UNION CARBIDE CORPORATION P. O. BOX 324, TUXEDO, NEW YORK 10987
MEDICAL PRODUCTS DIVISION TELEPHONE NUMBER: (914) 351-2131

March 15, 1984

U. S. Nuclear Regulatory Commission
Division of Licensing
Standardization and Special Projects Branch
Washington, DC 20555

Attn: Mr. Cecil O. Thomas, Chief

Dear Mr. Thomas:

Your letter of March 2, 1984 requested certain financial information pertaining to the operation of the UCNR, License R-81. That information is presented below in the same order in which it appears in the request.

1. Estimated operating costs for each of the first five years of the license renewal period are tabulated as follows:

1984	$1.90 million
1985	$2.03 million
1986	$2.17 million
1987	$2.32 million
1988	$2.50 million

   These figures are based on recent cost history and it is assumed that the duty cycle will remain at the current level of approximately 95 percent, the facility staff will be maintained as required in the license and an inflation rate of 7 percent will persist over this period.

2. The anticipated cost for decommissioning the facility is estimated to be either $3.03 million to thoroughly dismantle the licensed facilities or $1.24 million to place the facilty in a standby condition. A breakdown of these costs and the basic assumptions behind them are presented in the attachment.

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3. Union Carbide, as the licensee, is responsible for and will provide the funds to cover both the operating costs and the decommissioning costs if required. The facility is currently operated for the benefit of Cintichem, Inc., a subsidiary of Medi-Physics, Inc., in accordance with an Operating Agreement whereby Cintichem reimburses Union Carbide for all operating expenses and has agreed to pay for the potential decommissioning costs. The costs are essentially funded through the sale of products and services that are generated in the facility. The predominant products are medical diagnostic radioisotopes.

4. A copy of the most current Union Carbide Annual Report (1982) is enclosed.

Very truly yours,

JJ McGovern

James J. McGovern
Business Manager
Radiochemicals

JJMcG:js
Attachment

COST ESTIMATE FOR DECOMMISSIONING

NUCLEAR FACILITIES AT STERLING FOREST

An estimate of the cost of decommissioning the nuclear facilities (Reactor and Hot Lab) at Sterling Forest are as follows:

In order to make this first approximation, the following assumptions are made:

a. Licensee continues to occupy the Sterling Forest site.

b. The Reactor and Hot Lab buildings remain intact.

c. The USNRC, N.Y.S. Dept. of Health, N.Y.S. Dept. of Environmental Conservation, U.S. Dept. of Environmental Protection and Sterling Forest Corporation agree to our proposal for decommissioning.

At present there are two alternatives in decommissioning the facilities. The one chosen will depend ultimately on the final utilization of the site. These alternates are:

Alternate A

Complete closure of the facility whereby a "delicensing" could be accomplished. It is proposed that this would be accomplished by dismantling and decontaminating the facility so that there would be no radiological hazard to the environment as defined by the responsible regulatory authorities. It is proposed that this condition be accomplished by segregating contaminated facilities from the environment or cleaning them up. This decommissioning would result in the unrestricted availability of these two buildings or the site for whatever purpose is deemed desirable.

Alternate B

Maintaining the nuclear utilization capabilities of the facilities under a byproduct materials license. There would have to be restricted access to the buildings under this condition but the buildings could be used for other purposes provided the basic structures did not have to be altered.

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The cost approximations in 1983 dollars for these alternatives are as follows:

Alternate A "Delicense"		Alternate B Standby "Byproduct License"	
PHASE I		**PHASE I**	
a. Conduct Survey (radiological)			
b. Promulgate Decommissioning Plan.			
c. Prepare Hazards Summary Analysis and submit to NRC and N.Y.S..		Same As Alternate A	
d. Obtain approval to proceed.			
It is estimated that this phase could require 6 calendar months at about 60 percent of present staff.		3 Months Time Required	
Based on current experience in operational expenses, this would amount to ~	$450,000.	At a cost of ~	$250,000
		Fuel Shipment ~	$80,000
		Reprocessing	$530,000
PHASE II		**PHASE II**	
Fuel Shipment	$82,000	Maintain facility under Byproduct possession license.	
Fuel Reprocessing	$530,000		
Disposal of Low Level Waste (25 truck loads) and Large Quantity Waste (20 truck loads)	$855,000	Minimum staff 2 man/year	$80,000
		Minimum Utilities/Year	$300,000
Dismantle Decon Room and Prepare for Burial	$12,000		
Dismantle Stack and Prepare for Burial	$12,000		
Dismantle Filter Bank and Prepare for Burial	$12,000		
Dismantle Storage Tank and Prepare for Burial	$12,000		
Dismantle Pump Room and Disconnect Piping to Environment	$23,000		
Decon Pool	$35,000		

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Alternate A "Delicense"		Alternate B Standby "Byproduct License"
PHASE II		PHASE II
Decon Hot Cells	$35,000	
Disconnect Piping to Process Drain Tanks and Bury	$12,000	
Labor and Utilities for Phase II, Assume 1/2 Staff 18 Months	$730,000	
PHASE III		
Cost of Final Radiological Survey Depending Upon Regulatory Requirements.	$230,000	

Total cost of decommissioning Alternate A:	
Phase I	$450,000
Phase II	$2,350,000
Phase III	$230,000
	$3,030,000

Total cost of decomissioning Alternate B:	
Phase I	$860,000
Phase II	$380,000
	$1,240,000 (Year 1)
	$350,000/ Year Thereafter (Utilities plus 1 H.P. Man)

An inventory of uranium exists which serves as fuel for the reactor and as target material for isotope production. The scrap value of this inventory is estimated to be $1 million. Without considering other recoverable assets the estimated net decommissioning cost will be $2 million. The net cost for placing the plant into standby by status will be $240,000.

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Union Carbide

Annual Report 1982

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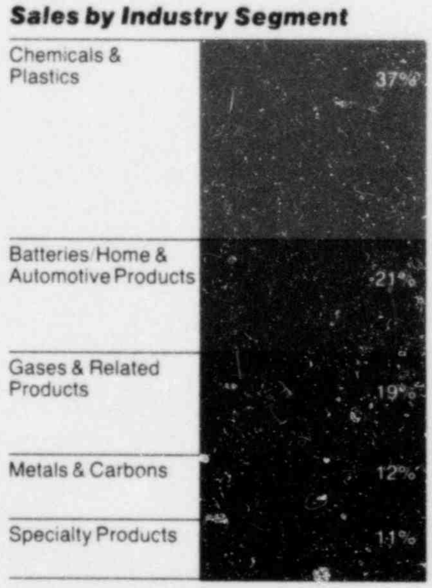
With consolidated sales of more than $9 billion in 1982, Union Carbide Corporation ranks among the largest industrial companies in the United States and the world. The Corporation's well-balanced portfolio of businesses is diversified both geographically and by product line. International operations contributed about one-third of total sales in 1982. As of February 1, 1983, Union Carbide's approximately 138,000 stockholders owned approximately 70 million shares.

