries.
Muscatine, Iowa. This plant is on a 474 acre tract, approximately 131 of which are devoted to manufacturing, and has approximately 550 employees.	Lasso®, Machete® and Ramrod® proprietary herbicides; plastic materials including ABS and SAN.
Nitro, W. Va. The plant occupies approximately 156 acres of a 202 acre tract and has approximately 675 employees.	Rubber Chemicals; MHA® calcium; tall oil rosin, distilled tall oil.
Pensacola, Fla. The plant occupies approximately 575 acres of a 2,281 acre tract. Including research and development personnel, it has approximately 4,150 employees.	Nylon 6,6 fiber, nylon intermediates, nylon molding resins, spun-bonded fabric and AstroTurf® functional surfaces.

MONS 003508

Location, Approximate Size and Number of Employees	Principal Products
St. Louis, Mo. (John F. Queeny Plant). The plant occupies approximately 64 acres of a 66 acre tract and has approximately 1,450 employees.	Pharmaceuticals; functional fluids; rubber chemicals; plasticizers; synthetic flavors; food ingredients; process and agricultural chemicals.
St. Peters, Mo. The plant occupies approximately 40 acres of a 66 acre tract. Including research and development personnel, it has approximately 1,050 employees.	Silicon products: single crystal silicon wafers (Czochralski and Float Zone), single crystal silicon rods and ingots; III-V products: gallium arsenide/gallium arsenide phosphide.
Sauget, Ill. The plant occupies approximately 120 acres of a 308 acre tract and has approximately 1,375 employees.	Heavy chemicals, chlorine and caustic; intermediates for the plastics, dyestuff, rubber and other industries; wood preservatives, dry bleach and phosphorus chemicals.
Springfield, Mass. These plants occupy approximately 149 acres of a 326 acre tract. Including research and development personnel, they have approximately 2,000 employees.	Broad range of plastic materials including ABS, SAN, polystyrene, phenolics, polyvinyl butyral sheet, reinforced nylon; specialty resins including phenolic and vinyl acetates; formaldehyde.
Texas City, Tex. The plant occupies approximately 220 acres of a 234 acre tract. Including research and development personnel, it has approximately 1,625 employees.	Petrochemicals including ethylene, styrene monomer and methanol; acetic acid; phthalic anhydride; oxoalcohol; phthalate plasticizers; lactic acid; polyethylene; acryonitrile.
Antwerp, Belgium. The plant occupies 80 acres of a 250 acre leased tract and has approximately 650 employees.	Rubber and agricultural chemicals; plasticizers; ABS and SAN plastic materials; polyvinyl butyral resins; and Gelva® multipolymer solutions (GMS).
Coleraine, U.K. This plant occupies 110 acres of a 210 acre tract and has approximately 700 employees.	Acrylic fibers.
Echternach, Luxembourg. This plant occupies 50 acres of a 300 acre tract and has approximately 800 employees.	Nylon fiber.
Seal Sand, U.K. The plant occupies 180 acres of a 234 acre tract and has approximately 450 employees.	Acrylonitrile.
New York, N.Y. The Company is a lessee under a 25-year lease which extends until November 30, 1998, with a net commitment as of December 31, 1977 of $52 million for seven floors in an office building at 1114 Avenue of the Americas.	

MONS 003509

Item 4. PARENTS AND SUBSIDIARIES

The following is a list of the Company's subsidiaries as of December 31, 1977, except for unnamed subsidiaries which, considered in the aggregate as a single subsidiary, would not constitute a significant subsidiary. The corporate relationship of the various companies is indicated by indentation.

	Percentage of Voting Power Owned by Immediate Parent
Companies included in consolidated statements:	
Monsanto Company (Delaware Corporation) (Registrant):	
Fisher Controls Company, Inc. (Delaware Corporation)	100%
Fisher Controls Company of Canada Limited (Canadian Corporation)	100
Fisher Governor de Mexico, S.A. (Mexican Corporation)	100
Monsanto Australia Limited (Australian Corporation)	100[1]
Monsanto Canada Limited (Canadian Corporation)	100
Monsanto Cie S.A. (Luxembourg Corporation)	100[3]
Monsanto Enviro-Chem Systems, Inc. (Delaware Corporation)	100
Monsanto (Deutschland) GmbH (West German Corporation)	100
Monsanto Europe S.A. (Belgian Corporation)	100[2]
Monsanto International Sales Company (Delaware Corporation)	100
Monsanto Limited (United Kingdom Corporation)	100[4]
Monsanto Luxembourg S.A. (Luxembourg Corporation)	100

[1] Combined voting power of the Company and by the following of its subsidiaries: Monsanto Limited and Monsanto Overseas, S.A.

