Monsanto

1972
ANNUAL REPORT
MONSANTO COMPANY

DSW 020812

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Annual Meeting

The next annual meeting of the shareowners of Monsanto Company is to be held at 2:30 p.m. Thursday, April 26, 1973, at the company's General Offices, 800 N. Lindbergh Blvd., St. Louis County, Mo. A formal notice of the meeting, together with a proxy statement and form of proxy, is being mailed to each shareowner along with the Annual Report and Review.

Italics identify Monsanto's trademarks.

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Operational Highlights

(Dollars in millions, except per share)

	1972	1971
Net Sales	$2,225.4	$2,087.1
Net Income	$ 122.0	$ 93.7
Per Common Share:		
Primary Earnings	$ 3.49	$ 2.65
Dividends Paid	1.80	1.80
Book Value	39.05	37.16
Depreciation, Obsolescence and Depletion	$ 193.9	$ 186.9
Plant Additions and Replacements	$ 168.3	$ 205.2
Technological Expenses	$ 92.0	$ 86.7
Employes	57,891	59,271
Shareowners — Common Shares	104,369	110,490

Operating Results by Lines of Business

	1972		1971	
	Net Sales	Income	Net Sales	Income
Lines of Business:				
Industrial Chemicals	$ 572.3	$ 57.7	$ 544.3	$ 49.5
Textiles	526.0	44.5	479.7	40.5
Polymers & Petrochemicals	556.8	46.5	531.4	30.3
Commercial Products	570.3	67.7	531.7	57.6
Sales and Operating Income	$2,225.4	216.4	$2,087.1	177.9
Income Charges—Net		13.8		18.5
Income Before Income Taxes		202.6		159.4
Provision for Income Taxes		80.6		65.7
Net Income		$122.0		$ 93.7

To the Shareowners

Monsanto achieved one of its most satisfactory years in 1972. Sales set new records, and net income rose substantially over that of 1971.

Consolidated net sales were $2.225 billion, a 7 per cent increase over the $2.087 billion reported in 1971.

Net income rose 30 per cent to $122.0 million in 1972. In 1971 net income was $93.7 million.

Primary earnings a common share reached $3.49 in 1972, compared to $2.65 in 1971.

1972 Earnings Factors

Monsanto's earnings improvement can be attributed to higher sales volumes, improved product mix, penetration of new markets, growth of newer products and the continuing effectiveness of our cost control programs.

The vitality of the U.S. economy and the growing strength of economic conditions worldwide were basic, positive influences on our sales success. Many key markets served by the company, such as agriculture, automotive, textiles, construction and consumer goods in general, grew at a brisk pace.

Significantly, 1972 was the first full year of operation under our new organizational structure implemented in September of 1971. Performances of the four operating companies created at that time are covered in detail on pages 6 to 13 of this report. The improved flexibility and capability of the new organization were major factors contributing to our success in 1972.

As part of a long-term reassessment, Monsanto has been divesting itself of products and businesses which are of marginal profit to the company, or which do not meet our long-range objectives.

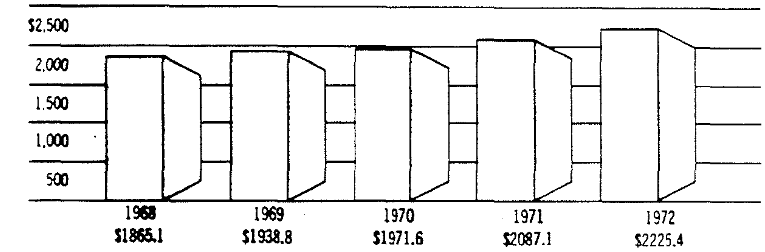
On Sept. 30, Monsanto sold its Lion Oil refining and marketing properties. As a regional refiner and marketer of petroleum products, we determined that Lion Oil would have required large capital expenditures to improve and expand its position in the petroleum industry and particularly to meet new ecological requirements.

During the first nine months of 1972, Lion Oil had sales of $69.8 million. The sale of this Lion Oil property resulted in after-tax income of $3.4 million.

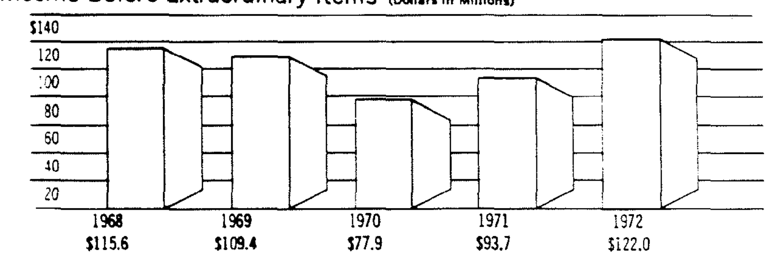
The company retained the oil and gas reserves formerly associated with Lion and continues active domestic production and exploration programs. In addition, Monsanto is a partner in a number of petroleum exploration ventures outside of the United States and is participating in drilling programs in the Java Sea and the North Sea.

While the divestment of marginal businesses must be a continuing program in any viable company, our efforts in this area have peaked for the present time.

Net Sales (Dollars in Millions)



Income Before Extraordinary Items (Dollars in Millions)



As we reported previously, provisions were made for projected cost overruns on several construction projects under way at wholly owned Monsanto Enviro-Chem Systems, Inc. For 1972, the overrun projection resulted in a total charge of $5.3 million against Monsanto's net income.

Based on current projections, we believe that we have provided fully for all anticipated cost overruns at Enviro-Chem and know of no current contract commitments of this subsidiary which would unfavorably affect Monsanto's future net income.

A second factor having a negative effect on earnings for 1972 was the write-off of the goodwill associated with the company's investment in Lansil Ltd., resulting in a $4.2 million reduction of net income. Lansil is engaged in the acetate fibers business in the United Kingdom. The current market uncertainty for Lansil's cellulosic fibers product line resulted in a decision to reduce the value of this investment.

An important measure of Monsanto's current and future earnings potential is the direction of its overall selling prices. These had declined steadily for a number of years. In 1972, however, the decline slowed markedly, and the outlook for future stabilization appears favorable. Principal factors affecting the 1972 decline in selling prices were lower fiber prices in European markets and lower selling prices of some electronic products. Virtually all other product areas showed selling price stability. In the last quarter of 1972, average selling prices were higher, compared to the same period of 1971.

Chairman Charles H. Sommer

President John W. Hanley

Capital Expenditures

In general, the level of capital spending in the chemical industry declined during the past two years, resulting in a balance between supply and demand for many major products. We are hopeful that this balance will continue to be maintained in the future.

Monsanto's capital expenditures amounted to $168.3 million in 1972. This level was modest in comparison to expenditures of the three prior years, when our capital outlays averaged $242.0 million per year. In 1972 we focused our attention on the opportunities created in the heavy investment years by improving the capabilities of new and expanded plants constructed during the earlier period.

Capital expenditures for 1973 are projected to increase approximately 20 per cent over those of 1972. Approximately 78 per cent will be spent in the United States and 22 per cent in other countries.

External Factors

We have applauded the Nixon administration's efforts to control wages and prices under Phase I and Phase II, and we welcome the decision to make controls voluntary and more flexible under Phase III. We were able to meet all of the requirements imposed upon Monsanto under Phase II during 1972. We are hopeful that both business and labor will exercise judicious restraint

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under the voluntary system envisioned under Phase III.

The recent dollar devaluation and other changes in parity ratios of major currencies will have only a minor effect on the company's consolidated financial position in 1973.

We fully expect the devaluation will stimulate our export sales and that the other resulting currency changes will have a positive effect on 1973 results.

We are concerned about the worldwide energy shortage, which directly affects our ability to obtain feedstocks for our petrochemical plants, as well as fuel for heating and cooling. During 1972, we achieved additional access to world feedstocks for U.S. petrochemical production, as our allocations for imported petroleum were increased in proportion to our petrochemical exports.

We expect our costs for feedstocks and for fuel will increase, and in some critical areas we are changing to alternate sources of supply. Effective long-term planning for feedstocks and fuel is heavily dependent on the U.S. government's energy policies.

The environment continues to receive our active attention. We attempt to anticipate the impact our products and processes will have on future generations, as related to the use of new products and new business systems, before their commercialization.

We are also developing systems to protect our environment. Early in 1973, our Enviro-Chem subsidiary entered into an agreement to build a solid-waste disposal and resource recovery plant utilizing Enviro-Chem's *Landgard* process for the city of Baltimore. Scheduled for

Primary Earnings a Share—1972	$3.49
—1971	2.65
Improvement—1972 over 1971	$0.84

Analysis of Major Causal Factors

Sales related factors:	
Change in sales volume and product mix	$1.56
Lower selling prices	(0.06)
Total sales related factors	1.50
Cost related factors:	
Lower raw material prices	0.10
Higher manufacturing costs	(0.63)
Higher nonmanufacturing costs	(0.31)
Lower start-up costs	0.02
Total cost related factors	(0.82)
Other factors:	
Lower interest expense	0.03
Higher income credits—net	0.05
Lower tax rate	0.09
Other	(0.01)
Total other factors	0.16
Improvement—1972 over 1971	$0.84

Quarterly Results

(Dollars in millions, except per share)

	Net Sales		Net Income		Primary Earnings Per Share	
	1972	1971	1972	1971	1972	1971
First	$ 615.0	$ 542.3	$ 47.5	$30.5	$1.38	$0.87
Second	564.8	539.8	31.8	30.5	0.91	0.88
Third	522.8	506.0	18.8	16.6	0.52	0.46
Fourth	522.8	499.0	23.9	16.1	0.68	0.44
YEAR	$2,225.4	$2,087.1	$122.0	$93.7	$3.49	$2.65

The Board of Directors wishes specifically to identify for Monsanto shareowners what it regards as a major accomplishment of 1972, namely: the election, effective Nov. 1, of John W. Hanley as president, chief executive officer and member of the board. The leadership qualities of our new president are very much in evidence as the company plans for a future of growth and profitability.