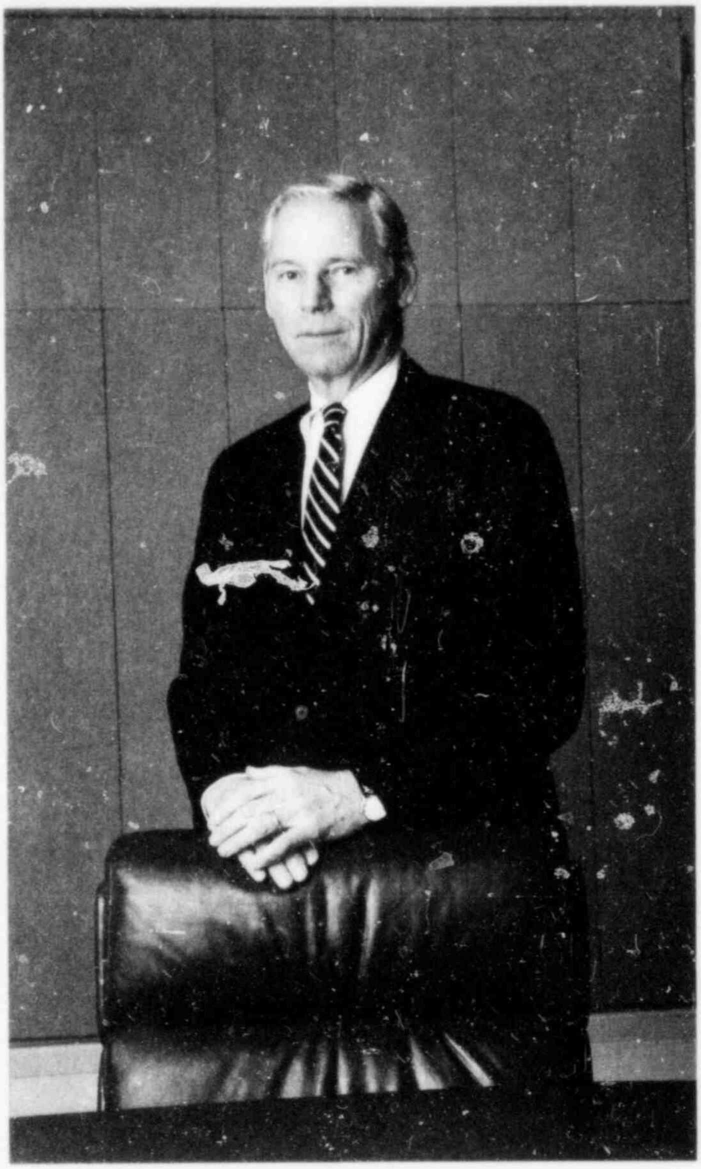
Financial Highlights

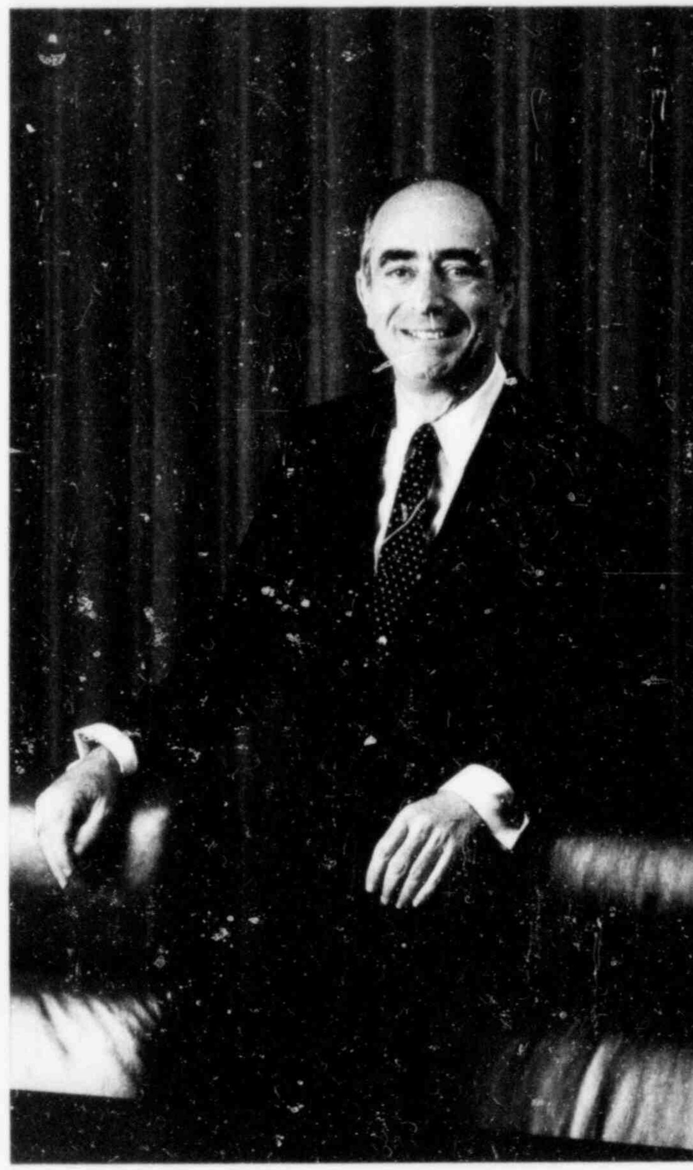
Dollar amounts in millions (except per share figures)	**1982**	1981	1980
For the year			
Sales	**$ 9,061**	$10,168	$ 9,994
Income before cumulative effect of change in accounting principle	**310**	649	673
Cumulative effect of change in accounting principle for the investment tax credit	**—**	—	217
Net income	**310**	649	890
Income per share before cumulative effect of change in accounting principle	**4.47**	9.56	10.08
Net income per share	**4.47**	9.56	13.36
Dividends	**235**	224	206
Dividends per share	**3.40**	3.30	3.10
Capital expenditures	**1,179**	1,186	1,129
At year-end			
Total assets	**$10,616**	$10,423	$ 9,659
UCC stockholders' equity	**5,159**	5,263	4,776
UCC stockholders' equity per share	**73.54**	76.74	70.90
Shares outstanding (thousands)	**70,153**	68,582	67,367
Number of stockholders	**138,098**	149,890	163,741
Number of employees	**103,229**	110,255	116,105

Sales by Industry Segment



Sales by Geographic Segment





"Everything we achieved rested ultimately on the ability of Carbide people....They deserve great praise."

Warren M. Anderson
Chairman of the Board

"We ended the year primed to convert higher operating rates into higher earnings."

Alec Flamm
President

Letter to Stockholders

Our results for 1982 were as follows: Worldwide sales were $9.06 billion, down 11 percent from the prior year. Income for the year declined 52 percent to $310 million. And earnings per share were $4.47, compared with $9.56 in 1981.

The recession exacted a high price in terms of our sales and earnings, placing us in the same boat as many of our customers, suppliers and competitors, whose performance also suffered. But the strong economic medicine brought important benefits: Necessary and overdue reductions were made in dangerously high inflation and interest rates, two of the most serious threats to the economy's long-term health.

Improved Productivity and Control of Overhead

At Union Carbide, we made a concerted effort to have the recession work to our advantage, and we closed out 1982 as a leaner and more effective organization, in a strong financial position.

To give credit where it's due, everything we achieved rested ultimately on the ability of Carbide people the world over to get the job done in trying times. They did, and they deserve great praise, not only for a job well done, but also for the enviable safety record compiled while doing it. Carbide's injury rate was among the lowest in our industry group, which itself has the lowest rate of all major U.S. industries.

As our sales began to fall below plan, and below 1981 levels for many products, we redoubled efforts to improve productivity and conserve cash. Planned construction spending was sharply curtailed. We also shut down or block-operated many facilities, reduced employment, cut inventories and raw materials commitments, and kept tight control of overhead and receivables.

However, difficult times did not diminish the Corporation's total commitment to equal employment opportunity at all levels. Women and minorities are already well represented in professional, managerial, and operating jobs throughout Union Carbide, and our aim now is to increase female and minority representation at higher levels of responsibility.

Union Carbide ended the year with a good balance sheet, with short-term debt at acceptable levels, and with its businesses primed to convert higher operating rates into higher earnings.

If the economy recovers, Union Carbide will do better in 1983. Toward that end, we have been urging a better balance of fiscal and monetary policies from Washington, a balance which must be achieved and sustained to pave the way for a meaningful recovery. The sacrifices of 1982, made in the interest of long-term economic health, should not be wasted.

Management Retirements and Promotions

The year just ended also marked the retirement of four corporate officers: William S. Gray, Jr., Richard J. Hughes, Fred C. Kroft, Jr., and Stephen E. Nightingale. All made major contributions during long years of service.

We were pleased to announce the election of Rolf H. Towe as vice president and treasurer. In addition, Louis G. Peloubet was promoted to vice president and controller, John H. Field was promoted to executive vice president, and J. Clayton Stephenson, who is an executive vice president, was named chief financial officer.

Finally, and perhaps most important, we can report that Union Carbide will emerge from the recession well positioned for the decade of the 80s. We are proud of that achievement and think it is a good time to tell the story behind it, which appears on the following pages. We think stockholders will find it well worth reading.

Warren M. Anderson

Warren M. Anderson
Chairman of the Board

Alec Flamm

Alec Flamm
President

Union Carbide and the New Economy: Responding to Change

For Union Carbide, 1982 was a year of coping with the recession, while preparing to get back on the earnings track the company was following before the slump. And at year-end the evidence was clear that we are indeed "leveraged for the upturn," in the parlance of Wall Steet, and operating more effectively than at any time in recent history.

The result is a shared achievement in the fullest sense, as Carbiders the world over redoubled efforts to conserve money and resources, to find more efficient ways to get the job done, and to implement plans and programs designed to keep the company financially strong in a difficult year.

Yet to stop with the achievements of 1982 would tell only part of the story. For much has been done to sustain the company's competitive leadership, and enlarge its opportunities for profitable growth, right through the end of the decade.

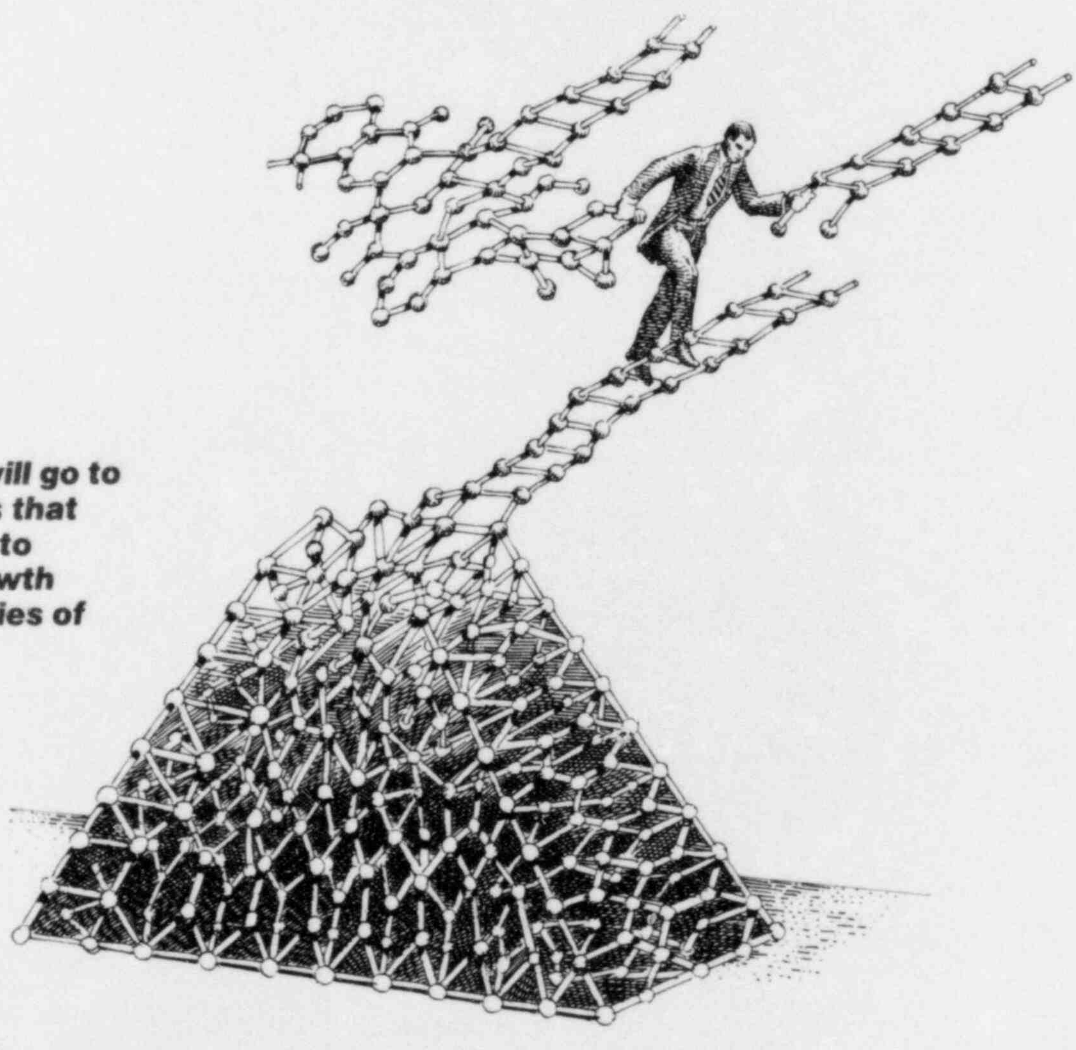
With a chance that the worst of the recession is behind us, it seems a good time for a progress report and review of our efforts.