[2] Combined voting power of the Company and by the following of its subsidiaries: Chemstrand Overseas, S.A.; Chemstrand, Inc.; Monsanto Research Corporation; Monsanto Service Company; Sweetwater Resources, Inc., Plax Incorporated and Monsanto Guatemala, Inc.

[3] Combined voting power of the Company and by the following of its subsidiaries: Sweetwater Resources, Inc.; Monsanto Research Corporation; Monsanto Service Company; Monsanto Guatemala, Inc.; Leonard Construction Company; Monsanto Dominicana, Inc. and FRP Company.

[4] Combined voting power of the Company and Monsanto International Finance Company (a subsidiary).

Item 5. LEGAL PROCEEDINGS

Because of the size and nature of its business, the Company is a party to a number of legal proceedings. Most of these proceedings have arisen in the ordinary course of business and involve claims for money damages.

For information concerning certain legal proceedings involving the Company, see "Business and Products" — "Environment" and "Legal Proceedings" contained in Item 1 to this report, which is incorporated herein by reference.

MONS 003510

Item 6. INCREASES AND DECREASES IN OUTSTANDING SECURITIES

(a) Equity Securities.

(1) $2.75 Preferred Stock, without par value

A decrease of 111,281 shares during period January 10, 1977 through December 23, 1977

Shares outstanding, December 31, 1976		382,587
Shares converted into Common Stock, $2 par value, at the initial conversion rate of 1.12 shares of Common Stock for each share of $2.75 Preferred Stock surrendered		(111,281)
Shares outstanding, December 31, 1977		271,306

(2) Common Stock, $2 par value

A decrease of 158,521 shares during period January 4, 1977 through December 30, 1977

Shares outstanding, December 31, 1976		38,439,241
Shares issued on conversion of Monsanto Limited convertible loan stock	2,096	
Shares issued pursuant to stock option plans of Monsanto Company:		
1969 Plan	23,710	
1974 Plan	13,812	
Shares issued on conversion at the initial rate of 1.12 shares of Common Stock for each share of $2.75 Preferred Stock, without par value	124,561	
Treasury shares purchased	(322,700)	(158,521)
Shares outstanding, December 31, 1977		38,280,720

(b) Changes in Debt Previously Reported on Form 10-Q.

None.

(c) Changes in Debt During Fourth Quarter.

None.

Item 7. CHANGES IN SECURITIES AND CHANGES IN SECURITY FOR REGISTERED SECURITIES

None.

Item 8. DEFAULTS UPON SENIOR SECURITIES

None.

Item 9. APPROXIMATE NUMBER OF EQUITY SECURITY HOLDERS

(1) Title of Class	(2) Number of Record Holders
$2.75 Preferred Stock, without par value	1,404
Common Stock, $2 par value	85,021

Item 10. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

Not Applicable.

MONS 003511

Item 11. EXECUTIVE OFFICERS OF THE REGISTRANT

The executive officers of the Company on March 1, 1978 were:

Name — Age	Present Position with Registrant	Year First Became an Executive Officer	Other Business Experience since January 1, 1973 (References are to Positions within Monsanto Unless Otherwise Noted)
John W. Hanley, 56	Director; Chairman of the Board; President and Chief Executive Officer; Chairman of Executive Committee and Member of Finance Committee	1972	Director, President and Chief Executive Officer; Chairman of the Board, 1975.
H. Harold Bible, 62	Director; Vice Chairman of the Board; Member of Executive, Pension and Savings Funds and Employee Benefits Plans Committees	1958	Director, Senior Vice President; Group Vice President, 1973; Managing Director — Monsanto Industrial Chemicals Co., 1974; Executive Vice President, 1975; and present position, 1977.
Edmond S. Bauer, 59	Director; Executive Vice President; Member of Executive Committee	1971	Vice President and General Manager, Agricultural Division — Monsanto Commercial Products Co.; Group Vice President, 1974; Managing Director — Monsanto Agricultural Products Co., 1975; and present position, 1975.
Robert L. Berra, 53	Vice President, Personnel; Chairman of Employee Benefits Plans Committee	1974	Vice President, Personnel and Public Relations, Foremost-McKesson; rejoined Monsanto in present position, 1974.
Robert E. Burke, 49	Vice President and Managing Director — Monsanto Textiles Co.; Member of Employee Benefits Plans Committee	1976	Director of Industrial Business Group, Textiles Division — Monsanto Textiles Co.; General Manager, Carpet and Industrial Business Groups — Monsanto Textiles Co., 1973; General Manager, Apparel and Nonwovens Division — Monsanto Textiles Co., 1975; and present position, 1976.
James E. Crawford, Jr., 55	Group Vice President; Managing Director — International Division	1963	General Manager, Fabricated Products Division — Monsanto Commercial Products Co.; Vice President, General Manager — International Division, 1973; and present position, 1975.
Richard W. Duesenberg, 47	Vice President, General Counsel and Secretary; Member of Employee Benefits Plans Committee	1977	Director of Law — Monsanto Textiles Co.; Assistant General Counsel and Assistant Secretary, 1975; and present position, 1977.
John R. Eck, 63	Director; Senior Vice President, Manufacturing Coordination	1961	Director, Vice President and Managing Director — Monsanto Polymers & Petrochemicals Co.; Group Vice President, 1973; Managing Director — Monsanto Chemical Intermediates Co., 1976; and present position, 1977.