For the Board of Directors —

Charles H. Sommer, Chairman

operation in 1974, the plant will dispose of 1,000 tons of municipal waste daily while generating usable energy and recovering ferrous metals and glassy aggregates as salable products.

Currently, Monsanto and other U.S. companies with manufacturing operations in other countries are facing the threat of major legislation, the Burke-Hartke Bill, which would significantly affect our operations. The bill provides for punitive taxes on earnings from operations outside of the United States, limits the use of technology in other countries, and establishes a strict system of quotas on imports.

We are engaged in a strong, industry-wide program to demonstrate to Congress the very positive contributions made to the U.S. economy by our international operations. Monsanto had a net export balance of more than $150.0 million in 1972.

It is our estimate that the jobs of more than 4,200 production, administrative and clerical employes in the United States are dependent on our operations in other countries or on exports. A large portion of our exports involves intermediate products which are shipped to our own plants around the world for further processing.

Major Operating Costs
(Dollars in millions)

	1972	1971
Raw Materials Purchased	$553.5	$540.4
Wages and Salaries	562.3	527.2
Employe Benefits	83.2	73.0
Energy and Other Utilities	110.0	98.1

Outlook Encouraging

The outlook for 1973 is encouraging. Based on the health of the U.S. economy, the growing vigor of worldwide economies, and the more favorable balance between supply and demand in the chemical industry, we anticipate another year of improvement for Monsanto.

We expect to benefit from higher sales volume and higher capacity utilization; from continued improvement in selling prices; from the ongoing effectiveness of our cost controls, and from the further turnaround of some of our lower profit product lines.

The negatives of inflation, higher raw material and labor costs, and the increasing investment required to meet ecological needs are facts of business life. While these factors concern us, we do not believe they will offset our strengths.

Monsanto's financial position at the end of 1972 remained strong. As now projected, the company does not plan any equity financing or any significant debt financing during 1973.

New Board Members

A number of changes have occurred on the Board of Directors. After many years of significant contributions, James S. Rockefeller and David R. Calhoun reached mandatory retirement age. In July, Edward L. Palmer, chairman of the executive committee of First National City Corporation and a director of both the holding company and its principal subsidiary, First National City Bank of New York, was elected to the board. In January, 1973, Francis E. Reese, a Monsanto vice president, was elected a director, replacing Anthony J. A. Bryan, who resigned as an officer and director of the company. Mr. Reese is general manager of the International Division. During 1972, H. Harold Bible, a director and vice president-administration, was elected a senior vice president.

As Monsanto adapts to the requirements and demands of a new era, we find a single constant stands out as a commanding asset: the determination, inventiveness, loyalty and spirit of the men and women of Monsanto. Our success is the sum of their efforts, and our pride in their accomplishments deserves special mention to our shareowners.

Sincerely,

Chairman of the Board

President

St. Louis
March 7, 1973

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Monsanto Industrial Chemicals Company

Monsanto Industrial Chemicals Company's 1972 sales increased to $572.3 million in 1972, a 5 per cent gain over the $544.3 million recorded in 1971. Operating income reached $57.7 million, a 17 per cent gain over 1971's $49.5 million.

Sales gains paralleled the strong growth of major industries served in the United States and other world markets. Particularly heavy demand came from the automotive and construction industries.

The improvement in operating income was attributed to higher sales, price stability—especially for large volume chemicals—and effective cost control programs.

Demand for chemicals used in rubber and vinyl products reached unprecedented levels. Rubber chemical and plasticizer sales worldwide set new records.

During 1972, a Monsanto subsidiary began construction of a new rubber chemicals plant in Argentina to serve the growing rubber market there. Scheduled for completion early in 1973, the unit will enable Monsanto to serve the rubber industry from plants in eight countries.

Governmental requirements and consumer preferences created increased demand for specialty plasticizers with fire resistant properties.

Production capacity for Monsanto's fire resistant additive, *Phosgard* 2XC-20, was doubled during 1972. The product is used in flexible polyurethane foam for 1973 model automobile and truck seat cushions.

Sales of process chemicals grew significantly during 1972. Selling prices of these products improved and reached more traditional levels. Plant expansions were completed for increased production of ONA (ortho-nitroaniline), PNA (para-nitroaniline) and benzyl chloride.

Research efforts to identify a safe phosphate substitute for detergents received high priority. Two studies on the biodegradability of sodium nitrilotriacetate (NTA) were concluded, adding to the accumulation of knowledge that continues to show NTA can be used safely as a partial substitute for phosphates in detergents.

Monsanto received contracts during 1972 to supply limited quantities of NTA to the Canadian detergent market, where the product's use is approved.

A proprietary bacteriostat for bar soaps, *TCC*, had substantial sales increases during 1972, and capacity was increased to meet the new demand. Monsanto is cooperating closely with the U.S. government in safety testing bacteriostats.

As a result of research and expansion into fragrance, food ingredient and pharmaceutical intermediate markets, a new aroma chemicals plant was completed, as was an expansion of Monsanto's vanillin plant.

Phase-out of polychlorinated biphenyl (PCB) products, except for use in closed-system electrical equipment, was completed. New replacement products were introduced.

To meet demand for other products, plant expansions were under way at Luling, La., for increased production of *ACL* chlorine compounds, cyanuric acid and *EMA* resins. Production capacity for *Dequest* deflocculating and sequestering agent was increased at the Everett, Mass., plant.

The growth of the paper industry during 1972 led to increased sales of paper chemicals. A new wet-strength resin, *Santo-Res* 23, was introduced. Paper chemicals are used to impart wet strength and water resistance to paper products.

During 1972, recently completed plant modernization programs began to return intended benefits in higher volumes and lower unit costs. Internal needs for essential raw material chemicals were met, and participation in some chemical commodity markets was profitable.

The strength of the chemical industry, and the improved balance of supply and demand, should continue to benefit Monsanto.

Businesses	Major Products	Product Applications	1972 Highlights
Rubber and Specialty Chemicals	Accelerators Antidegradants Test instruments	Processing and preserving tires and other rubber products. Test instruments for the rubber processing industry.	Strong growth in all world markets except Europe. With completion of new plant in Argentina, the rubber industry will be served from facilities in eight countries.
	Latex binders	Carpet backing. Adhesive for wall covering and packaging.	Broad base of applications developed.
	Process and hydraulic fluids Dielectrics	Heat-transfer systems. Industrial and aircraft fire retardant systems. Encapsulant solvents for carbonless paper. Transformer and capacitor fire retardant fluids.	Record sales with new formulations. New facilities for carbonless paper solvents brought on-stream.
	Bleaching compounds	Swimming pool chlorination, laundry bleaches, sanitizing agents.	Excellent sales and manufacturing volume. New plant in Luling, La., neared completion.
	Fire chemicals	Fire extinguishers, fire retardant coatings, wildfire control.	Market demand continued to increase for all applications.
	Specialty resins	Liquid detergents, photographic film, thickening agent in textile print paste.	Sales and manufacturing volume reached record levels. Construction of new plant in Luling, La., begun.
	Vanillin Aspirin Food ingredients Flavors	Pharmaceuticals and food processing.	Vanillin expansion completed. Record aspirin sales. Prices, demand strong for food ingredients.
Process Chemicals	Aromatic organics Inorganic industrial chemicals Resin raw materials	Chemical processes, polyester and coatings production, detergents, fertilizers, gasoline and oil additives.	Selling prices stabilized and turned upward. Plant output significantly higher. Expansions completed on ONA, PNA and benzyl chloride.
	General purpose and specialty plasticizers	Used in polyvinyl chloride products such as vinyl wall coverings, floorings, wire and cable insulation, film and sheeting, food packaging, medical and dairy equipment.	Plasticizer sales up in unprecedented vinyl chloride growth worldwide. Flame retardant additive capacity expanded. Polymeric plasticizer gained acceptance in food, medical and dairy uses.
Phosphates and Detergents	Phosphate builders Surfactants Bacteriostats	Household and industrial detergents and soaps.	Good demand. Strong technical and marketing base provided strength in transition to new detergent materials.

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Monsanto Textiles Company

Monsanto Textiles Company's sales reached $526.0 million in 1972, 10 per cent above the $479.7 million of 1971. Operating income of $44.5 million was 10 per cent over the previous year's $40.5 million.

Sales and operating income gains were worldwide. U.S. apparel and carpet markets improved over 1971, reflecting the growing strength of the textiles segment of the domestic economy. European sales of man-made fibers were also higher. Selling prices were depressed in Europe during 1972, but firmed at year-end as demand for fibers increased.

Record levels of residential and commercial construction activity, coupled with increased purchases of consumer durable goods, stimulated carpet sales.