But first, what will the decade be like?

A New Set of Rules

One thing already clear, as a futurist has neatly put it, is that yesterday is over. For many large companies, that means, for example, that the steady volume growth they witnessed during much of the 60s is probably history. And it means that high double-digit inflation probably won't be around to make earnings look good, while the quality of those earnings—the rate of return—is eroded by higher costs, as it was for many corporations in the late 70s.

In other words, in the slow growth era many are forecasting, weak competitors will have no place to hide. The rich rewards of the 80s will go to the cost-efficient producers with the best technology, and to companies that know how to create growth opportunities of their own.



Rewards will go to companies that know how to create growth opportunities of their own.

Priorities were shifted after a searching analysis of the Corporation's businesses.

For some companies, the process of adjusting to this new set of rules has just begun. At Union Carbide, the work has been underway for more than five years, and the pieces, along with a new strategic direction, are largely in place.

Although the changes begun in 1977 were prompted by a complex set of business and economic considerations, at their heart was the same basic motive that drives any successful business: the will to do better.

In the early 70s, market leadership and market share were what mattered most to Union Carbide. To keep its lead, the company paced the rapid growth of its large petrochemical businesses with heavy capital investment. But as the rate of return in those capital-intensive businesses came under pressure from escalating costs, the combination of weak returns and heavy investment undermined earnings quality for the corporation as a whole.

Quality, Quality

It proved too high a price to pay for simply getting bigger, and priorities at Union Carbide were shifted, from market share for its own sake, to a balance that combined strong market position with a drive to improve the quality of returns.

In practical terms, that meant redirecting a portion of the investment that might have gone for new capacity into projects and technologies that have made Union Carbide the low-cost producer virtually across the board in its U.S.-based high-volume businesses.

And it meant a new and searching analysis of the Corporation's business portfolio, slimming it so that eventually it will include only those businesses that support Carbide's twin goals of better earnings quality and continued growth.

The result of that analysis was the first tangible expression of a new corporate strategy, leading to the sale over four years of more than a billion dollars of low-yielding assets. The proceeds, in turn, provided much of the wherewithal for the drive to improve cost efficiency and otherwise strengthen operations in the rest.

The move was sound enough under the circumstances, but as the recession took hold and deepened—and competitors rushed to follow suit—it began to look prophetic. For it left the Corporation with a portfolio better balanced for the decade's competitive tests, combining the earnings and cash flow of very large—and now very lean—businesses with the flexibility provided by smaller businesses to range across new and promising growth opportunities.

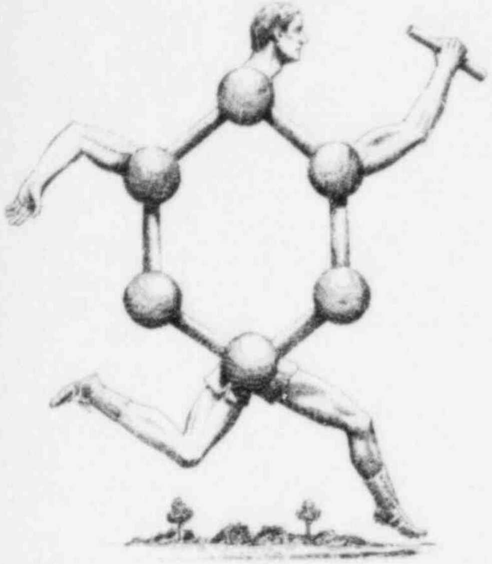
It is a diversified lineup. Union Carbide is the world's leading polyolefins producer, the nation's largest producer of industrial gases, the world's leading producer of dry-cell batteries, and the world's largest producer of graphite electrodes for steelmaking. The Corporation's portfolio also includes a rapidly developing agricultural products business, the world's largest selling brand of antifreeze, and such specialty businesses as electronic products, food processing and packaging materials, molecular sieves, coatings services, specialty chemicals, and specialty polymers and composites.

In the large businesses serving markets whose growth is slowing—autos and steel, for example—maintaining a leading market position will no longer take the heavy capital investment of the past. Instead, funding at reduced levels can go mainly to sustain the low-cost leadership of those businesses.

And just as higher costs and heavy investment eroded their returns in the past, reducing costs and slowing the rate of investment is precisely the way to improve them. Carbide's aim is to have those slower-growing businesses generate cash and earnings to fuel the expansion of an array of businesses whose greatest growth is still ahead, thereby helping to maintain liquidity as well.

Elements of Strategy: Low-Cost Producer

Although the true measure of a strategy cannot be taken with the economy at a virtual standstill, much has already been accomplished. Of great importance are the major strides Union Carbide has made in advancing and improving its low-cost position.



Carbide has made major strides in improving its low-cost position.

The most dramatic example is in the company's polyethylene business, where Union Carbide's low-pressure *Unipol* process for manufacturing low-density polyethylene resins is rapidly changing the industry. An extension of the company's low-pressure gas-phase *Unipol* process for high-density polyethylene, the new low-density technology can cut capital costs for a new plant by up to two-thirds and energy needs by as much as 85 percent.

Many benefits have flowed from this development, some expected, and some even better than expected. In terms of Union Carbide's own operations, *Unipol* made it possible to rejuvenate our processing plants, going from a system about 17 years old on average to one whose average age is four years, and doing so in less than five years. That represents a 75 percent conversion to *Unipol* for the Union Carbide polyethylene system.

The *Unipol* process placed the Corporation so far ahead of competitors that it also became possible to participate in a broader segment of the world market simply by licensing *Unipol* to others. To date, there are more than 20 *Unipol* licensees in 14 countries on six continents. Their planned capacity suggests that by 1985, at least 25 percent of the world's total polyethylene capacity will be based on Union Carbide's technology.

A transformation through technology has also taken place in Union Carbide's ethylene oxide/glycol business, another in which the company has kept its leadership over the years by developing that industry's most cost-efficient catalysts.

The latest generation of high-efficiency catalysts can turn even a 10-or-12-year-old plant into a cost-effective competitor. Its catalysts have established Carbide as a low-cost producer. And they will also be making a substantial contribution to income in their own right, now that the Corporation has begun licensing its know-how to others.

Union Carbide also owns the world's leading and lowest-cost process for the production of oxo-alcohols.

The main market for the oxo-chemicals is the coatings business, where they are used as either solvents or intermediates. At five billion pounds a year worldwide, the market for oxo-chemicals is a fraction of polyethylene's volume. But by 1984, as much as 40 percent of world capacity will be based on Union Carbide's process.

In addition to these high-volume petrochemical businesses, low-cost status in other areas can be claimed by the company's graphite electrodes business, and by its battery business, whose plants are cost competitive with any in the world.

Elements of Strategy: Technology First

While their cost-efficient operation and strong market positions ensure an important strategic role for Union Carbide's traditional high-volume businesses, other segments of its portfolio will also be helping to meet the Corporation's growth objectives.

Carbide's already large consumer businesses form one such segment. Consumer businesses accounted for more than a fifth of consolidated revenues in 1982, and chalked up record earnings and good growth right through the recession. Leading that growth are some of the world's best known brand names—*Eveready, Energizer, Prestone, Glad,* and *Simoniz*—all spawning product extensions year after year that lead to new markets and larger sales.

Carbide's consumer products also account for a large share of its stature as a major multinational. With manufacturing activities, including mines and mills, in 38 countries, and marketing activities in 130, the company's search for growth opportunities is truly global in scope.

In still other segments of the Corporate portfolio, Carbide is employing technology both to create new products, and to point the way to promising new extensions of our basic businesses.

The industrial gases business of Carbide's Linde Division offers good examples. Through technological advances, Linde is extracting growth even from the relatively slow growing steel industry. The division has invented a unique combustion system expected to open sizeable new oxygen markets in steel mills. It has developed additional processes which use argon in steelmaking, and has a major position in the growing market for nitrogen in heat treating.