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Name — Age	Present Position with Registrant	Year First Became an Executive Officer	Other Business Experience since January 1, 1973 (References are to Positions within Monsanto Unless Otherwise Noted)
Louis Fernandez, 53	Director; Executive Vice President	1969	Director, Vice President and Managing Director — Monsanto Textiles Co.; Group Vice President, 1973; Executive Vice President — Corporate Staff, 1976; and present position, 1977.
Francis J. Fitzgerald, 50	Group Vice President; Managing Director — Monsanto Industrial Chemicals Co.	1975	General Manager, Detergents and Fine Chemicals Division — Monsanto Industrial Chemicals Co.; General Manager, Specialty and Process Chemicals Division — Monsanto Industrial Chemicals Co., 1974; Vice President and Managing Director — Monsanto Industrial Chemicals Co., 1975; and present position, 1976.
Earle H. Harbison, Jr., 49	Vice President; Managing Director — Monsanto Commercial Products Co.	1977	Director of Management Information & Systems Department; Director of Organization and Management Development, 1973; General Manager, Specialty Chemicals Division — Monsanto Industrial Chemicals Co., 1975; General Manager, Plasticizers Division — Monsanto Industrial Chemicals Co., 1976; General Manager, Plasticizers and Detergents & Phosphates Divisions — Monsanto Industrial Chemicals Co., 1977; and present position, 1977.
S. Allen Heininger, 52	Vice President, Corporate Research & Development Staff	1977	Director of Corporate Plans & Development; General Manager, Plasticizers Division — Monsanto Industrial Chemicals Co., 1974; Director of Corporate Research & Development, 1976; and present position, 1977.
James J. Kerley, 55	Director, Executive Vice President — Administrative Staff; Member of Pension and Savings Funds, Executive, and Finance Committees	1970	Director, Vice President — Finance; Group Vice President — Administrative Staff, 1974; and present position, 1976.
Richard J. Mahoney, 44	Executive Vice President; Member of Employee Benefits Plans Committee	1975	Director of Sales, Agricultural Division — Monsanto Agricultural Products Co.; Director of Operations, International — Monsanto Agricultural Products Co., 1974; General Manager, Overseas Division — Monsanto Agricultural Products Co., 1975; Vice President and Managing Director — Monsanto Agricultural Products Co., 1975; Group Vice President and Managing Director — Monsanto Plastics & Resins Co., 1976; and present position, 1977.
Joseph T. Nolan, 57	Vice President, Public Affairs	1976	Senior Vice President, Group Executive, Chase Manhattan Bank Corporate Communications Group; Professor, Journalism & Public Affairs, University of South Carolina, 1974; and present position, 1976.

MONS 003513

Name — Age	Present Position with Registrant	Year First Became an Executive Officer	Other Business Experience since January 1, 1973 (References are to Positions within Monsanto Unless Otherwise Noted)
Richard C. O'Sullivan, 50	Vice President and Treasurer	1971	Controller; Treasurer, 1975; and present position, 1976.
Nicholas L. Reding, 43	Vice President; Managing Director — Monsanto Agricultural Products Co.	1976	Director of International Markets — Monsanto Agricultural Products Co.; Director of Operations, Herbicides — Monsanto Agricultural Products Co., 1974; General Manager, Herbicides Division — Monsanto Agricultural Products Co., 1975; General Manager, Crop Chemicals Division — Monsanto Agricultural Products Co., 1975; and present position, 1976.
Francis E. Reese, 58	Director; Group Vice President; Managing Director — Monsanto Chemical Intermediates Co.	1968	Vice President and Group General Manager — Monsanto Polymers & Petrochemicals Co.; Director, General Manager — International Division, 1973; Managing Director — International Division, 1973; Group Vice President — Facilities & Planning Staff, 1975; and present position, 1977.
Ernest S. Robson, Jr., 57	Vice President, Energy and Materials Management	1974	General Manager, Rubber & Process Chemicals Division — Monsanto Industrial Chemicals Co.; and present position, 1974.
Tom K. Smith, Jr., 59	Director; Senior Vice President — Marketing Coordination	1960	Director, Vice President and Managing Director — Monsanto Commercial Products Co.; Group Vice President, 1973; Group Vice President — Operations Staff, 1975; and present position, 1977.
Francis A. Stroble, 47	Vice President and Controller	1975	Controller — Monsanto Polymers & Petrochemicals Co.; Director of Management Information & Systems Department, 1973; Controller, 1975; and present position, 1977.
Monte C. Throdahl, 58	Director; Group Vice President — Corporate Environmental Policy Staff	1965	Director, Vice President — Technology; Group Vice President — Technical Staff, 1973; and present position, 1977.
J. Virgil Waggoner, 50	Vice President, Managing Director — Monsanto Plastics & Resins Co.	1977	General Manager, Petrochemicals Division — Monsanto Polymers & Petrochemicals Co.; General Manager, Cycle-Safe® Division — Monsanto Commercial Products Co., 1976; and present position, 1977.