To meet demand, carpet nylon capacity was increased by 25 million pounds, with another 25 million pound increase scheduled for 1973. The nylon carpet market is expected to continue its growth in 1973. Bolstering the market for carpet fibers late in 1972 was the high price of wool, worldwide, which created an opportunity for Monsanto to further penetrate market areas particularly suited for *Acrilan* acrylic fiber.

During the year, home furnishings was established as an independent business group, separate from carpets, in recognition that this market is expected to grow significantly in the future.

Annual consumption of man-made fibers for draperies, pillows, blankets, area rugs, upholstery and other similar uses is nearing the two-billion-pound mark. Industry projections indicate consumption will reach three billion pounds annually by 1980.

The industrial fibers business was strong, with production at high levels at year-end to meet heavy requirements from the tire industry. Demand for nylon tire cord strengthened during 1972, as an all-time truck tire sales record was set. Other tire markets — farm, replacement and off-the-road equipment — also experienced higher sales. Uses of nylon for seat belts, camping equipment and sewing thread were at record levels.

Monsanto's modacrylic fiber for *Elura* wigs had sales exceeding expectations. More importantly, the product, which was first introduced in 1970, has established a leading position for itself as the premium quality fiber for wigs.

One of several bright spots in the apparel field was the year-long consumer preference for knitted outerwear and a corresponding demand for *Acrilan* fiber. *Actionwear* textured nylon yarn sales to the hosiery trade also increased over 1971, as this product gained greater commercial acceptability.

Monvelle biconstituent nylon and spandex hosiery yarn was test marketed in Japan, Germany and the United States during 1972. Early reports have been optimistic, and successful commercialization of this product is expected in 1973. *Monvelle* combines sheerness with the properties of a support hose. The fiber is an industry first.

Initial sales of *SEF* modacrylic fiber for apparel, developed during 1971, also exceeded expectations. The first man-made fiber to meet government standards concerning flammability in children's sleepwear, *SEF* maintains the soft quality of *Acrilan* while meeting stringent federal safety regulations. The coming extension of government flammability standards for sleepwear in sizes 7x-14x suggests further potential for this Monsanto fiber.

The performance of other new *Acrilan* products also was encouraging. This was especially true in the pile fabric area and in the rapidly growing hand-knitting yarn business.

Monsanto's *Wear-Dated* program celebrated its 10th anniversary during 1972. As the program moves into its second decade, the *Wear-Dated* guarantee now encompasses more than 300 identifiable products made with Monsanto fibers in the United States. These products account for approximately $1 billion annually at retail sales outlets.

The *Wear-Dated* guarantee, introduced long before "consumerism" was a national issue, has been extended since 1962 to cover every category of apparel. The program today operates in 22 countries around the world.

Factors contributing to increased European sales were higher production resulting from debottlenecking of facilities at the Coleraine, Northern Ireland, acrylic plant, and the successful start-up of the 35-million-pound-a-year Lingen, West Germany, acrylic plant.

In addition to start-up of the Lingen plant, 1972 saw the Sand Mountain plant in northern Alabama begin production, as its first units were installed on schedule. This plant, incorporating advanced technology for producing nylon and polyester filament yarns, fits Monsanto's plans for entry into the market for apparel polyester.

The establishment of import quotas for man-made fibers from Japan, Hong Kong, Taiwan and Korea brought about a reduction of fiber imports from those countries during 1972. Imports of man-made fibers from other countries, however, were not under quota, and shipments increased.

General growth of the textiles industry, which is expected to continue in 1973, helped to stabilize prices for synthetic fibers. While there were some increases, U.S. prices still remained below earlier levels. With demand for acrylics and nylon still strong in the United States and improving in Europe, pricing in general is expected to remain firm in the months ahead.

Business	Major Products	Product Applications	1972 Highlights
Man-Made Fibers	Acrylic staple	Carpets, rugs, blankets, draperies and upholstery. Sweaters, skirts, dresses, babies' garments, ski suits, slacks, sports and work clothing.	Demand strong in U.S., improving in Europe. Start-up of Lingen, W. Germany, plant. Debottlenecking of Coleraine, N. Ireland, plant. High price of wool offered opportunity in specialty carpet areas traditionally closed to *Acrilan*. Strong demand from knitted outerwear market. Sales in home furnishings area increased.
	Modacrylic fibers	Premium quality fibers for wigs, draperies and curtains, simulated fur, industrial fabrics, scatter rugs and carpets.	*Elura* wigs established leading position as premium product. Sales of *SEF* fibers exceeded expectations.
	Nylon fibers	Carpeting, upholstery, bedspreads, hosiery, stretch fabrics, raincoats, dresses, lingerie, blouses, windbreakers, thread, sails, conveyor belts, tire cord, safety belts, tarpaulins, ropes, nets, parachutes.	Strong total demand in U.S., improving in Europe. Carpet nylon capacity increased reflecting healthy state of building industry. Tire yarn business strong. Demand for other industrial fibers at all time high. *Actionwear* sales to hosiery trade up. Test-marketing of *Monvelle* hosiery yarn successful in Japan, Germany and U.S. *Cadon* nylon products developed carpet market interest.
	Polyester	Durable press suits, shirts, slacks, dresses, blouses, lingerie, draperies, rope, tire cord, fish nets. Fiberfill for pillows, comforters, sleeping bags, skiwear.	First units of Sand Mountain plant installed, marking entry into apparel polyester filament field. *Spectran/Acrilan* blends introduced to several markets. Both filament and staple demand showed strength.

Monsanto Polymers & Petrochemicals Company

Sales of Monsanto Polymers & Petrochemicals Company reached $556.8 million in 1972, compared to $531.4 million recorded in 1971. Operating income was $46.5 million in 1972 and $30.3 million in 1971. Nine months operating results of Lion Oil marketing and refining operations, which were sold on Sept. 30, are included in the 1972 totals.

A healthy U.S. economy was the dominant factor in sales increases for all product lines. Every major market expanded. Automotive production was at record levels. The upsurge in the construction industry resulted in higher sales to housing and consumer goods markets. Increased consumer spending contributed to growth in packaging.

Higher sales volumes, together with excellent manufacturing operations at worldwide plant locations, led to improved operating income.

Market demand for plastics was strong.

Use of *Lustran* ABS plastic for drain, waste and vent pipe was at a record high, and penetration continued into appliance markets, particularly refrigerators. Expansions were scheduled to maintain leadership in ABS engineering plastic. A new plant in Antwerp, Belgium, with annual capacity of 110 million pounds, began production at mid-year. Final phases of another expansion, in Addyston, Ohio, were under way. Facilities in Sarnia, Ontario, Canada, were purchased from The Polymer Corporation, and installation of a new ABS plant was scheduled for completion in 1973.

Demand for *Lustrex* polystyrene, manufactured by Monsanto in 10 nations, increased in packaging and appliance uses. Construction of Israel's first polystyrene plant by a Monsanto affiliate neared completion, and construction on a plant in Australia for expandable polystyrene was scheduled for completion in 1973.

Packaging demand also helped improve sales of polyethylene. High-density grades of the plastic are used to make bottles, shipping trays and pails in the United States. Packaging film is the principal market for low-density polyethylene in the United Kingdom.

Monsanto decided to end its U.S. role in polyvinyl chloride (PVC) plastics. Although PVC business in other nations is large, the company's share of the U.S. market is small. In addition, manufacture of the raw material, vinyl chloride monomer, was ended in 1968. Early in 1973, Monsanto licensed its U.S. PVC technology and initiated plans to close some production units.

Monsanto expanded its role in engineering plastics with the introduction of a unique, mineral-reinforced grade of *Vydyne* nylon resin. Reinforced nylon from a new unit in Springfield, Mass., is now used in automotive and industrial parts previously made from metal or other engineering plastics. Capacity for production of basic *Vydyne* nylon was more than doubled at Pensacola, Fla.

During 1972, capacity for the production of *Saflex* polyvinyl butyral sheet, used to make laminated glass, was expanded in Ghent, Belgium. A new plant in Springfield, Mass., also started *Saflex* production, replacing an older and smaller unit. Use of laminated safety glass in auto windshields continued to grow. The ability of *Saflex* to suppress sound continues to create interest in architectural markets, where laminated windows reduce noise pollution.

Sales of specialty resins increased substantially. Production of phenolic resins, used to bond mineral fibers into insulation, was near capacity. Demand for melamines and ureas for industrial coatings led to a plant expansion in Springfield, Mass. Markets for adhesive resins, used for pressure-sensitive tapes and reproduction paper, were strong in the United States and Europe, and a 50 per cent expansion was begun.

Two new resins were introduced for developmental marketing. *Montac* hot-melt adhesive was under test in the assembly of cans, automobiles and electrical equipment. In the paper industry, plastic pigments based on polystyrene particles were tested to replace inorganic pigments.

Petrochemical markets demonstrated considerable improvement over 1971. Plastics growth expanded the movement of ethylene and phenol, absorbing surplus capacity in the industry. Strong demand by the rubber industry was reflected in styrene and butadiene sales. Growth in the fiber industry aided marketing of acrylonitrile in the United States and Europe.

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Monsanto expanded its position in styrene monomer with the start-up of a new plant in Texas City, Tex. With annual capacity of 1.3 billion pounds, the plant is geared to supply growing U.S. demand. Styrene plants using Monsanto-licensed technology also began production in Japan and the United Kingdom.