Linde's technology has opened new uses of industrial gases in faster growing markets as well. For example, oil and gas recovery are enhanced by the injection of nitrogen into producing fields, and by the use of high pressure nitrogen to fracture producing formations. Although declining oil prices have slowed the growth of these applications, Carbide still foresees attractive prospects in the oil field through its joint ventures with Halliburton and Ingersoll Rand.

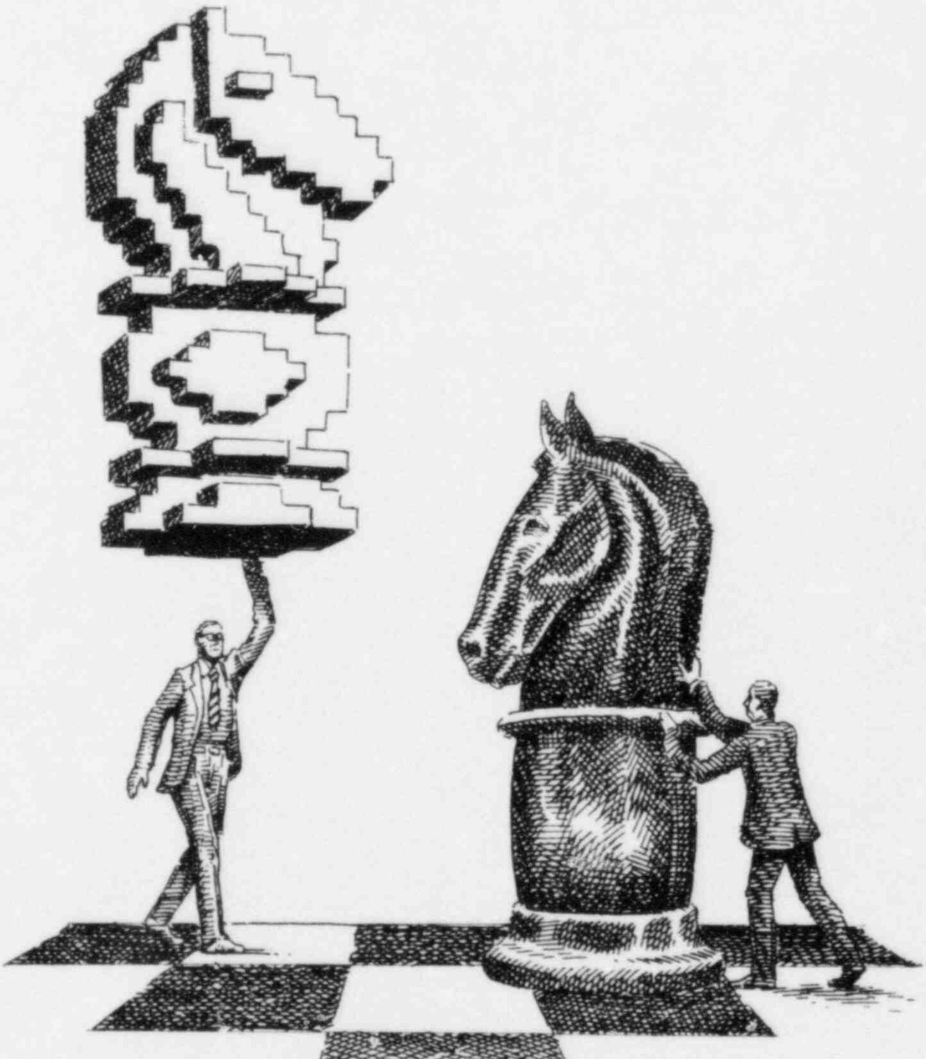
Linde also sees growth opportunities in electronics, where higher-purity and specialty gases are in demand; and in the chemical industry, where nitrogen and oxygen applications continue to grow in size and number.

With technology the key to these and other applications, the Linde R&D budget continued to increase right through the recession.

Elements of Strategy: The Niche to Grow

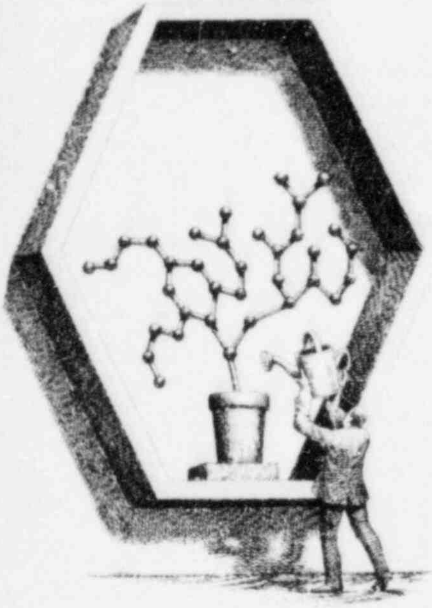
It is Union Carbide's goal to have its business extensions make an important contribution to financial performance in the 80s. The strategy for pursuing them is highly selective, but the basic mandate is simple and direct: Go where the action is. That may be toward an industry with good growth potential, or toward a niche or industry segment that is growing faster than the market as a whole.

Technology is both creating new products and extending our basic businesses.



The company's recent move into the polysilicon business is a prime example: Union Carbide's goal is to be a major supplier of this basic material for the production of semiconductors, one of the fastest growing industries in the world.

Based on the known needs of the electronics industry, the market for polysilicon is forecast to grow more than 15 percent a year. And Carbide will begin serving it with commercial quantities of polysilicon from a 1,200-ton-a-year plant scheduled to come on stream in 1984.



One simple strategy: Cultivate a fast-growing market niche.

Union Carbide's proprietary technology virtually assures that its first plant will be the industry's quality leader when it starts up. In fact, the product will be of such stunning purity that end users may need to re-think its potential. How pure is that? "To find the impurities," says a Union Carbide scientist associated with the project, "would be like tracing 70 or 80 particular dollar bills in the entire U.S. economy."

Union Carbide's agricultural products business is another aiming for rapid growth. The goal of the business is to be the world's largest and lowest-cost producer of carbamate insecticides. Union Carbide's expertise in carbamate chemistry gives it a special competitive edge in this fast-growing market, and exceptional qualifications for meeting tough environmental and safety standards associated with agricultural chemicals.

By the end of the decade, we expect to add nine new insecticides to our roster, for a total of 11. Our intention is to have the broadest and strongest portfolio of insecticides in the industry, with products that offer important protection for all the major agricultural crops of the world.

In its chemical segment, Carbide's silicones business may be the perfect example of a group of products whose uses are already large and varied, but whose potential applications are vastly larger. Silicones find their way into such products as lubricants, electronics, pharmaceuticals, polishes, plastic composites, and textiles, and increasingly into personal care products, adhesives, sealants, and other rapidly growing markets.

Yet marketers think there are still thousands of potential customer companies whose products and processes can be improved with silicones, and Carbide is supporting the growing markets for silicones with a major new production facility that will begin operating in mid-1983.

The niche philosophy is also deeply ingrained in the thinking of Union Carbide's specialty polymers and composites business, which operates on the idea that everything in the world is a substitute for something else.

And where high strength, close engineering tolerances, and resistance to heat and acids is called for, that substitute increasingly is a specialty polymer.

With the electrical/electronic industry as one of its main markets, this business, too, is serving high-growth areas of the economy.

The latest application, and one with great promise, is a printed circuit board made of a patented Union Carbide engineering polymer, a plastic that can withstand wave solder temperatures of up to 525 degrees F. Thus the *Radel A-400* polymer is off to a running start among a family of other high flyers that includes Union Carbide's *Udel* polysulfone, *Mindel* engineering resins, and *Ardel* polyarylate.

Substitution also plays an important part in the strategy of Union Carbide's specialty chemicals business, the downstream end of the company's chemical operations that will get more attention in the competitive environment of the 80s. Its phenoxy is the key ingredient in the zinc-rich paints that make new cars more rust resistant. And its solution vinyl resins are important not only for paint, but also as the binder for magnetic tape, a market growing at nine percent a year, and one that depends heavily on Union Carbide for its solution vinyl resins.

Still other profitable niches are filled by such products as molecular sieves, which are used as catalysts or catalyst bases in the petroleum refining industry, and metallic and ceramic coatings, which impart long life to the fan blades of nearly all the jet engines made in the United States.

The Essential Carbide

Union Carbide is therefore relying on several strategies for continued leadership and improved performance in the 80s.

In its high-volume businesses, the goal is to improve earnings quality in a slow-growth era by emphasizing cost efficiency and market position over expansion for its own sake.

A second strategy employs technology to create profitable new extensions of its basic businesses, directing marketing efforts toward the higher growth sectors of the economy, and the high-growth segments of those industries that are more mature.

With these complementary strategies in place, Carbide restructured its operations in 1982 to reflect the sharply defined roles of its various businesses and the need to manage them accordingly.

By grouping high-volume petrochemicals operations together, managers can focus on cost efficiency and aggressive marketing to maintain worldwide market leadership. And in the high-technology end of the chemical business, where value is added by superior product performance and technical service, managers will have all the R&D support and entrepreneurial freedom they need to pursue growth wherever they find it. Two new labs opened in 1982 are the latest expression of that commitment.