The above-listed individuals are elected, or appointed to the office set opposite their names to hold office until their successors are duly elected and have qualified, or until their earlier death, resignation or removal.

MONS 003514

Item 12. INDEMNIFICATION OF DIRECTORS AND OFFICERS

Except as set forth below, the information provided by the Company pursuant to Item 9 appearing in the Annual Report on Form 10-K for the year ended December 31, 1975, with respect to Delaware Law, the Company's By-Laws, Pension Trust Liability Insurance, Directors and Officers Liability and Company Reimbursement Insurance, and General Liability Insurance maintained by the Company is still applicable. The information provided regarding:

(i) Excess Umbrella Liability Insurance maintained by the Company is still applicable except that it now covers losses up to $135,000,000 in excess of the limits of the primary General Liability Insurance and is in nine layers; and

(ii) Pension Trust Liability Insurance maintained by the Company is still applicable except that it is now in one layer; and

(iii) Directors and Officers Liability and Company Reimbursement Insurance is still applicable except that it is now in three layers; and

(iv) Proposed amendment to the Company's By-Law 53 relating to indemnification of directors, officers and employees is still applicable except that the amendment was adopted by shareholders at the Annual Meeting on April 22, 1976.

Item 13. FINANCIAL STATEMENTS, EXHIBITS FILED, AND REPORTS ON FORM 8-K

(a) Financial Statements and Exhibits.

(1) Financial Statements and Supporting Schedules.

Monsanto Company and Subsidiaries:

Financial Supplement filed as Exhibit I to this Annual Report on Form 10-K, which includes the following financial statements for the five years ended December 31, 1977 except as noted below:

Statement of Consolidated Income

Statement of Consolidated Financial Position at December 31, 1977 and 1976

Statements of Consolidated Additional Contributed Capital and Reinvested Earnings

Statement of Changes in Consolidated Financial Position

Notes to Financial Statements

Replacement Cost Data

The following schedules for the years ended December 31, 1977 and 1976:

V — Property, Plant and Equipment

VI — Accumulated Depreciation, Depletion and Amortization of Property, Plant and Equipment

IX — Bonds, Mortgages and Similar Debt (December 31, 1977 only)

XI — Guarantees of Securities of Other Issuers (December 31, 1977 only)

XII — Valuation and Qualifying Accounts and Reserves

XIII — Capital Shares (December 31, 1977 only)

All other schedules are omitted because of the absence of the conditions under which they are required.

Financial statements and schedules for Monsanto Company are not included herein as permitted by Instruction 1(b)(i) to Financial Statements.

MONS 003515

(2) Exhibits.

I — 1977 Financial Supplement of Monsanto Company.

II — Monsanto Company By-Laws, as amended December 2, 1977, an amended Basic Document.

III — Copies of policies providing additional Excess Umbrella Liability Insurance filed as Exhibit 4.6 to Post-Effective Amendment No. 11 to Registration Statement on Form S-7 (File No. 2-36636) and incorporated herein by reference.

IV — Copy of Declaration page providing one layer of Pension Trust Liability Insurance filed as Exhibit 4.4 to Post-Effective Amendment No. 11 to Registration Statement on Form S-7 (File No. 2-36636) and incorporated herein by reference.

V — Copy of Policy providing for third layer of Directors and Officers Liability and Company Reimbursement Insurance filed as Exhibit 4.2 to Post-Effective Amendment No. 11 to Registration Statement on Form S-7 (File No. 2-36636) and incorporated herein by reference.

(b) Reports on Form 8-K.

None.