On Sept. 30, the sale of the petroleum marketing and refining properties of Lion Oil was completed. The assets sold included a 37,500-barrel-per-day refinery at El Dorado, Ark., an associated crude oil gathering and pipeline system and service stations in the mid-South.

Monsanto continued an active oil and gas exploration program. Total reserves of oil and gas increased during the year. The search for natural gas in the United States was intensified, and new gas reserves were discovered in the Gulf of Mexico, Oklahoma and New Mexico.

Participation in offshore exploration, along with other companies, continued. A part interest in a Dutch North Sea concession was sold to finance activity elsewhere. Monsanto is the operator for another group which received two exploration licenses in the U.K. North Sea. Plans call for initial drilling there in 1973. In the Java Sea off Indonesia, oil and gas were recovered during one test. Further evaluation is planned to confirm the potential of this find.

The gains recorded in 1972 were not solely a result of the improved economy. They reflect investment and commercial decisions initiated earlier. This business strategy is expected to continue to yield further market and profit growth.

Businesses	Major Products	Product Applications	1972 Highlights
Plastic Materials	ABS Nylon Polyethylene Polystyrene	Appliance housings and parts. Automotive interiors, body parts. Pipe for construction. Furniture, plastic packaging.	Strong growth in thermoplastics. ABS plant completed in Belgium. ABS expansions under way in Ohio and Canada. Israeli polystyrene plant neared completion. Australian expansion begun. Basic nylon facilities expanded in Florida. Engineering plastics line broadened with mineral-reinforced nylon.
	PVB sheet	Laminated glass for automotive windshields, buildings.	Increased auto, architectural use. Capacity expanded in Belgium. New facility in Massachusetts replaced older unit there.
	Melamines Phenolics Ureas Vinyl acetates	Appliance enamels, auto coatings, house paints. Insulation, plywood, particleboard for building. Adhesives for packaging.	Sales increased substantially. Melamine/urea expansion completed, and expansion begun on polyvinyl acetate copolymer in Massachusetts.
Petrochemicals	Acetic acid Acrylonitrile Butadiene Ethylene Methanol Phenol Propylene Styrene monomer	Plastics and resins, man-made fibers, synthetic rubber, organic chemicals.	Internal use and sales expanded. Manufacturing efficiencies contributed to income. New styrene monomer plant began operation in Texas. Licensed styrene plants started up in Japan and the United Kingdom.
Petroleum Products	Crude oils Natural gas	Raw material for refineries, petrochemicals. Home heating, industrial power.	Successful U.S. drilling increased total reserves. Gas sales up, oil production down slightly. Java Sea test recovered hydrocarbons. License granted for exploration in North Sea.
	Asphalts Burner oils Diesel fuels Gasolines	Engine fuels, building heat, industrial power, road paving.	U.S. demand for fuels brought sales increase. Arkansas refinery and related marketing properties sold at end of third quarter.

Monsanto Commercial Products Company

Monsanto Commercial Products Company had record sales and operating income in 1972. Sales reached $570.3 million for the year, compared to $531.7 million in 1971. Operating income rose 18 per cent to $67.7 million. In 1971 operating income was $57.6 million.

Agricultural chemicals recorded the strongest sales gains and were major contributors to improved operating income. Crop protection products led the advance.

Sales of *Lasso* herbicide, which controls most annual grasses and some broadleaf weeds in corn, soybeans, peanuts and cotton, increased sharply. During 1972, the U.S. Environmental Protection Agency granted an additional clearance for *Lasso* for use on sweet corn.

Domestic demand was also strong for other crop protection products, including *Ramrod* herbicide used in corn and sorghum. Outside of the United States, sales gains were made by *Avadex* and *Avadex* BW wild oat herbicides, and by *Machete* herbicide, which controls grassy weeds in rice.

A substantial increase in cotton acreage planted in the United States, and in Central America, led to improved sales of parathion for use in controlling insects. Fertilizer operations also improved.

Two developmental products, *Polaris* plant growth regulator for sugarcane, and *Roundup*, a post-emergence herbicide for a number of uses, showed excellent results in extensive field tests conducted during 1972. *Polaris* increases the yield of raw sugar by improving the sucrose content of sugarcane. *Roundup* controls a broad spectrum of undesirable annual and perennial grasses and broadleaf weeds.

Commercialization of these developmental products is not expected until full field testing is completed and the necessary clearances are granted by appropriate government agencies.

Sales of fabricated plastic products were strong. Consumer preference for plastic containers created increased demand for blow-molded bottles in large volume markets such as household chemicals, toiletries, cosmetics and pharmaceuticals.

Polyethylene film sales increased for specialty applications, such as disposable diapers, as well as for agricultural, industrial and construction uses. Facilities for increased production capacity were under construction in 1972.

Fome-Cor sheathing board continued as a preferred material for use in the subroofs and sidewalls of mobile homes, and sales rose significantly over those of 1971.

To meet demand for urethane foam used as seat cushioning material in automobiles and furniture, capacity was under expansion at the company's Woodbridge, Ontario, Canada, plant.

Progress continued in development of the *Lopac* container system for carbonated beverages. Tests conducted in 1972 gave positive evaluations of the container's environmental acceptability and its performance in filling, shelf life and distribution. Expanded test marketing is planned for 1973.

Sales of wholly owned Fisher Controls Company, Inc., were near the 1971 level. Demand for the subsidiary's valves, regulators and instruments used to control the flow of gases and liquids was lower than anticipated. Fisher's performance was hindered by reduced capital spending in most of the major processing industries served by the company.

During the year, Fisher's operations were expanded when a new manufacturing facility to serve South American markets began operation in Argentina.

Growth in the electronics industry stimulated sales of electronic products in 1972. Demand for Monsanto's silicon, III-V materials and opto-electronic devices was high.

Depressed silicon prices began to strengthen late in the year. To meet new customer requirements, the product line was expanded to include a three-inch-diameter polished silicon wafer.

A substantial gain was made by III-V materials used in the manufacture of optoelectronic products. Demand for Monsanto's optoelectronic devices, such as light-emitting diodes, solid-state displays, digital readouts and optically coupled switches, reached a new level.

The 1972 performance of Monsanto Enviro-Chem Systems, Inc., did not meet expectations. This was due primarily to cost overruns on several construction projects, discussed earlier in this report, and to lower volume of new business in engineering and construction con-

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tract-service operations. In Enviro-Chem's product areas, gains were made by *Brink* mist eliminators and vanadium catalysts, used in acid manufacture. The market for *Brink* mist eliminators was expanded to include use by textile and pulp and paper industries.

At year-end, Enviro-Chem entered into an agreement with the city of Baltimore, Md., to build a plant utilizing the company's *Landgard* solid-waste disposal and resource recovery process. Scheduled for operation by the city in 1974, the unit will dispose of 1,000 tons of municipal waste daily, while recovering ferrous metals and glassy aggregates as salable products. Steam generated from the heat of the *Landgard* pyrolysis process will be sold by the city to the Baltimore Gas and Electric Company as an energy source.

Monsanto Commercial Products Company is in a strong position to meet increases in demand forecasted for its products in 1973.

Businesses	Major Products	Product Applications	1972 Highlights
Products for Agriculture	Herbicides Insecticide Fertilizer materials Animal feed supplements Blasting agents	Weed and insect control, and soil fertilization. Quality improvement for poultry and pork producers. Mining and engineering explosives.	Continued strong performance. High volume, good product mix, generally favorable market conditions for crop protection products. Herbicide uses broadened. Good gains in markets outside the U.S. Experimental products for new markets met development expectations.
Plastic Products	Bottles, film, sheet and trays	Packaging of food, household and other products. Polyethylene film for agricultural, construction, industrial and specialty uses.	Strong market growth for plastic packaging continued. Bottle prices stable, but food film and sheet packaging prices under pressure.
	Fome-Cor board Urethane foam	*Fome-Cor* sheathing for mobile home construction. Foam for automobile and furniture cushions.	Markets for *Fome-Cor* and urethane foam strong. New production capacity under way for embossed polyethylene film and urethane foam.
Process Controls and Electronics	Valves, regulators and controllers Electronic instrumentation	Chemical process, power, oil and gas, pulp and paper industries for flow control of liquids and gases.	Market demand soft. Static new plant activity in markets served. Year-end order backlog strong. New plant in Argentina. U.S. and European interest in electronic instrumentation line gained.
	Silicon III-V materials Optoelectronic devices	Components for semiconductors. Optoelectronic devices for computer, calculator, electronics, aircraft and automobile industries.	Strong market demand. Silicon prices strengthened at year-end. New products extended applications.
Chemical and Environmental Systems	Engineering and construction contract services *Brink* mist eliminators Vanadium catalysts *Landgard* process	Chemical process, power, textile, pulp and paper industries. Municipal environmental control.	Cost overruns and lower volume of engineering and construction services depressed performance. Sales of *Brink* mist eliminators at new high. First sale of *Landgard* solid waste disposal and recovery process.

International Division

As a multinational corporation, Monsanto faces numerous opportunities and challenges associated with meeting the varied social, individual and industrial needs of the many nations in the world. These needs range from the most basic requirements in developing areas to the highly complex demands of a United States or European Economic Community (EEC).

In a period of rising concern in many countries over individual national interests, Monsanto is well positioned and dedicated to making a positive contribution to the societies and economies in which the company does business.