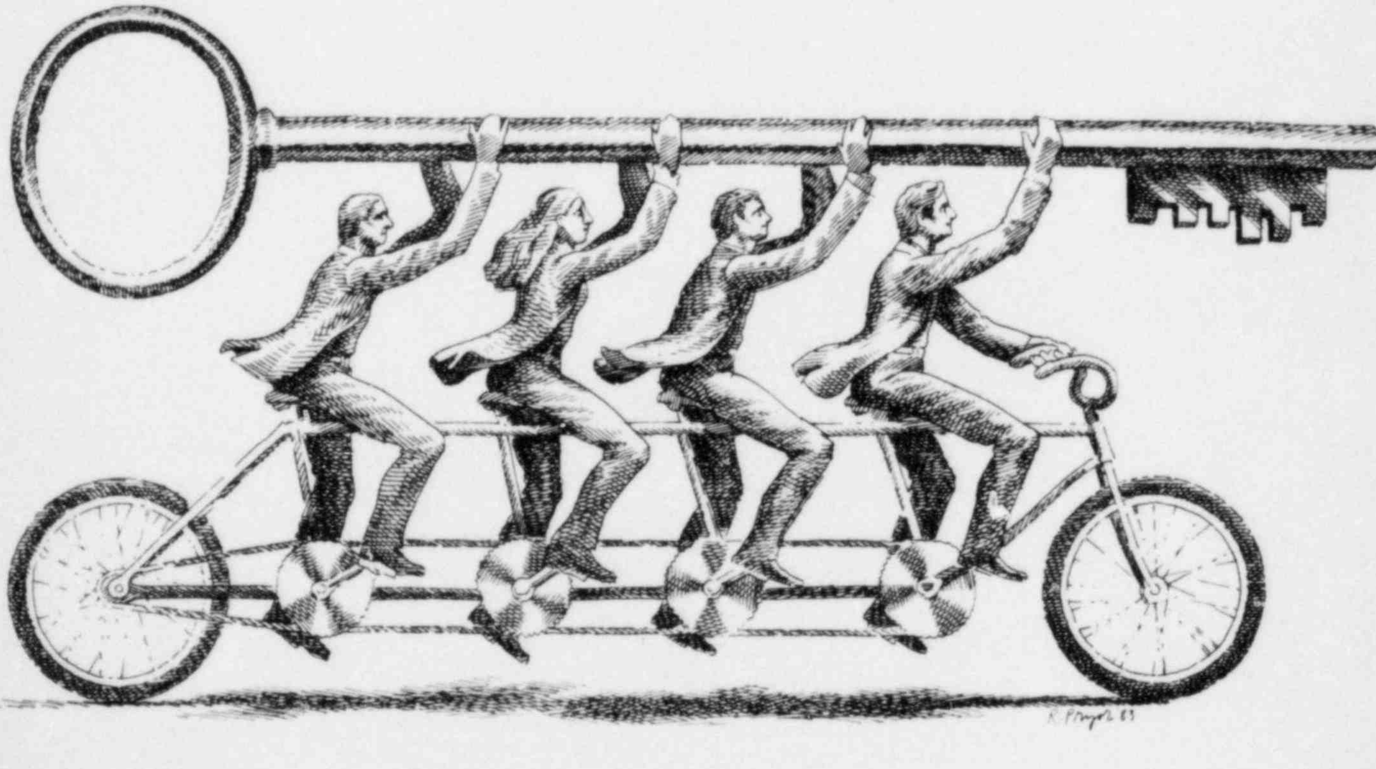
Finally, we are convinced that changes underway in the nation's industrial sector will provide many new avenues for profitable growth.

Under the goad of the steep energy price increases of the 70s, and the emergence of tough new competitors in world markets, U.S. industry, led by the automakers, is downsizing to meet the tests of a new era. Companies are striving to do more with less, to conserve resources, to improve productivity and efficiency, and to employ new cost-efficient materials to build better products.

Union Carbide has been a strong underpinning of industry for decades. With a vanguard of skilled and talented people, and the ability to create the materials for a new era of competition, it is set for an even more critical role in the 80s.

"When you get down to it," says a Carbide manager, "our real business is to use our skills, our technologies, and our products to make industry more competitive. And considering the tests that lie ahead, I can't think of a more important business to be in."

With a vanguard of skilled and talented people, we are ready for the 80s.



Union Carbide at a Glance

Industry Segment — Sales and Operating Profit

Chemicals & Plastics

Millions of dollars	1982	1981	1980
Sales	$ 3,287	$ 3,795	$ 3,655
% of UCC Consolidated	37%	37%	36%
Operating profit	$ 77	$ 277	$ 421
% of UCC Consolidated	12%	23%	33%

Gases & Related Products

Millions of dollars	1982	1981	1980
Sales	$ 1,698	$ 1,780	$ 1,561
% of UCC Consolidated	19%	17%	16%
Operating profit	$ 217	$ 303	$ 240
% of UCC Consolidated	33%	26%	19%

Metals & Carbons

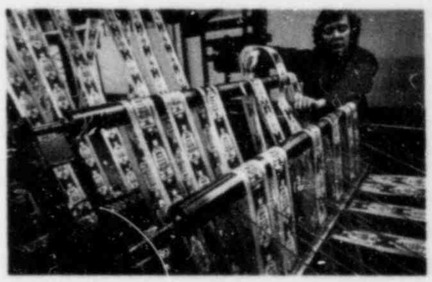
Millions of dollars	1982	1981	1980
Sales	$ 1,127	$ 1,679	$ 1,884
% of UCC Consolidated	12%	17%	19%
Operating profit	$ 55	$ 281	$ 314
% of UCC Consolidated	8%	24%	24%

Batteries/Home & Automotive Products

Millions of dollars	1982	1981	1980
Sales	$ 1,931	$ 1,908	$ 1,796
% of UCC Consolidated	21%	19%	18%
Operating profit	$ 219	$ 199	$ 185
% of UCC Consolidated	33%	17%	14%

Specialty Products

Millions of dollars	1982	1981	1980
Sales	$ 1,018	$ 1,006	$ 1,098
% of UCC Consolidated	11%	10%	11%
Operating profit	$ 89	$ 117	$ 132
% of UCC Consolidated	14%	10%	10%



Businesses	Highlights of 1982
Polyolefins	Polyethylene sales volume approached a record high. Major improvements in *Unipol* process technology, and advances in *Unipol* product fabrication technology, were announced.
Ethylene oxide/glycol	Construction of new glycol capacity continued at Prentiss, Alberta. In our worldwide catalyst leasing program, the number of customer contracts signed exceeded plan.
Solvents/coatings materials	Modernization of oxo-alcohol facilities at Texas City, Texas, continued, with completion scheduled for late 1983. The facilities will be converted to our proprietary low-pressure oxo process.
Specialty chemicals	Process revisions at the Institute, West Virginia, plant improved manufacturing costs for *Cellosize* thickener. A synthetic thickener, based on new chemistry, was introduced.
Industrial gases	Unique oxygen-fired combustion systems featuring major energy savings were brought to readiness for commercialization. A novel adsorption-process oxygen plant began operation to supply a steel customer. Several new plants serving electronics and oil field markets were completed.
Engineering products	Engineering products and processes posted record worldwide sales. Sales were up in the coatings service, cryogenic, and medical areas, including Linde Homecare Medical Systems. Molecular sieves sales were down. Two new coatings services plants were completed.
Graphite electrodes	The second phase of construction was completed in May on a new, highly-automated graphite electrode facility we are building at Clarksville, Tennessee.
Carbon fibers	Our carbon fiber and engineered plastics businesses were joined together in a new division which will take advantage of our capabilities in both areas.
Carbon specialties	Construction was completed on a multimillion-dollar expansion and modernization of graphite specialties facilities at Clarksburg, West Virginia. Capacity has been increased by 50 percent.
Metals	Despite reduced operations in tungsten, uranium, vanadium, and ferrochrome, development of mineral properties and new mineral products continued.
Battery products	*Energizer* alkaline battery sales continued strong. The new *Eveready* Super Heavy Duty line of premium carbon-zinc batteries was successfully introduced.
Plastic wrap and bags	*Glad* brand product introductions included *Funtime* sandwich bags, deodorant garbage bags, and *Sheer Strength* disposer bags. Our line of unique *Handle-Tie* bags was expanded.
Automotive products	*Prestone II* antifreeze/summer coolant and *Simoniz SuperPoly* car polish maintained leading positions. A new product, *Prestone* cooling system super sealer, was introduced.
Agricultural products	A new *Temik* aldicarb insecticide plant was completed in Brazil, and an *Amiben* chloramben herbicide plant started up in Woodbine, Georgia.
Food processing and packaging materials	A new *E-Z Smoke* casing was introduced that imparts color and flavor to meat products processed by the *Shirmatic* system. Specialty films capacity was added at Centerville, Iowa, and Pauls Valley, Oklahoma.
Electronics	A polycrystalline silicon pilot plant was completed in Washougal, Washington, and construction begun on a major polycrystalline silicon facility at Moses Lake, Washington.

Segment Review

Our domestic operations in 1982 were severely affected by the persistent recession which began in the fourth quarter of 1981 and continued throughout 1982.

In 1982, for the first time in recent history, total domestic sales declined from the prior year. The 13% decline reflected 11% lower volume and 3% lower average selling prices. Sales in 1981 had increased 2% as a result of 8% higher average selling prices, partly offset by the effect of 6% lower volume.

Operating profit for our domestic operations declined 55% from 1981 as a result of the lower volume, selling prices and operating rates, particularly in the second half of the year. Operating profit had decreased 2% in 1981.

Export sales to customers, which are included in domestic sales, declined 14% in 1982 following a 13% decline in 1981. Sales in both years were depressed by the combined effect of a strong U.S. dollar and weak foreign economies.