MONS 003516

SCHEDULE V

MONSANTO COMPANY AND SUBSIDIARIES

PROPERTY, PLANT AND EQUIPMENT
FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976
(Dollars in millions)

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E		COLUMN F
Classification	Balance at Beginning of Year	Additions at Cost	Retirements	Transfers Between Accounts	Other Changes	Balance at End of Year
Year Ended December 31, 1977:						
Land	$ 44.5	$ 1.9	$ 1.1	$ (0.3)		$ 45.0
Buildings	541.8	39.8	11.2	3.2		573.3
Machinery, equipment, etc.	3,439.2	532.9	107.6	(3.5)	$(0.5)[1] 36.3 [2] 17.7 [3]	3,914.5
Mineral rights and oil and gas properties	188.8	32.8	3.9	0.6		218.3
	$4,208.3	$607.1	$123.8	—	$53.5	$4,745.1
Year Ended December 31, 1976:						
Land	$ 41.7	$ 2.7	$ 0.3	$ (0.1)	$ 0.5 [4]	$ 44.5
Buildings	500.3	34.7	6.2	11.0	2.0 [4]	541.8
Machinery, equipment, etc.	2,908.6	589.9	78.0	(10.9)	$3.0 [3] 7.3 [4] (0.7)[1]	3,439.2
Mineral rights and oil and gas properties	169.3	19.5	5.0			183.8
	$3,619.9	$646.8	$90.5	—	$32.1	$4,208.3

NOTES:

[1] Amortization of leasehold improvements.

[2] Leases capitalized to conform with the provisions of Financial Accounting Standards Board Statement No. 13, "Accounting for Leases."

[3] Property related to Industrial Development Bonds.

[4] Property related to acquired subsidiaries.

MONS 003517

SCHEDULE VI

MONSANTO COMPANY AND SUBSIDIARIES

ACCUMULATED DEPRECIATION, DEPLETION AND AMORTIZATION OF PROPERTY, PLANT AND EQUIPMENT FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976

(Dollars in millions)

COLUMN A Description	COLUMN B Balance at Beginning of Year	COLUMN C Additions Charged to Costs and Expenses	COLUMN D Retirements	COLUMN E Other Changes	COLUMN F Balance at End of Year
Year Ended December 31, 1977:					
Buildings — depreciation	$ 249.7	$ 21.5	$ 3.8		$ 267.4
Machinery, equipment, etc. — depreciation	1,717.2	203.1	57.1	$19.3 (1)	1,882.5
Mineral rights and oil and gas properties:					
Depreciation	44.4	10.4	2.6		52.2
Depletion	55.6	7.7	1.6		61.7
Government grants	51.6	(3.7)(2)	0.4	25.1 (3)	72.6
	$2,118.5	$239.0	$65.5	$44.4	$2,336.4
Year Ended December 31, 1976:					
Buildings — depreciation	$ 233.3	$ 19.1	$ 2.4	$(0.3)(4)	$ 249.7
Machinery, equipment, etc. — depreciation	1,601.5	159.4	47.7	4.0 (4)	1,717.2
Mineral rights and oil and gas properties:					
Depreciation	37.0	9.1	1.7		44.4
Depletion	52.4	5.5	2.3		55.6
Government grants	35.6	(4.5)(2)	0.2	20.7 (3)	51.6
	$1,959.8	$188.6	$54.3	$24.4	$2,118.5

NOTES:

(1) Accumulated depreciation relating to leases capitalized to conform with the provisions of Financial Accounting Standards Board Statement No. 13, "Accounting for Leases."

(2) Amortization of government grants credited to income.

(3) Government grants.

(4) Accumulated depreciation related to acquired subsidiaries.

MONS 003518

SCHEDULE IX

MONSANTO COMPANY AND SUBSIDIARIES

BONDS, MORTGAGES AND SIMILAR DEBT, DECEMBER 31, 1977

(Dollars in millions)