For 1972, Monsanto's sales abroad, made up of exports of U.S. produced products and sales of products manufactured outside of the United States, reached a record $551.5 million—a 12 per cent gain over the $492.6 million reported for 1971. Because Monsanto's operating companies have worldwide responsibility for product lines, these sales and the attendant operating income have already been reported in the operating company sections.

Summary of Sales Abroad
(Dollars in millions)

	1972	1971
Exports from the United States	$155.5	$119.8
Manufactured outside the United States	396.0	372.8
Total	$551.5	$492.6

A number of factors contributed to higher sales for 1972. Economic conditions improved worldwide. Currency revaluations that resulted from the Smithsonian Agreement of December, 1971, made American products more competitive in world markets. Capacity at some existing plants was expanded, and new plants came on-stream. Over-all capacity utilization was high.

Exports from the United States were particularly strong during 1972, increasing to $155.5 million. This was a 30 per cent gain over export sales of $119.8 million reported in 1971, with strength in most product lines.

Exports were also stimulated by the creation of a Domestic International Sales Corporation (DISC) subsidiary. DISC subsidiaries were authorized under the U.S. Revenue Act of 1971 to improve the cost competitiveness of U.S. products in world markets, stimulate domestic employment and help the U.S. balance of payments.

Sales Abroad by World Area
(Dollars in millions)

	1972	1971
Europe	$320.2	$270.0
Canada and Latin America	151.1	153.4
Pacific and Other	80.2	69.2
Total	$551.5	$492.6

In Europe, Monsanto's sales increased 19 per cent over those of 1971. Selling prices, while weak early in 1972, began firming at midyear. Sales gains were led by products for agriculture and by man-made fibers.

Inflation remains a serious problem in Europe, particularly in the United Kingdom where wage and price controls were established during 1972. Other European countries are utilizing various means to halt inflation, including control of interest rates and credit, and adjustment of monetary policies.

During 1972, the United Kingdom, Ireland and Denmark joined the EEC, bringing the alliance total to nine nations. The EEC has a population slightly larger than that of the United States and accounts for 45 per cent of the world's international trade. Monsanto's long-range planning has been based upon this enlargement of the EEC, and the company expects to benefit from evolving new business opportunities.

Monsanto's sales in Canada and Latin America were $151.1 million in 1972, a 14 per cent increase over a comparable $132.9 million reported in 1971. The $132.9 million excludes $20.5 million of sales of the former subsidiary, Monsanto Mexicana S.A., which was merged with Resistol S.A. in 1971, creating an affiliate company, Industrias Resistol S.A.

Canadian sales, stimulated by strong markets for agricultural products in western Canada, were led by crop protection chemicals. Sales of synthetic fibers and plastics were also major contributors to improved 1972 results.

In Latin America, plastics, rubber chemicals, phosphate products and chemicals for agriculture were strong performers. Mexico, Argentina, Brazil and Central America represent the major Monsanto market areas in this region. Despite continued high rates of inflation, operations in Argentina were successful, and product lines were expanded with the installation of a facility for the manufacture of rubber chemicals.

In the Asia-Pacific area, sales of $80.2 million were led by fibers and agricultural and rubber chemicals. In 1971 sales were $69.2 million.

The company has partial ownership in major affiliated companies in Spain, Japan and Mexico.

Monsanto's Spanish affiliate, Aiscondel S.A., experienced the best year in its history in 1972, helped by the rapid economic expansion in Spain. Aiscondel maintains its position as a major plastics producer and plastics fabricator.

Excess capacity in the Japanese chemical industry led to low prices early in 1972. Prices began firming late in the year. Monsanto's affiliate, Mitsubishi Monsanto Chemical Company, achieved record sales in 1972, and the improvement is expected to continue into 1973.

The year 1972 was the first full year of operation of Industrias Resistol S.A. The strengthening Mexican economy and cooperation among the component organizations of the newly formed company led to an outstanding performance for the year. Expansion and diversification programs currently under way are expected to lead to further growth in Mexico.

Other key events in 1972 were the trade agreement that was reached between the United States and the U.S.S.R. and the opening of trade with the People's Republic of China. These two highly populated market areas offer Monsanto expanded opportunities for future commercial relationships. Business programs have been designed to adapt to these developments, and we are hopeful that future years will bring significantly expanded business relations with both countries.

For 1972, Monsanto had capital expenditures of $54.1 million in areas outside of the United States. This constituted approximately 32 per cent of total worldwide capital expenditures for the year.

Capital Expenditures Abroad
(Dollars in millions)

	1972	1971
Europe	$47.1	$56.3
Canada and Latin America	5.5	3.3
Pacific and Other	1.5	1.1
Total	$54.1	$60.7

At the end of 1972, Monsanto's gross investment in plant and property outside of the United States was $489.3 million—up $35.3 million from 1971.

Gross Plant and Property Investment Abroad
(Dollars in millions)

	Year-End 1972	Year-End 1971
Europe	$414.4	$376.3
Canada and Latin America	41.8	44.3
Pacific and Other	33.1	33.4
Total	$489.3	$454.0

Consolidated Sales by Product Groups

(Dollars in millions)

	1972	1971	Per Cent Increase (Decrease)	Per Cent of Total 1972	Per Cent of Total 1971
Industrial Chemicals:					
Rubber and Specialty Chemicals	$ 255.6	$ 245.5	4.1%	11.9%	12.3%
Process Chemicals	160.0	142.8	12.0	7.4	7.1
Phosphates and Detergents	156.7	156.0	0.4	7.3	7.8
Textiles:					
Man-Made Fibers	526.0	479.7	9.7	24.4	24.0
Polymers & Petrochemicals:					
Plastic Materials	346.5	310.4	11.6	16.1	15.5
Petrochemicals	112.7	106.3	6.0	5.2	5.3
Petroleum Products	27.8	27.5	1.1	1.3	1.4
Commercial Products:					
Products for Agriculture	222.3	199.7	11.3	10.3	10.0
Plastic Products	144.4	134.8	7.1	6.7	6.7
Process Controls and Electronics	137.3	125.0	9.8	6.4	6.3
Chemical and Environmental Systems	39.9	52.8	(24.4)	1.8	2.6
Other Products	26.4	19.4	36.1	1.2	1.0
Sales from Continuing Operations	2,155.6	1,999.9	7.8	100.0%	100.0%
Sales from Discontinued Lion Oil Operations	69.8	87.2	(20.0)		
Total	$2,225.4	$2,087.1	6.6%		

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Technology

Monsanto's technological programs have three basic goals: improvement of existing products and processes; redesign of existing products to penetrate new markets; development of new processes and product systems.

The major portion of the $92.0 million spent for technology in 1972 was in the first two categories and took place within the four Monsanto operating companies. Representative of the innovations reported in other sections of this report, and stemming from Monsanto's over-all technological capabilities, were: *Monvelle* biconstituent fibers for hosiery, *Polaris* plant growth regulator, *Roundup* herbicide, specialty plasticizers with flame resistant properties, *Vydyne* mineral-reinforced nylon plastics, and digital and analog control systems.

In the development of new processes and product systems, Monsanto concentrates on those areas where it has proven technological capabilities, or where the end product can serve markets familiar to the company. While the development of new systems is costly, the potential for significant impact on future sales and earnings is high.

A number of promising new businesses were in varying stages of commercialization in 1972 by the company's New Enterprise Division, which researches, develops and markets items outside the mainstream of Monsanto's four operating companies.

Sales of Monsanto's *Cerex* spunbonded nylon fabric increased sharply in 1972 for a number of industrial end-uses. Production capacity was expanded. The company foresees a major marketing opportunity in the area of nonwoven fabrics, a rapidly growing segment of the textiles industry.

An *AstroTurf* resilient track-basketball-tennis surface was added to the well known line of *AstroTurf* synthetic recreational and landscaping surfaces in 1972. Monsanto now offers a full line of athletic surfaces.

Sales and operating income of *Cerex* and *AstroTurf* product lines are reflected in the operating results of Monsanto Commercial Products Company.

In addition to the New Enterprise Division's activities, the Corporate Research Department and the Corporate Engineering Department perform exploratory research and fundamental engineering to improve the technical excellence of existing business groups and to support new Monsanto business ventures.

In 1972 Monsanto made major additions to its store of fundamental knowledge in catalysis, polymers and electrochemistry—three areas in which the company is particularly expert at effecting changes on the molecular level.

As one measure of its scientific and technological effectiveness, Monsanto last year received 472 U.S. patents and 1,068 patents outside the United States.

Monsanto continues to pioneer in computer applications. Last year the company redesigned its U.S. and European computer networks to bring the capabilities of large machines to dozens of Monsanto locations. The U.S. network, centered in St. Louis, now processes four times as many remote jobs as it did a year and a half ago, with no increase in computer cost. The European network, centered on a large scale computer in Brussels, was installed with relative ease, utilizing Monsanto developed technology.

Environmental research continues to receive strong emphasis. At Dayton, Ohio, Monsanto Research Corporation (MRC), a Monsanto subsidiary, developed a sophisticated measuring device to detect pollutants in flowing rivers at levels not previously possible on a practical basis. The first instruments produced were purchased by the Environmental Protection Agency.

MRC continued to operate Mound Laboratory at Miamisburg, Ohio, for the U.S. Atomic Energy Commission. As part of its work in support of government programs, the laboratory separates and distributes stable gaseous isotopes and carbon-13 for use in research worldwide. The laboratory also develops and fabricates radioactive power sources for space, terrestrial and medical programs.