United States & Puerto Rico

Millions of dollars	1982	1981	1980
Sales	$ 6,051	$ 6,979	$ 6,845
Operating profit	$ 382*	$ 852	$ 869
Identifiable assets	$ 7,319	$ 7,115	$ 6,542

*Includes the favorable effect of LIFO inventory reductions (see Note 1 on page 29) and a credit of $44 million related to an advance sale of uranium.

International sales declined 6% from 1981 as a result of lower sales in Europe and Canada. The decline resulted mainly from lower volume as average selling prices declined 2%. Sales had increased 1% in 1981.

International operating profit decreased 15% chiefly as a result of operating losses in Canada. Significant percentage gains were recorded in Africa & Middle East. Results for 1982 reflect the adoption of a new policy for translating foreign currency, Statement of Financial Accounting Standards No. 52. (See discussion on page 21 and Note 2 on page 29.) If 1981 were adjusted to a comparable basis (Statement No. 52), 1982 international operating profit would have been lower than that of last year by about 20%. International operating profit had decreased 23% in 1981 reflecting lower results in all geographic segments—especially Canada.

International Operations

Millions of dollars	1982	1981	1980
Sales	$ 3,010	$ 3,189	$ 3,149
Operating profit	$ 275	$ 325	$ 423
Identifiable assets	$ 3,198	$ 2,990	$ 2,882

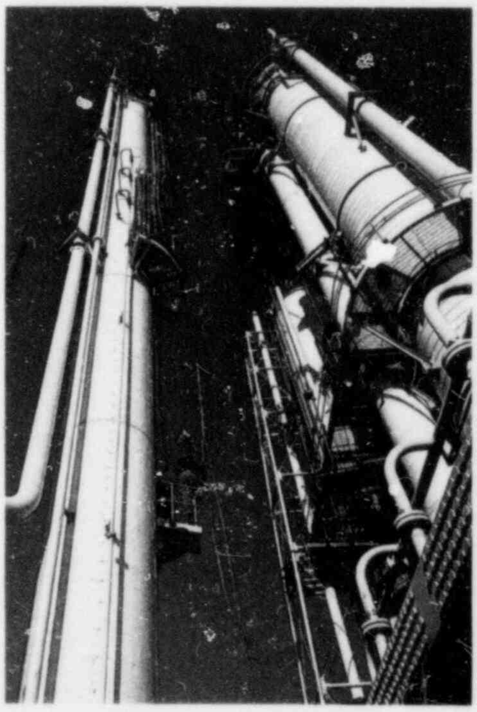
Following is a review of Union Carbide's operations by worldwide industry segment and by geographic segment.

Chemicals & Plastics

In 1982 segment sales declined 13% from 1981 as industrial chemicals in the United States and the polyethylene business worldwide fell victim to persistent recession. Domestic sales for the segment were 15% lower while international sales were off 9%.

Volume in the United States declined 13%, and prices for most products weakened during the year in reaction to flagging demand. Overall average selling prices were down 2% in 1982. In 1981, worldwide sales had increased 4%. Domestic sales in 1981 had increased 4% as a result of 7% higher average prices and 3% lower volume.

Operating profit declined by 72% from 1981 due to the weak worldwide market conditions and low operating rates, especially in the fourth quarter. Operating profit in 1981 had declined 34% from 1980, especially as a result of recessionary pressures in the fourth quarter.



Millions of dollars	1982	1981	1980
Sales[a]	$ 3,287	$ 3,795	$ 3,655
Operating profit	$ 77[b]	$ 277	$ 421
Identifiable assets	$ [illegible],956	$ 3,850	$ 3,750
Depreciation	$ 168	$ 156	$ 133
Capital expenditures	$ 465	$ 407	$ 392

[a]Sales of chemicals in 1982, 1981, and 1980 were $2,225 million, $2,575 million, and $2,457 million, respectively. Sales of plastics were $1,06[illegible] million, $1,220 million, and $1,198 million, respectively.

[b]Includes the favorable effect of LIFO inventory reductions. See Note 1 on page 29.

Polyethylene sales volume approached a record high in 1982. Sales of *Unipol* process linear low-density resins increased markedly as the resins continued to displace high-pressure low-density products in virtually all major polyethylene markets. Advances in *Unipol* fabrication technology resulted in the introduction of new high-performance film and molding products. Major breakthroughs in our low-pressure, gas-phase *Unipol* process technology were announced. Five more licensee *Unipol* projects were put in commercial operation during the year.

In our oxide/glycol business, catalyst leasing activities showed an appreciable increase. And in our solvents/coatings materials business, several new latexes and terpolymers received increasing acceptance in their respective markets. But in general, 1982 was a year of consolidation and conservation in the chemicals area. Sales of ethylene oxide and glycol were adversely affected by depressed sales in the polyester fabrics, automotive, housing, and natural gas industries. Sales volume of ethylene oxide derivatives declined, and price competition was severe. In solvents and coatings, all production units were operated well below full capacity.

In specialty chemicals, lower sales were only partly offset by selected price increases and cost control programs. But despite the economic pressures, emphasis on new product research, development, and marketing was maintained.

Gases & Related Products

The segment's 1982 sales decreased 5% from 1981, influenced, in part, by the steep decline in domestic steel production. Domestic prices remained relatively constant—about 1% above last year—while domestic volume fell 6% below last year. Sales in 1981 had increased 14%, the largest increase for any of our industry segments.

Operating profit in 1982 declined 28% from the record 1981 results, chiefly due to weakness in the domestic industrial gases business. International operations were also less favorable, due especially to the depressed Brazilian economy. Worldwide operating profit had increased by 26% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 1,698	$ 1,780	$ 1,561
Operating profit	$ 217	$ 303	$ 240
Identifiable assets	$ 2,071	$ 1,963	$ 1,686
Depreciation	$ 117	$ 104	$ 79
Capital expenditures	$ 336	$ 308	$ 268

In industrial gases in 1982, our Linde Division implemented stringent cost reduction measures, trimmed back its work force, and exercised tight control of overhead. As part of an on-going program, obsolete facilities were shut down. Their load was assumed by more efficient plants.

Construction was substantially completed at a new Loveland, Colorado, plant which will replace a much less efficient plant in the same general area; and construction continued on a plant in Hatfield, Pennsylvania, expected on stream early in 1983, which will replace a higher cost facility.

***Far left:* The Eveready Super Heavy Duty battery has joined the Energizer alkaline and our improved general purpose line, strengthening our strategy of offering consumers quality products at each price level.**

***Left:* World-scale facilities at South Charleston, West Virginia, will support our silicones fluids business. Start-up of the addition is scheduled for mid-1983.**

***Right:* Cryogenic containers are manufactured at our Speedway, Indiana, plant. After a vacuum is drawn, liquid nitrogen or oxygen will be introduced into the containers' storage spaces.**

In the area of enhanced oil and gas recovery, new plants began operation at Anschutz Ranch in Wyoming for Amoco Petroleum and at an adjacent facility for Chevron. These very large and modern facilities will place the Union Carbide—Ingersoll Rand joint venture, Niject, in the forefront of the enhanced oil and gas recovery market. Additional facilities for Marathon Oil, Mobil, Getty, and Woods Petroleum have been placed in operation. Work also began on liquid nitrogen plants at Mooreland, Oklahoma, and Big Spring, Texas, which will supply the oil field nitrogen requirements of Wellnite Services, Union Carbide's joint venture with Halliburton.

A specialty gases facility was finished at East Chicago. The Linde Division increased its sales to the semi-conductor industry of both bulk and specialty gases.

Engineering products and processes posted record worldwide sales. Sales were up in the coatings service, cryogenic, and medical areas. Molecular sieves sales were down.

Metals & Carbons

In 1982 segment sales declined 33%. After adjustment for the divestiture of portions of the metals business sold in mid-1981, sales from continuing operations declined about 25% from 1981. Sales were severely affected by the low level of steel production during the year. (Total crude steel production in the United States declined to an estimated 73 million tons in 1982, which represented the lowest annual level of steel production since 1946.) Domestically, segment prices were down 3% and volume in continuing operations declined about 33%. The segment's 1981 sales in continuing operations had declined 4% from 1980.

The 80% operating profit decline from 1981 resulted primarily from lower carbons volume, especially in the United States. Operating profit had declined 11% in 1981 due to lower metals volume and to the effect of the sale of portions of the metals business.

Millions of dollars	1982	1981	1980
Sales	$ 1,127	$ 1,679	$ 1,884
Operating profit	$ 55[a]	$ 281	$ 314[b]
Identifiable assets	$ 1,708	$ 1,790	$ 1,763
Depreciation	$ 50	$ 52	$ 50
Capital expenditures	$ 96	$ 183	$ 200

[a]Includes a credit of $44 million related to an advance sale of uranium.

[b]Includes a charge of $22 million representing accrual of the loss on sale of portions of the metals business. Sales of these operations, principally domestic, aggregated $320 million in 1980 and $184 million through the date of sale in June 1981. In 1980, the operating profit of these businesses amounted to $46 million. See Note 4 on page 30.

Operating rates were reduced at carbon products facilities during 1982 in response to weak demand from the steel, aluminum, and ferroalloy industries. Rates were reduced in step with demand so as to reduce inventory levels.

Metals operations were curtailed during 1982 in response to declining demand. The weakness in steel directly affected chrome and vanadium, and poor economic conditions dramatically lowered prices and consumption of tungsten. Demand for uranium remained at low levels due to cancellation or deferral of nuclear reactor construction.

Right: At our modern agricultural research center in North Carolina, soybean plants are tested for water loss. Controlling water loss can increase crop yields.