COLUMN A	COLUMN B	COLUMN C	COLUMN D	
			Amount Shown in Accompanying Statement of Consolidated Financial Position Under Caption	
Name of Issuer and Title of Each Issue	Amount Authorized by Indenture	Amount Issued and not Retired or Canceled	"Long-Term Debt"	"Current Liabilities"
Monsanto Company:				
6¼% - 8¼% bank loan, due 1978/1979 (West German deutsche mark)	$ 24.5	$ 14.5	$ 9.5	$ 5.0
7½% promissory notes, due 1978/1985	17.1	17.1	14.6	2.5
8% notes, due 1985	100.0	100.0	100.0	
4¾% promissory notes, due 1993	100.0	72.0	67.3	4.7
8¼% sinking fund debentures, due 2000	175.0	175.0	175.0	
9¼% sinking fund debentures, due 2000	150.0	131.3	125.3	6.0
3¾% income debentures, due 2002	66.0	66.0	66.0	
3¾% income debentures, due 2002, second series	25.0	25.0	25.0	
9% promissory note, due 2004	1.4	1.4	1.4	
4½% income debentures, due 2008	50.0	50.0	50.0	
Leases capitalized			15.6	3.7
Issued in connection with Industrial Development Bonds:				
5¼% notes, due 1983	1.0	1.0	1.0	
5⅛% notes, due 1984	1.0	1.0	1.0	
5¼% notes, due 1985	1.5	1.5	1.5	
5¼% notes, due 1985	1.5	1.5	1.5	
5¼% notes, due 1985	4.0	4.0	4.0	
4½% notes, due 1986	1.0	1.0	1.0	
4½% notes, due 1986	1.0	1.0	1.0	
4½% notes, due 1986	0.5	0.5	0.5	
5¼% notes, due 1986	2.0	2.0	2.0	
5¼% notes, due 1986	1.0	1.0	1.0	
5¼% notes, due 1986	1.0	1.0	1.0	
5¼% notes, due 1986	1.0	1.0	1.0	
7% notes, due 1990	2.0	2.0	2.0	
5⅛% notes, due 1991	1.0	1.0	1.0	
5⅛% notes, due 1991	1.0	1.0	1.0	
5¼% notes, due 1991	1.0	1.0	1.0	
5¼% notes, due 1997	3.0	3.0	3.0	
5¼% notes, due 1997	3.7	3.7	3.7	
5⅛% notes, due 1998	3.3	3.3	3.3	
7¼% notes, due 2000	5.4	5.4	5.4	
7¼% notes, due 2000	1.7	1.7	1.7	
6¼% notes, due 2001	2.4	2.4	2.4	
7¼% notes, due 2005	3.7	3.7	3.7	
7¼% notes, due 2005	3.5	3.5	3.5	
7¼% notes, due 2005	1.0	1.0	1.0	
7¼% notes, due 2005	1.0	1.0	1.0	
7¼% notes, due 2005	3.5	3.5	3.5	
8¼% notes, due 2006	8.8	8.8	8.8	
8¼% notes, due 2006	4.7	4.7	4.7	
8¼% notes, due 2006	4.4	4.4	4.4	
8¼% notes, due 2006	3.0	3.0	3.0	
8¼% notes, due 2006	1.3	1.3	1.3	
8¼% notes, due 2006	1.1	1.1	1.1	
6¼% notes, due 2020	13.9	13.9	13.9	
6¼% notes, due 2020	7.0	7.0	7.0	
8¼% notes, due 2027	4.8	4.8	4.8	
8¼% notes, due 2027	3.5	3.5	3.5	
8¼% notes, due 2027	2.9	2.9	2.9	
8¼% notes, due 2027	2.4	2.4	2.4	
8¼% notes, due 2027	2.2	2.2	2.2	
8¼% notes, due 2027	1.0	1.0	1.0	
8⅛% notes, due 2027	7.8	7.8	7.8	
8⅛% notes, due 2027	1.7	1.7	1.7	
Monsanto International Finance Company:				
4½% guaranteed sinking fund debentures, due 1985	25.0	18.3	17.5	0.8
Monsanto International N.V. (Netherlands Antilles subsidiary):				
8¼% guaranteed sinking fund debentures, due 1985	20.0	8.8	7.4	1.4
5¼% guaranteed bonds, due 1987 (Swiss franc)	39.2	39.2	39.2	

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MONSANTO COMPANY AND SUBSIDIARIES

BONDS, MORTGAGES AND SIMILAR DEBT, DECEMBER 31, 1977
(Dollars in millions)

COLUMN A Name of Issuer and Title of Each Issue	COLUMN B Amount Authorized by Indenture	COLUMN C Amount Issued and Not Retired or Canceled	COLUMN E Amount Shown in Accompanying Statement of Consolidated Financial Position Under Caption "Long-Term Debt"	 "Current Liabilities"
Monsanto Limited (United Kingdom subsidiary) (British pound):				
6% debentures, due 1978/1983	$ 5.7	$ 3.0	$ 2.9	$ 0.1
5% debentures, due 1983	6.7	4.1	3.9	0.2
5% guaranteed loan stock, due 1982/1986	30.5	11.2	11.2	
5% guaranteed loan stock, due 1996/1997	2.9	2.9	2.9	
6¼% guaranteed loan stock, due 1992/1997	2.9	2.9	2.9	
5¼% - 6¾% medium term loans, due 1979/1983	11.4	5.7	5.7	
7½% medium term loan, due 1979/1982	1.9	1.9	1.9	
7¾% medium term loan, due 1979/1983	1.9	1.9	1.9	
8¼% - 9½% medium term loans, due 1980/1983	13.3	7.6	7.6	
9¾% medium term loan, due 1980/1981	1.9	1.9	1.9	
Monsanto (Suisse) S.A. (Swiss subsidiary) (Swiss franc):				
6¾% guaranteed sinking fund debentures, due 1985	19.6	14.7	14.7	
6¼% guaranteed sinking fund debentures, due 1986	39.4	34.5	34.5	
Monsanto Europe S.A. (Belgian subsidiary) (Belgian franc):				
9% guaranteed bank loan, due 1978/1988	38.8	19.9	17.7	2.2
8¾% guaranteed bank loan, due 1978/1983	14.8	9.8	8.2	1.6
9¾% guaranteed bonds, due 1982/1991	11.8	11.8	11.8	
10¾% - 11½% guaranteed bank loan, due 1980/1987	44.3	44.3	44.3	
11½% guaranteed bank loan, due 1978/1987	4.9	4.9	4.4	0.5
Monsanto (Deutschland) GmbH (West German subsidiary) (West German deutsche mark):				
6¼% guaranteed bank loan, due 1980	32.6	23.5		23.5
3¼% guaranteed government agency (BA) loan, due 1988	6.1	3.2	2.5	0.7
Monsanto Australia Limited (Australian subsidiary) (Australian dollar):				
13% bank loan	6.5	6.5	6.5	
Compania Industrial de Plasticos S.A. (Mexican subsidiary) (Mexican peso):				
13% - 19% bank loans, due 1978/1981	4.9	1.2	0.7	0.5
Chymetic Industries, Inc.:				
8% - 9½% long-term lease indebtedness, due 1983/1986	3.8	2.0	1.5	0.5
Milwaukee Die Casting Company:				
7½% bank loan, due 1980	0.3	0.1	0.1	
Nippon Fisher Company, Inc. (Japanese subsidiary) (Japanese yen):				
13½% bank loan, due 1978/1979	1.1	1.1	1.1	
Industrias Monsanto S.A. (Brazilian subsidiary) (Brazilian cruzeiro):				
Bank loans	2.2	2.2	1.6	0.6
Societe Monsanto S.A. (French subsidiary) (French franc):				
Bank loans	6.6	6.6	6.4	0.2
Israel Chemical Fibres Limited (Israeli subsidiary) (Israeli pound):				
Bank loans	1.3	1.3	1.2	0.1
			$1,030.6	$53.5