Monsanto Company and Subsidiaries

Statement of Consolidated Income

(Dollars in millions, except per share)

	Year 1972	Year 1971
Net Sales	$2,225.4	$2,087.1
Cost of Goods Sold	1,696.3	1,614.3
Gross Profit	529.1	472.8
Less:		
Marketing and administrative expenses	220.7	208.2
Technological expenses	92.0	86.7
	312.7	294.9
Operating Income	216.4	177.9
Income Charges (Credits):		
Interest expense	37.2	38.9
Other — net	(23.4)	(20.4)
	13.8	18.5
Income Before Income Taxes	202.6	159.4
Provision for Income Taxes:		
Current	80.9	69.4
Deferred (credit)	(.3)	(3.7)
	80.6	65.7
Net Income	$ 122.0	$ 93.7
Earnings a **Common Share Based on Weighted Average Number of Shares Outstanding:**		
Primary	$3.49	$2.65
Fully diluted	3.40	2.63

The above statement should be read in conjunction with pages 22 through 25 of this report.

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Monsanto Company and Subsidiaries

Statement of Consolidated Financial Position

(Dollars in millions, except per share)

ASSETS

	December 31, 1972	December 31, 1971
Current Assets:		
Cash	$ 34.6	$ 34.2
Marketable securities, at cost which approximates market	160.1	40.4
Receivables, net of allowances of $18.0 in 1972 and $15.6 in 1971	400.2	402.9
Inventories	394.3	395.4
	989.2	872.9
Investments and Miscellaneous Assets:		
Investments in affiliates — at equity in 1972	41.3	25.1
Miscellaneous investments and receivables — at cost or less	39.4	45.0
	80.7	70.1
Property, Plant and Equipment, at Cost:		
Land	30.1	32.4
Buildings	414.3	408.4
Machinery and equipment	2,197.2	2,172.5
Mineral rights and related properties	123.4	121.8
	2,765.0	2,735.1
Less accumulated depreciation and depletion, etc.	1,631.7	1,564.8
Net property	1,133.3	1,170.3
Deferred Charges	33.7	40.2
	$2,236.9	$2,153.5

The above statement should be read in conjunction with pages 22 through 25 of this report.

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LIABILITIES AND SHAREOWNERS' EQUITY

	December 31, 1972	December 31, 1971
Current Liabilities:		
Accounts payable and accruals	$ 263.1	$ 247.2
Income taxes	36.2	63.3
Current portion of long-term debt	12.6	15.8
	311.9	326.3
Long-Term Debt—Less Current Portion Above	576.2	558.2
Other Liabilities and Deferred Credits:		
Deferred income taxes	27.2	27.5
Miscellaneous	24.8	12.9
	52.0	40.4
Minority Interests in Subsidiary Companies	3.0	2.9
Shareowners' Equity:		
Preferred stock—authorized, 10,000,000 shares without par value, issuable in series; outstanding, 2,321,610 shares in 1972 and 2,320,410 shares in 1971	5.2	5.2
Common stock — authorized, 50,000,000 shares, par value $2 each; issued, 33,308,988 shares in 1972 and 33,155,500 shares in 1971	66.6	66.3
Paid-in surplus	593.0	586.5
Retained earnings	641.5	580.2
	1,306.3	1,238.2
Less common stock in treasury, at cost (307,033 shares in 1972 and 306,543 shares in 1971)	12.5	12.5
	1,293.8	1,225.7
	$2,236.9	$2,153.5

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Monsanto Company and Subsidiaries

Statement of Changes in Consolidated Financial Position

(Dollars in millions)

	Year 1972	Year 1971
Source of Working Capital:		
Operations:		
Income	$122.0	$ 93.7
Depreciation, obsolescence and depletion	193.9	186.9
Working capital from operations	315.9	280.6
Outside financing	41.4	64.3
Property disposals	11.4	17.9
Other—net	19.2	11.6
	387.9	374.4
Application of Working Capital:		
Capital expenditures	168.3	205.2
Dividends	65.5	65.1
Debt reduction	23.4	95.4
	257.2	365.7
Net Increase in Working Capital	$130.7	$ 8.7
Changes in Elements of Working Capital:		
Increase (decrease) in current assets:		
Cash and marketable securities	$120.1	$ (5.2)
Net receivables	(2.7)	19.8
Inventories	(1.1)	3.3
	116.3	17.9
(Increase) decrease in current liabilities:		
Accounts payable and accruals	(15.9)	2.3
Income taxes	27.1	(45.1)
Current portion of long-term debt	3.2	33.6
	14.4	(9.2)
Net Increase in Working Capital	$130.7	$ 8.7

The above statement should be read in conjunction with pages 22 through 25 of this report.

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Monsanto Company and Subsidiaries

Statements of Consolidated Paid-In Surplus and Retained Earnings

(Dollars in millions, except per share)

Paid-In Surplus	Year 1972	Year 1971
Balance at Beginning of Year	$586.5	$583.5
Addition:		
Excess of amounts received over the stated or par value of shares of capital stock issued under stock option plans:		
Preferred stock—stated value $2.24 each: 1,200 shares in 1972 and 6,500 shares in 1971	.1	.2
Common stock—par value $2 each: 152,628 shares in 1972 and 67,138 shares in 1971	6.4	2.8
	6.5	3.0
Balance at End of Year	$593.0	$586.5

Retained Earnings		
Balance at Beginning of Year:		
As previously reported	$580.2	$551.6
Adjustment for certain affiliates from cost to equity	4.8	
As restated	585.0	551.6
Addition—Net income for the year	122.0	93.7
	707.0	645.3
Deduction:		
Dividends on capital stock of parent company:		
Preferred—$2.75 a share	6.4	6.4
Common—$1.80 a share	59.1	58.7
	65.5	65.1
Balance at End of Year	$641.5	$580.2

The above statements should be read in conjunction with pages 22 through 25 of this report.

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Summary of Significant Accounting Policies

Basis of Consolidation

The consolidated financial statements include Monsanto Company (the Company) and all its domestic and foreign subsidiaries in which it has more than a 50 per cent interest. All significant intercompany transactions have been eliminated.

Foreign currency assets and liabilities are translated into United States dollars at approximate year-end rates, except that fixed assets are translated at exchange rates prevailing at the dates acquired. Income and expense items are translated at approximate average rates in effect during the year, except depreciation which is calculated at the approximate rates prevailing when the fixed assets were acquired.

Year-end currency exchange and translation gains and losses are recorded in a reserve for foreign operations. Losses in excess of the reserve balance are charged to income currently.

Investments in the common stock of certain affiliates considered joint ventures, in which the Company has 20 per cent but not more than 50 per cent interest, are accounted for by the equity method.

Construction Contracts

Monsanto Enviro-Chem Systems, Inc., a subsidiary, reports income on its long-term contracts on the percentage-of-completion basis. Losses on such contracts are reported in the period first recognized.

Depreciation and Depletion

The Company, with minor exceptions, uses the sum of the years digits method of computing depreciation on most domestic assets placed in service in the period 1955—1971 and the straight line method on assets placed in service effective January 1, 1972. Most foreign subsidiaries compute depreciation by use of the straight line method. Depreciation rates are based on the estimated useful lives of the individual assets. Depreciation and depletion of mineral rights and related properties are by the unit of production method based upon estimated recoverable reserves.

Income Taxes

The Company follows the practice of reducing its provision for current income taxes by the full amount of its investment tax credits.

Accelerated methods of depreciation are used for income tax purposes. Deferred income taxes are provided for amounts which affect financial and taxable income in different periods.

Inventory Valuation

Inventories are stated at the lower of cost or market, determined generally on the first-in, first-out basis.

Pension Plans

Pension costs include charges applicable to current service and amortization of unfunded prior service costs, wherever applicable, generally over periods ranging from 15 to 30 years. It is the policy to fund pension costs accrued.

Technological Expenses

Research, development, and engineering expenditures are charged to costs as incurred.

Accountants' Opinion

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

TEN BROADWAY
SAINT LOUIS 63102

Monsanto Company:

We have examined the accompanying consolidated financial statements (pages 17 through 25) of Monsanto Company and Subsidiaries for the years ended December 31, 1972 and 1971. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, such financial statements present fairly the consolidated financial position of Monsanto Company and Subsidiaries at December 31, 1972 and 1971 and the results of their operations and changes in their financial position for the years then ended, in conformity with generally accepted accounting principles applied, except for the change in depreciation method, in which we concur, explained on page 23 in the notes to financial statements, on a consistent basis.

February 16, 1973

Haskins & Sells

(Dollars in millions, except per share)

Depreciation, Obsolescence, Depletion

	1972	1971
Charges against income:		
Depreciation and amortization	$168.4	$167.4
Obsolescence	21.7	14.7
Depletion	3.8	4.8
	$193.9	$186.9

Effective January 1, 1972, the Company changed from the sum of the years digits method to the straight line method of computing depreciation for financial statement purposes on domestic assets placed in service on or after that date. The reason for the change in policy was the desire to conform with prevailing industry practice. The change resulted in reduced depreciation charges of $5.0 and an increase in net income of $2.6, or 8 cents a share for the year.

It is estimated that the cumulative effect of the change in method will have a greater impact upon earnings in subsequent years.

The Company continued the use of the sum of the years digits method of computing depreciation on most domestic assets placed in service prior to 1972. The excess of depreciation provided by this method over straight line depreciation on such assets was $13.0 in 1972 and $18.3 in 1971.