Second right: A new **Simoniz BodyGard** *car wax recently joined our line of* **Simoniz** *car care products. Its unique combination of two silicones makes it effective yet easy to use.*

Far right: Consumers have trusted the **Prestone** *name for more than 50 years—and our* **Prestone II** *antifreeze/summer coolant is the leading brand today.*

Batteries/Home & Automotive Products

The strength of our consumer-related product sales and encouraging operating profit results provided a bright spot among our recession-battered industry segments in 1982. The segment's 1982 sales increased 1% over those of 1981. Average domestic prices were 4% below 1981, while volume increased 7%. Antifreeze business volumes were especially strong. Segment sales in 1981 had increased 6% over 1980.

Operating profit increased 10% in 1982. Operating profit for batteries was substantially improved with higher domestic as well as international results. Home and automotive products operating profit also showed strong improvement, as the effect of lower plastic wrap and bags results was more than offset by improved anti-freeze operations. Segment operating profit had increased 8% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 1,931	$ 1,908	$ 1,796
Operating profit	$ 219	$ 199	$ 185
Identifiable assets	$ 1,403	$ 1,337	$ 1,211
Depreciation	$ 49	$ 44	$ 32
Capital expenditures	$ 114	$ 140	$ 155

Energizer alkaline batteries continued to enjoy excellent growth in 1982, and a new line of *Eveready* Super Heavy Duty premium carbon zinc batteries was introduced. A new research and development center, the largest of its kind in the world, was completed in Westlake, Ohio.

Prices were rolled back on *Glad* disposer bag products in 1982 to meet competitive price reductions. The shortfall in revenues was partially offset, however, by plant and distribution cost improvements. Several new products were introduced.

The continued oversupply of ethylene glycol in 1982 exerted downward pressure on antifreeze prices. But price reductions in *Prestone II* antifreeze/summer coolant did not match the steep declines effected by competition. Union Carbide's volume actually increased.

Automotive specialty products posted strong sales in 1982 reflecting a rebound in the automotive aftermarket, with consumers seeking to extend the life of their automobiles through more do-it-yourself maintenance.

Specialty Products

Segment sales in 1982 increased 1% over 1981. Sales gains for our agricultural products and food processing and packaging materials businesses were nearly offset by lower electronics materials sales, which were affected by lower industry-wide selling prices. Sales in 1981 had declined 8%, partly due to the effect of the divestiture of certain businesses in 1980 and parts of the medical products business in early 1981.

Operating profit declined by 24% in 1982, with lower results reported by the major businesses, particularly agricultural products and electronics. Operating profit had declined 11% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 1,018	$ 1,006	$ 1,098
Operating profit	$ 89	$ 117	$ 132
Identifiable assets	$ 1,040	$ 1,041	$ 846
Depreciation	$ 42	$ 30	$ 32
Capital expenditures	$ 168	$ 148	$ 114

In 1982 our *Larvin* thiodicarb insecticide received a provisional technical product registration in the United States. Patent litigations on *Larvin* insecticide and *Ethrel* ethephon plant regulator were favorably concluded, solidifying our worldwide proprietary position in both products.

In our food processing and packaging materials business, specialty films production capacity was expanded to support sales in fresh red meat and processed meats packaging. An *E-Z Smoke* casing was introduced.

Prestone® II

In our electronics business, we began expansion of our crystals plant in Washougal, Washington, to accommodate the transfer of R&D and manufacturing operations from our San Diego plant. Construction of a major polycrystalline silicon facility at Moses Lake, Washington, was begun.

Europe

Europe, our largest international segment in terms of sales, reported mixed financial results in 1982. As a result of continuing weak economic conditions, sales in 1982 were down 7% from 1981. The decline was principally due to weakness in the steel-related industry businesses. Sales of agricultural products improved significantly over 1981. Segment sales had declined 13% in 1981.

Operating profit increased 16% over 1981. If 1981 were adjusted to a comparable basis (Statement No. 52), 1982 operating profit would have been higher than that of last year by only about 3%. Improved operations of the battery business were offset by the effect of lower results in most of the other businesses. Operating profit had declined 17% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 856	$ 925	$ 1,060
Operating profit	$ 96	$ 83	$ 100*
Identifiable assets	$ 807	$ 831	$ 922

*Includes a charge of $28 million representing accrual of the loss on sale of portions of the metals business. See Note 4 on page 30.

In 1982 the Corporation purchased the stock held by its French joint venturer in certain European food processing and packaging materials operations, and became the 100 percent equity owner. An Italian subsidiary brought on stream a new $30 million organofunctional silanes plant.

Latin America

Sales in Latin America showed no increase in 1982 as compared to 1981. Sales volumes were lower due to economic difficulties in Argentina and Brazil, and the effect of the continuing recession throughout the area. The currency devaluations in Argentina and Brazil also affected dollar sales amounts. Sales of industrial gases, the largest product line in the segment, were flat, while sales of batteries, the second largest product line, were lower. Sales of this international segment had increased 11% in 1981, mainly the result of severe inflation. Our average selling price increases moderated significantly in 1982.

Operating profit declined 8% and 5%, respectively, in both 1982 and 1981.

Millions of dollars	1982	1981	1980
Sales	$ 714	$ 714	$ 645
Operating profit	$ 107	$ 116	$ 122
Identifiable assets	$ 799	$ 678	$ 588

We are the leading producer and marketer of dry cell batteries and portable lighting products in Latin America. We are also the leading supplier of graphite electrodes in Mexico and Brazil, and of industrial gases in Brazil. Start-up of the single largest industrial gas plant in South America, at Jacarei, Brazil, took place in 1982.

Canada

Canada, suffering from the worst recession in 50 years, experienced the most severe sales and operating profit declines among our international segments. Sales declined 18% from 1981, reflecting decreases in all major businesses, except industrial gases and food processing and packaging materials. Sales had increased 10% in 1981.

Canada's operating loss of $22 million was chiefly related to losses reported in the polyethylene, metals and battery businesses. Operating profit had declined 54% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 553	$ 671	$ 609
Operating profit (loss)	$ (22)	$ 41	$ 89
Identifiable assets	$ 814	$ 722	$ 690

To cope with the recession, Union Carbide Canada Limited implemented a comprehensive cost restraint program which included a reduction in work force, moderated employee compensation programs, and curtailed capital spending.

Far East

Sales increased 1% over 1981, primarily as a result of increased battery sales. Polyethylene sales were sharply lower as a result of soft prices due to excess industry production capacity. Sales had increased 6% in 1981.

Operating profit increased 3% over 1981. If 1981 were adjusted to a comparable basis (Statement No. 52), 1982 operating profit would have declined from that of 1981 by about 6%, due mainly to lower chemicals and plastics results. Overall operating profit in the Far East had declined 16% in 1981.

Millions of dollars	1982	1981	1980
Sales	$ 762	$ 755	$ 709
Operating profit	$ 82	$ 80	$ 95
Identifiable assets	$ 632	$ 604	$ 518

Despite severe competition, 1982 trading volumes surpassed those of the prior year. Growth in China trade was especially marked. Battery plant expansions were completed at Singapore in 1982. A collaborative pesticide research program between the Corporation and Union Carbide India Limited has been intensified.

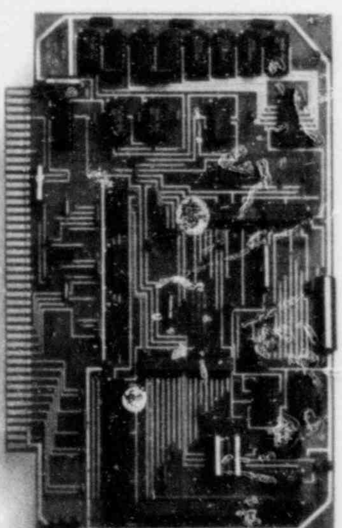
Africa & Middle East

Sales for our smallest international segment increased 1% over 1981 and operating profit more than doubled, primarily due to improved operations at battery facilities. Sales and operating profit in 1981 had declined 2% and 71%, respectively, due primarily to depressed worldwide demand for chromium and vanadium.

Millions of dollars	1982	1981	1980
Sales	$ 125	$ 124	$ 126
Operating profit	$ 12	$ 5	$ 17
Identifiable assets	$ 146	$ 155	$ 164

Over the past two years, battery operations in the Ivory Coast, Kenya, Sudan, and Egypt have been expanded and are well positioned to take full advantage of market demand. Chromium and vanadium demand decreased in 1982; chrome ore production has been suspended and vanadium production curtailed pending recovery in the steel industry. Trading company branch offices have been strategically located to maximize imports from other segments.

Far left: This truck's bold graphics are part of an identification program that is making people more aware of our Linde Division, a leader in the industrial gas business.



Left: Our entries in th[illegible] growing electronics [illegible] include Lonco specia[illegible], Kemet capacitors, KTI photolithographic chemicals, and parv[illegible]e conformal protective coatings.

Right: A well-known logo—consumer satisfaction with our quality Glad products has made the brand number one in consumer plastic wrap and bags.

GLAD®

Notes to Segment Review

Throughout this review, the terms *Union Carbide, UCC Consolidated, we,* and *our* refer to Union Carbide Corporation and its consolidated subsidiaries. The terms *Corporation* and *UCC* refer to Union Carbide Corporation, the parent company. The term *domestic* means the United States and Puerto Rico, and the term *domestic operations* refers generally to all of Union Carbide's operations in this area, including exports. The term *international* refers to all other parts of the world, and *international operations* refers to all operations other than domestic.