NOTES:

Columns D(1), F, G and H have been omitted as the answers thereto would have been "None."

Column D(2) is the same as Column C.

See "Long-Term Debt" under Notes to Financial Statements in Financial Supplement.

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SCHEDULE XI

MONSANTO COMPANY AND SUBSIDIARIES

GUARANTEES OF SECURITIES OF OTHER ISSUERS, DECEMBER 31, 1977

(Dollars in millions)

COLUMN A Name of Issuer of Securities Guaranteed by Person for Which Statement is Filed	COLUMN B Title of Issue of Each Class of Securities Guaranteed	COLUMN C Total Amount Guaranteed and Outstanding
Village of Sauget, Illinois	Pollution Control Revenue Bonds (Serial Bonds)	$8.8
Village of Sauget, Illinois	Pollution Control Revenue Bonds (Term Bonds)	5.1
Gulf Coast Waste Disposal	Pollution Control Revenue Bonds	0.8
Galveston County Water District, Texas	Industrial Development Bonds	0.6
Alcoandel, S.A.	Bank Loans	14.7
Mindia Chemicals Ltd.	Bank Loans	3.8
Surrey Industries	Bank Term Loans	0.5
Jack Burton Management Company	Bank Real Estate Loans	0.3
Various Export Financings	Bank Loans	0.6
Employees of Monsanto Company and Subsidiaries	Real Estate Loans	0.6
		$29.8

NOTES:

Columns D, E and G have been omitted as the answers thereto would have been "None."

In answer to Column F, all guaranteed securities are guaranteed as to principal and interest.

The annual aggregate amount of interest guaranteed is approximately $2.6.

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SCHEDULE XII

MONSANTO COMPANY AND SUBSIDIARIES

VALUATION AND QUALIFYING ACCOUNTS AND RESERVES
FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976
(Dollars in millions)

COLUMN A	COLUMN B	COLUMN C — Additions		COLUMN D	COLUMN E
Description	Balance at Beginning of Year	Charged to Costs and Expenses	Charged to Other Accounts	Deductions	Balance at End of Year
Year Ended December 31, 1977:					
Reserves deducted from related assets in the Statement of Consolidated Financial Position:					
Doubtful receivables, trade receivables in foreign currencies and returns and allowances	$18.6	$25.9		$ 6.9 (1) 18.5 (2)	$19.1
Reserves for inventory losses, obsolescence and long-term construction contract losses	$40.7		$ 3.3 (3)	$ 2.2 (4)	$41.8 (5)
Reserves included under the caption "Other Liabilities and Deferred Credits — Miscellaneous" in the Statement of Consolidated Financial Position:					
Employees' bonus — Unawarded	$ 6.9	$ 8.7		$ 7.7 (6)	$ 7.9
Miscellaneous	$12.1				$ 6.8
Year Ended December 31, 1976:					
Reserves deducted from related assets in the Statement of Consolidated Financial Position:					
Doubtful receivables, trade receivables in foreign currencies and returns and allowances	$19.0	$17.1		$ 2.6 (1) 14.9 (2)	$18.6
Reserves for inventory losses, obsolescence and long-term construction contract losses	$38.5		$ 4.3 (3)	$ 1.8 (4)	$40.7 (5)
Reserves included under the caption "Other Liabilities and Deferred Credits — Miscellaneous" in the Statement of Consolidated Financial Position:					
Employees' bonus — Unawarded	$ 4.8	$14.8		$12.1 (6)	$ 6.9
Miscellaneous	$17.5				$12.1

Notes:

(1) Uncollectible accounts written off, less recoveries.