Earnings a Common Share

Primary earnings a common share are based on the weighted average number of common shares outstanding in each year plus shares issuable upon the conversion of convertible loan stock of Monsanto Textiles Limited and the exercise of employe stock options. Net income used in this computation is after deduction of dividends on the $2.75 Preferred Stock but before deduction of interest (less tax) on the convertible loan stock.

Fully diluted earnings a common share are based on the number of shares used in the determination of primary earnings, plus common shares issuable upon conversion of the $2.75 Preferred Stock and the convertible debentures of Monsanto International Finance Company. Net income used in this computation is before deduction of dividends on the preferred stock and before deduction of interest (less tax) on the convertible loan stock and the convertible debentures.

Employes' Bonus

The provision for employes' bonus under the Company's Bonus Plan was $2.5 in 1972. On February 16, 1973, bonus awards aggregating $2.0 were made to 18 directors and officers and 251 other employes. The level of net income in 1971 did not allow a bonus provision and bonuses were not awarded.

Equity in Affiliates and Foreign Subsidiaries

Effective January 1, 1972, the Company changed from the cost to the equity method of reporting its investments in the common stock of certain affiliates considered corporate joint ventures. Retained earnings as of January 1, 1972, have been credited with the Company's equity in the undistributed earnings of these affiliates as of that date. 1971 results have not been restated since the change to the equity method had no material effect on the results as previously reported.

The Company's equity in the unaudited net income of these companies totaled $4.6 and is included in other income in 1972, and compares with equity in net income of $1.3 in 1971. Dividends of $0.7 were received and recorded as other income in 1971.

The Company's equity in the net income of foreign subsidiaries was $17.2 in 1972 and $17.3 in 1971. The Company's equity in the net assets of these companies at December 31, 1972 and 1971, was $303.9 and $274.0, respectively.

Consolidated retained earnings at December 31, 1972, include $140.0 of the undistributed earnings of these subsidiaries and corporate joint ventures. The remittance of these earnings has been indefinitely postponed as the companies have reinvested a substantial portion thereof, or have plans for reinvestment of these earnings in their operations. Consequently, no provision has been made for U.S. income taxes on these undistributed earnings. Any tax on dividends which may be received will be substantially offset by foreign tax credits.

Goodwill Write-Off

During 1972, the Company wrote off the remaining goodwill associated with its investment in Lansil Limited, in the United Kingdom, resulting in a $4.2 reduction of net income. The current market uncertainty of Lansil's cellulosic fibers product line resulted in a decision to reduce the value of this investment.

Income Taxes

Investment tax credits totaled $7.3 in 1972 and $1.1 in 1971. The provision for current income taxes has been reduced by the full amount of such credits.

The Company utilizes guideline lives and the Asset Depreciation Range System class lives for machinery and equipment in computing depreciation for income tax purposes.

Legal Proceedings

The Company and its subsidiaries are defendants in a number of lawsuits. While the results of litigation cannot be predicted, management, based upon advice of Company counsel, believes that the final outcome of such litigation will not have a material adverse effect on the financial position or operations of the Company and its consolidated subsidiaries.

Liabilities — Contingent and Commitments

The Company and its subsidiaries were contingently liable as guarantors of bank loans and for customers' receivables discounted aggregating approximately $22.8 at December 31, 1972, and $21.5 at the end of 1971.

Long-Term Debt

The long-term debt of the Company and its subsidiaries at December 31, 1972 and 1971, exclusive of current maturities, and repayable in U.S. dollars, except where indicated, was as follows:

	1972	1971
Parent Company:		
6½%—8½% bank loan due 1975/1985 (West German Mark) (a)	$ 16.0	$ 14.1
4¾% promissory notes due 1993	90.7	100.0
9⅛% sinking fund debentures due 2000	150.0	150.0
3¾% income debentures due 2002	91.0	91.0
4¼% income debentures due 2008	50.0	50.0
Monsanto International Finance Company:		
4½% guaranteed sinking fund debentures due 1985 (b)	25.0	25.0
Monsanto International N.V. (Netherlands Antilles subsidiary):		
8¾% guaranteed sinking fund debentures due 1985	18.6	20.0
5½% guaranteed bonds due 1987 (Swiss Franc)	20.8	—
Monsanto Textiles Limited (British subsidiary) (Pound Sterling):		
Guaranteed bank loans (1% over bank rate) due 1973/1974	5.7	12.5
5% guaranteed loan stock due 1982/1986 (c)	25.3	28.1
5% guaranteed loan stock due 1992/1997	3.5	3.9
6¼% guaranteed loan stock due 1992/1997	3.5	3.9
Monsanto (Suisse) S.A. (Swiss subsidiary) (Swiss Franc):		
6¾% guaranteed sinking fund debentures due 1985	7.8	7.8
6½% guaranteed sinking fund debentures due 1986	13.0	13.0
Monsanto Europe S.A. (Belgian subsidiary) (Belgian Franc) (d):		
9% guaranteed bank loan due 1974/1986	21.5	17.9
8.6% guaranteed bank loan due 1975/1983	11.0	4.4
Other	22.8	16.6
Total (e)	$576.2	$558.2

NOTES:

(a) Interest on this bank loan is reduced by a West German Government subsidy (expiring in 1974) equal to a percentage of construction costs for which the loan is used.

(b) These debentures are guaranteed by Monsanto Comoany and are currently convertible into Monsanto common stock at $89 a share, subject to adjustment under certain conditions.

(c) This loan stock is guaranteed by Monsanto Company and is convertible into Monsanto common stock at the rate of one share per £22 18s. 4d. (approximately 22 pounds 92 new pence) ($54 at current exchange rate), subject to adjustment under certain conditions.

(d) Interest on these bank loans is reduced by government subsidies of 2.4% (expiring in 1973) on the 9% loan and 2% (expiring in 1974) on the 8.6% loan.

(e) Maturities and sinking fund requirements on long-term debt for the five years ending December 31, 1977, are as follows:

	1973	1974	1975	1976	1977
4¾% promissory notes	$ 4.7	$ 4.7	$ 4.7	$ 4.7	$ 4.7
9⅛% sinking fund debentures	—	—	—	6.0	6.0
4½% guaranteed sinking fund debentures	—	—	—	2.5	2.5
Bank loans (Monsanto Textiles Limited)	5.7	5.7	—	—	—
Bank loans (Monsanto Europe S.A.)	—	1.7	2.9	2.9	2.9
Other	2.2	2.8	4.0	6.2	4.1
	$12.6	$14.9	$11.6	$22.3	$20.2

Pension Plans

The Company and its subsidiaries have several pension plans covering substantially all employes.

Following a review in 1971 of certain hourly and salaried pension plans, the Company adopted a revised formula for evaluating assets in such pension plans and increased the assumed rate of return on such assets from 4% to 5½%, a level deemed to be more realistic. The effect was to reduce materially the annual cost of funding the pension plans. These two changes, however, were offset by two actions which added materially to such annual costs. They were the reduction in the amortization period of certain unfunded past service costs and amendments to certain pension plans in 1971 providing increased benefits to employes. The net impact on earnings of the above changes was not material in both 1971 and 1972.

The total provision for pension costs for the years 1972 and 1971, was approximately $35.9 and $36.3, respectively.

The market value of assets in the related pension funds exceeded the actuarially computed value of vested benefits for plans of the Company and certain domestic subsidiaries as of December 31, 1972.

Preferred Stock

The outstanding preferred stock is stated at $2.24 a share and has a cumulative dividend of $2.75 a share. It is convertible at any time into Company common stock at the initial rate of 1.12 shares of common for each share of preferred, subject to adjustment in certain events under antidilution provisions. The stock may be redeemed at the Company's option any time on or after August 12, 1974, at $73 a share, which amount is also the voluntary liquidation preference. The involuntary liquidation preference is $35 a share, or an aggregate of $81.3 in 1972 and $81.2 in 1971.

Project Cost Overruns

The Company anticipates cost overruns on several projects being constructed by its subsidiary, Monsanto Enviro-Chem Systems, Inc. All anticipated cost overruns were fully recognized and had the effect of reducing net income by $5.3 in 1972.

Repairs

Repairs and maintenance charges were $135.7 in 1972 and $127.8 in 1971.

Revolving Bank Credit Agreement

On November 1, 1971, the Company arranged for total domestic short-term bank credit facilities of $180.0. These arrangements, made with sixteen banks, provided for $125.0 under a Revolving Credit Agreement plus a $55.0 Line of Credit. All loans under these agreements are to bear interest related to the prime commercial rate of the agent bank.

On March 31, 1972, the over-all credit facility was reduced to $120.0. Of the reduced amount, $60.0 was covered by a Revolving Credit Agreement and $60.0 by a Line of Credit. The participant banks and the interest rate arrangements remained unchanged. No borrowings have been made under either of these loan agreements.

Sale of Lion Oil Properties

The Company sold its petroleum marketing and refining properties in September, 1972. This resulted in a gain, after applicable taxes, of $3.4.

The results of these discontinued operations, excluding allocated corporate charges, included in the accompanying statement of consolidated income are as follows:

	Nine Months 1972	Year 1971
Net sales	$69.8	$87.2
Operating income	5.5	4.9

Shares in Treasury

The Company held 307,033 shares of its common stock in treasury for general corporate purposes at December 31, 1972. The Company also held 61,938 shares of its common stock for specific purposes which are included in Miscellaneous Investments in the accompanying statement of financial position at December 31, 1972.

Shares Reserved

At December 31, 1972, there were 8,900 shares of $2.75 Preferred Stock reserved for stock options, and 4,319,351 shares of common stock were reserved for the following purposes:

	Shares
Conversion of $2.75 Preferred Stock	2,600,203
Stock option plans	967,838
Conversion of convertible loan stock of Monsanto Textiles Limited	470,412
Conversion of debentures of Monsanto International Finance Company	280,898
Total	4,319,351

Stock Options

The status of the authorized common shares for the stock option plans for key employes and the changes occurring during the year were:

	1969 Plan	1964 Plan	1960 Plan
Outstanding 1/1/72	756,300	156,910	9,823
Unoptioned 1/1/72	189,112	—	—
Optioned during year	164,050	—	—
Exercised during year	88,378	58,205	6,045
Expired during year	3,500	—	1,072
Terminated during year	21,397	575	—
Outstanding 12/31/72	807,075	98,130	2,706
Unoptioned 12/31/72	49,959	—	—

Under the above plans, 841 options were outstanding at prices ranging from $31.25 to $58.38 a share, or a weighted average of $48.78 a share.

The status of the authorized shares of $2.75 Preferred Stock for the stock option plan for employes of the former Fisher Governor Company and the changes occurring during the year were:

Outstanding 1/1/72	10,400
Exercised during year	1,200
Terminated during year	300
Outstanding 12/31/72	8,900

Under this plan, 29 options were outstanding, at prices of $46.00 and $46.50 a share, or a weighted average of $46.47 a share.

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Monsanto Company and Subsidiaries

Ten-Year Summary

(In millions, except per share and where italicized)

	1972	1971	1970
Operating Results			
Net sales	$2.225.4	$2,087.1	$1.971.6
Gross profit	529.1	472.8	445.2
Per cent of net sales	*23.8%*	*22.7%*	*22.6%*
Operating income	216.4	177.9	128.2
Income before extraordinary items	122.0	93.7	77.9
Extraordinary charges (credits) — net	—	—	11.3
Net income	122.0	93.7	66.6
Per cent of net sales	*5.5%*	*4.5%*	*3.4%*
Earnings a common share:			
Primary:			
Before extraordinary items	$3.49	$2.65	$2.17
After extraordinary items	3.49	2.65	1.83
Fully diluted:			
Before extraordinary items	3.40	2.63	2.17
After extraordinary items	3.40	2.63	1.83
Financial Position			
Working capital	$ 677.3	$ 546.6	$ 537.9
Property, plant and equipment — gross	2,765.0	2,735.1	2,636.7
Property, plant and equipment — net	1,133.3	1,170.3	1,169.9
Total assets	2,236.9	2,153.5	2,144.7
Long-term debt	576.2	558.2	589.3
Shareowners' equity	1,293.8	1,225.7	1,194.2
Other Data			
Depreciation, obsolescence and depletion	$193.9	$186.9	$170.4(1)
Capital expenditures	168.3	205.2	300.8
Employes	*57,891*	*59,271*	*62,940*
Shareowners:			
Common	*104,369*	*110,490*	*121,399*
Preferred	*3,939*	*3,897*	*3,941*
Common shares	33.3	33.1	33.1
Per common share:			
Dividends	$ 1.80	$ 1.80	$ 1.80
Book value	39.05	37.16	36.27

(1) Excludes $16.0 applicable to extraordinary charges.

1969	1968	1967	1966	1965	1964	1963
$1,938.8	$1,865.1	$1,705.3	$1,679.0	$1,526.5	$1,407.9	$1,237.9
513.5	497.2	449.5	459.8	452.8	439.2	360.9
26.5%	*26.7%*	*26.4%*	*27.4%*	*29.7%*	*31.2%*	*29.2%*
190.9	213.7	185.7	211.0	219.4	226.2	174.1
109.4	115.6	105.3	120.4	130.0	120.6	87.7
(6.7)	—	(6.4)	—	—	—	—
116.1	115.6	111.7	120.4	130.0	120.6	87.7
6.0%	*6.2%*	*6.6%*	*7.2%*	*8.5%*	*8.6%*	*7.1%*
$3.08	$3.26	$2.96	$3.48	$3.86	$3.65	$2.67
3.28	3.26	3.15	3.48	3.86	3.65	2.67
3.03	3.20	2.92	3.40	3.73	3.56	2.65
3.21	3.20	3.10	3.40	3.73	3.56	2.65
$ 509.5	$ 519.7	$ 433.9	$ 396.2	$ 364.2	$ 306.6	$ 325.1
2,470.8	2,344.6	2,293.1	2,167.0	1,982.3	1,715.1	1,536.4
1,071.4	1,046.5	1,097.6	1,105.0	1,046.9	883.5	787.3
2,012.2	1,956.7	1,907.5	1,905.9	1,814.5	1,561.4	1,443.5
454.0	472.8	492.4	520.3	500.8	378.6	385.9
1,204.7	1,154.4	1,103.0	1,044.4	975.1	884.8	795.3
$163.7	$174.3	$165.2	$154.0	$134.8	$121.4	$115.6
219.9	135.0	166.4	219.6	299.1	219.7	115.5
64,604	*62,815*	*62,073*	*60,697*	*58,817*	*54,376*	*49,883*
118,156	*111,538*	*111,363*	*95,938*	*93,538*	*89,833*	*80,608*
3,621	—	—	—	—	—	—
33.1	33.1	33.0	32.3	31.6	30.9	30.0
$ 1.80	$ 1.65	$ 1.60	$ 1.60	$ 1.45	$ 1.25	$ 1.20
36.25	34.74	33.31	32.17	30.67	28.51	26.37

Worldwide Interests

Included among Monsanto's member companies around the world are those appearing in the following list. Per cent ownerships are noted parenthetically. In addition, there are a number of other member companies not listed, many of which have been established for marketing or investment purposes.

North America

UNITED STATES
Farmers Hybrid Companies, Inc. (100%) is a producer of hybrid breeding swine and seed corn.

Fisher Controls Company, Inc. (100%) manufactures and markets process measurement and control equipment.

Monsanto Enviro-Chem Systems, Inc. (100%) develops and markets engineered chemical facilities and pollution-abatement systems.

Monsanto Flavor/Essence, Inc. (100%) manufactures essential oils, aroma chemicals, flavors and fragrances.

Monsanto International Finance Company (100%) obtains funds abroad to help finance overseas expansion.

Monsanto Research Corporation (100%) conducts research for government agencies and for Monsanto; produces nuclear sources; operates a government-owned laboratory for the Atomic Energy Commission.

United Systems Corporation (100%) manufactures electronic test and measurement instruments.

CANADA
Monsanto Canada Ltd. (100%) manufactures chemicals and plastics.

Plax Canada Ltd. (50%) produces plastic blownware.

Europe and Middle East

BELGIUM
Monsanto Europe S.A. (100%) manufactures plastics and chemicals in Belgium and conducts marketing activities throughout Europe.

FRANCE
Societe Monsanto (100%) manufactures plastics.

ISRAEL
Israel Chemical Fibres Ltd. (60%) manufactures *Acrilan* acrylic fiber.

LUXEMBOURG
Monsanto Cie S.A. (100%) manufactures nylon 6,6 yarns.

SPAIN
Aiscondel S.A. (50%) makes consumer plastic products. A subsidiary produces chemicals and plastics.

SWITZERLAND
Monsanto (Suisse) S.A. (100%) markets Monsanto products throughout Switzerland.

UNITED KINGDOM
Lansil Ltd. (100%) produces bleached cotton linters, acetate flake and yarn, textile fabrics and carpet underlay.

Monsanto Chemicals Ltd. (100%) manufactures chemicals and plastics. Subsidiaries and affiliates produce other chemicals and plastic products.

Monsanto Textiles Ltd. (100%) manufactures *Acrilan* acrylic fiber, acrylonitrile and nylon 6,6 yarns.

WEST GERMANY
Monsanto (Deutschland) GmbH (100%) manufactures *Acrilan* acrylic fiber and markets Monsanto products.

Latin America

ARGENTINA
Monsanto Argentina S.A.I.C. (100%) manufactures plastics and chemicals.

COLOMBIA
Fabrica de Hilazas Vanylon S.A. (49%) produces nylon 6 yarns.

MEXICO
Industrias Resistol S.A. (37%) produces chemicals and plastics.

Compania Industrial de Plasticos S.A. (100%) fabricates plastic consumer products.

NETHERLANDS ANTILLES
Monsanto International N.V. (100%) obtains funds abroad to assist in financing the operations of Monsanto Company and its subsidiaries.

PANAMA
Chemstrand Overseas S.A. (100%) and **Monsanto Overseas S.A.** (100%) hold investments outside the United States.

Asia and Australia

AUSTRALIA
Australian Petrochemicals Ltd. (55%) manufactures chemicals.

Monsanto Australia Ltd. (100%) makes chemicals and plastics. Associate companies produce fluorocarbons and synthetic latex products.

HONG KONG
Monsanto Far East Ltd. (100%) supervises marketing of Monsanto products in the Asia-Pacific area outside Japan and Australia.

JAPAN
Mitsubishi Monsanto Chemical Company (50%) manufactures chemicals and plastics.

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John R. Eck..................................St. Louis
Louis Fernandez.............................St. Louis
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