(2) Allowances granted.

(3) Transfer from Reserves included in "Other Liabilities and Deferred Credits — Miscellaneous."

(4) Credited to costs and expenses.

(5) Bonus awards transferred to current liabilities.

(6) Includes reserves for cost overruns on several construction projects of the Company's wholly-owned subsidiary, Monsanto Enviro-Chem Systems, Inc., as indicated below:

	1977	1976
Deducted from inventories	$36.6	$36.3
Included in "Other Liabilities and Deferred Credits — Miscellaneous"	0.8	1.1
	$37.4	$37.4

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SCHEDULE XII

MONSANTO COMPANY AND SUBSIDIARIES

CAPITAL SHARES

COLUMN A	COLUMN B	COLUMN C	COLUMN D		COLUMN E		COLUMN F		COLUMN G	
			Number of Shares Included in Column C Which Are		Shares Outstanding as Shown on or Included in Accompanying Statement of Consolidated Financial Position		Number of Shares Held by Affiliates for Which Statements are Filed Herewith		Number of Shares Reserved for Options, Warrants, Conversions and Other Rights	
Name of Issuer and Title of Issue(1)	Number of Shares Authorized by Charter	Number of Shares Issued and Not Retired or Cancelled	Held by or for Account of Issuer	Not Held by or for Account of Issuer	Number	Amount at Which Shown (In millions)	Pursuant to Options, Warrants, Conversions and Other Rights Included in Consolidated Statements	Others	Directors, Officers and Employees	Others
Monsanto Company:										
Preferred stock without par value	30,000,000	271,308	None	271,308	271,308	$ 0.6	None	None	None	None
Common stock, par value $2 each	100,000,000	36,872,323	699,357(2)	36,172,966	36,872,323	73.7	None	None	1,035,495(3)	774,583
Australian Petrochemicals Limited:										
Common stock, par value $A1 each	10,000,000	2,000,000	None	2,000,000	900,000	1.0	1,100,000	None	None	None
Compañía Brasileira de Plasticos Monsanto:										
Preferred shares, par value 1 Cr. each	17,433,111	17,433,111	None	17,433,111	13,920,434	1.5	3,512,677	None	None	None
Ordinary shares, par value 1 Cr. each	48,566,889	48,566,889	None	48,566,889	14,911,425	1.6	33,655,464	None	None	None
Nippon Fisher Company, Ltd.:										
Common stock, par value ¥ 500 each	1,200,000	1,200,000	None	1,200,000	350,000	0.6	850,000	None	None	None
Israel Chemical Fibres Limited:										
Ordinary shares, Class "A", par value I£1 each	7,931,850	7,931,850	None	7,931,850	None	None	7,931,850	None	None	None
Ordinary shares, Class "B", par value I£1 each	7,068,150	7,068,150	None	7,068,150	7,068,150	1.4	None	None	None	None
Three Other Partially-Owned Subsidiaries	10,005,050	541,695	None	541,695	238,761	0.2	302,934	None	None	None
						80.6				
Shareowners' Equity — Capital stock						874.3				
Minority Interests — Capital stock						6.3				
						880.6				

Notes:

(1) Capital shares of wholly-owned subsidiaries have been omitted; answers to Columns G(1) and (2) would be "None."

(2) Held for certain specific purposes and included in Miscellaneous Investments (37,754) and held in Treasury (591,603).

(3) Reserved for stock options granted and available for grant. See Employee Stock Options in Notes to Financial Statements.

PART II

Items 14-18.

These items have been omitted pursuant to General Instruction H since the registrant has filed a definitive proxy statement which involves the election of directors pursuant to Regulation 14A.

SIGNATURE

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MONSANTO COMPANY
(Registrant)

By /s/ FRANCIS A. STROBLE
Francis A. Stroble
Vice President and Controller
(Principal Accounting Officer)

Date: March 31, 1978

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CONSENT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

Monsanto Company:

We hereby consent to the incorporation by reference in your annual report on Form 10-K which you are filing with the Securities and Exchange Commission for the year ended December 31, 1977, of our opinion dated February 13, 1978, included in your Financial Supplement (Exhibit I, 10-K report).

We also consent to our opinion referred to above being considered as comprehending our opinion that the financial schedules as listed in Item 13 present fairly in all material respects the information shown therein.

HASKINS & SELLS

Saint Louis, Missouri
March 31, 1978

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