• The following are totals for UCC Consolidated of the various segment items reported on the previous pages:

Millions of dollars	1982	1981	1980
Sales	$ 9,061	$10,168	$ 9,994
Operating profit	$ 657	$ 1,177	$ 1,292
Depreciation	$ 426	$ 386	$ 326
Capital expenditures	$ 1,179	$ 1,186	$ 1,129

For the amounts of identifiable assets, see the note below.

• Segment sales as presented in the preceding pages are to customers. Transfers between segments were as follows:

Millions of dollars	1982	1981	1980
From Chemicals & Plastics	$ 187	$ 268	$ 261
From other industry segments	33	38	44
Total between segments	$ 220	$ 306	$ 305
From United States & Puerto Rico	$ 405	$ 419	$ 471
From other geographic segments	78	104	174
Total between segments	$ 483	$ 523	$ 645

Products are transferred between segments at the estimated market value of the products.

• The following table reconciles segment operating profit to the consolidated financial statements. (The term *operating profit* is used as defined in Statement of Financial Accounting Standards No. 14.)

Millions of dollars	1982	1981	1980
Total segment operating profit	$ 657	$ 1,177	$ 1,292
Less: General corporate expenses-net	36	90	87
Interest on long-term and short-term debt	236	171	153
Income before provision for income taxes	$ 385	$ 916	$ 1,052

• The following table reconciles segment identifiable assets to total identifiable assets and total identifiable assets to the consolidated financial statements:

Millions of dollars	1982	1981	1980
Identifiable assets by industry segment	$10,178	$ 9,981	$ 9,256
Intersegment eliminations	(55)	(77)	(76)
Total identifiable assets	$10,123	$ 9,904	$ 9,180
Identifiable assets by geographic segment	$10,517	$10,105	$ 9,424
Intersegment eliminations	(394)	(201)	(244)
Total identifiable assets	$10,123	$ 9,904	$ 9,180
Total identifiable assets	$10,123	$ 9,904	$ 9,180
Investments and advances	418	411	358
Corporate assets	75	108	121
UCC Consolidated assets	$10,616	$10,423	$ 9,659

Raw Materials, Products, and Markets

Chemicals & Plastics

We buy LPG and naphtha and make ethylene, propylene, and benzene. These, plus purchased materials, are used to make the following for use by us and our customers: polyethylene, for films, pipe, electrical insulation, wrap, bags, and other products; ethylene oxide/glycol and derivatives, for antifreeze, polyester fiber, petroleum processing, coatings, lubricants, and other uses; alcohols and oxo-alcohols, for coatings, preservatives, detergents, and cosmetics. We make and buy other materials to produce phenoxy, phenolic and solvent vinyl resins, vinyl acetate, acrylates, and acetic esters, for coatings, latexes, and packaging and other products. Purchased propylene oxide is used to make urethane intermediates for automotive, furniture, and other products. Purchased materials are used to make silicones for various uses. Products are sold directly and through distributors.

Gases & Related Products

Oxygen, nitrogen, and argon are separated from air. A major operating cost is that of electrical power. Gases are sold from on-site plants and in distributable form. Demand is primarily from the steel, chemicals, metal fabrication, petroleum, food-freezing, and electronics industries. Hydrogen and other specialty gases are produced from our own or purchased materials. Purchased materials and chemicals are used to manufacture the following products for sale as indicated: welding equipment and materials, to the metal fabricating and welding industries; cryogenic and process systems and equipment, to the oil, chemicals, medical, and industrial gases industries; molecular sieves, chiefly to the natural gas, oil, and chemicals industries; ceramic and metallic materials to the aircraft, oil drilling, and textile markets.

Metals & Carbons

Ores mined and milled from company-owned reserves are sold as indicated: uranium, to electric utilities; tungsten, to the electrical, chemical, and machine tool industries; vanadium, to the steel, chemical, and titanium industry; chromium, to stainless and specialty steel producers. Anthracite coal, premium-grade petroleum coke, coal-tar pitch, and petroleum pitch are purchased to make electrodes, refractory linings, metallurgical specialties, and other carbon and graphite forms, sold to the steel, ferroalloys, aluminum, chemicals, and transportation industries. High-performance products such as boron nitride and flexible graphite are sold for unique applications in the electronics and automotive industries. Carbon fibers, both manufactured and purchased, are sold to the aerospace, transportation, and recreation industries.

Batteries/Home & Automotive Products

Zinc, silver, and other materials are purchased to manufacture dry cell batteries. Our own polyethylene and purchased steel, aluminum, and hardware are used to make flashlights, lanterns, and miniature lamps. Some flashlights and lamps are purchased for resale. Products are sold to original equipment manufacturers and through wholesalers and retailers under the *Eveready, Energizer, Ucar* and other trademarks. Our own polyethylene is used to make *Glad* brand, private label, and generic plastic wrap and bags, which are sold chiefly through brokers to food stores. Our own ethylene glycol is used to make *Prestone II* brand and private label antifreeze/summer coolant, sold to wholesalers and retailers and the auto industry. *Simoniz* wax and other automotive specialties, produced for us under contract, are sold to wholesalers and retailers.

Specialty Products

All of the following are produced from manufactured or purchased chemicals and other materials: insecticides, herbicides, and plant growth regulators, sold through formulators and distributors to a broad range of agricultural and specialty markets; intermediates for insecticides, sold to chemical manufacturers; cellulosic casings made for production of hot dogs, sausages, and processed meats, and shrinkable plastic bags, made for fresh and processed meat and poultry packaging, both sold to meat and poultry processors and packers; capacitors, substrates, and proprietary processing chemicals and materials, sold to the electronics industry for computers, television receivers, communications systems, automobiles, etc.

Selected Financial Data

Union Carbide Corporation and Subsidiaries

Dollar amounts in millions (except per share figures)	**1982[a]**	1981	1980	1979	1978
From the income statement					
Net sales	**$ 9,061**	$10,168	$ 9,994	$ 9,177	$ 7,870
Cost of sales	**$ 6,687**	$ 7,431	$ 7,186	$ 6,491	$ 5,580
Research and development expense	**$ 240**	$ 207	$ 166	$ 161	$ 156
Selling, administrative, and other expenses	**$ 1,249**	$ 1,221	$ 1,152	$ 1,053	$ 943
Depreciation	**$ 426**	$ 386	$ 326	$ 470	$ 417
Interest on long-term and short-term debt	**$ 236**	$ 171	$ 153	$ 161	$ 159
Other income (expense)—net	**$ 162**	$ 164	$ 41	$ (42)	$ 12
Income before provision for income taxes	**$ 385**	$ 916	$ 1,052	$ 799	$ 627
Provision for income taxes	**$ 58**	$ 258	$ 360	$ 251	$ 205
Income before cumulative effect of change in accounting principle	**$ 310**	$ 649	$ 673	$ 556	$ 394
Cumulative effect of change in accounting principle for ITC	**—**	—	$ 217	—	—
Net income	**$ 310**	$ 649	$ 890	$ 556	$ 394
Income per share before cumulative effect of change in accounting principle	**$ 4.47**	$ 9.56	$ 10.08	$ 8.47	$ 6.09
Cumulative effect per share of change in accounting principle for ITC	**—**	—	$ 3.28	—	—
Net income per share	**$ 4.47**	$ 9.56	$ 13.36	$ 8.47	$ 6.09
Pro forma net income with 1980 change in accounting principle for ITC applied retroactively				$ 573	$ 448
Pro forma net income per share				$ 8.73	$ 6.92
From the balance sheet (at year-end)					
Working capital	**$ 1,747**	$ 2,147	$ 2,124	$ 2,070	$ 1,621
Total assets	**$10,616**	$10,423	$ 9,659	$ 8,803	$ 7,866
Long-term debt	**$ 2,428**	$ 2,101	$ 1,859	$ 1,773	$ 1,483
Total capitalization	**$ 8,305**	$ 8,018	$ 7,282	$ 6,317	$ 5,794
UCC stockholders' equity	**$ 5,159**	$ 5,263	$ 4,776	$ 4,042	$ 3,639
UCC stockholders' equity per share	**$ 73.54**	$ 76.74	$ 70.90	$ 61.06	$ 55.92
Other data					
Funds from operations	**$ 715**	$ 1,172	$ 1,211	$ 1,114	$ 924
Dividends	**$ 235**	$ 224	$ 206	$ 190	$ 181
Dividends per share	**$ 3.40**	$ 3.30	$ 3.10	$ 2.90	$ 2.80
Shares outstanding (thousands at year-end)	**70,153**	68,582	67,367	66,206	65,065
Market price per share—high	**$ 61**	$ 62⅛	$ 52½	$ 44½	$ 43¼
Market price per share—low	**$ 40⅛**	$ 45¼	$ 35¼	$ 34	$ 33⅝
Capital expenditures	**$ 1,179**	$ 1,186	$ 1,129	$ 831	$ 688
Number of employees (at year-end)	**103,229**	110,255	116,105	117,031	113,371
Selected financial ratios					
Total debt/total capitalization (at year-end)	**33.9%**	30.3%	29.9%	31.4%	32.3%
Net income/average UCC stockholders' equity	**6.0%**	12.9%	15.3%[b]	14.5%	11.2%
Net income + minority share of income/average total capitalization	**4.3%**	9.1%	10.6%[b]	9.6%	7.5%
Dividends/net income	**75.8%**	34.5%	30.6%[b]	34.2%	46.0%
Dividends/funds from operations	**32.9%**	19.1%	17.0%	17.1%	19.6%

[a]Amounts for 1982 reflect the adoption of Statement of Financial Accounting Standards No. 52. (See Note 2, *Foreign Currency Translation*, on page 29.)

[b]Net income in these ratios excludes the non-recurring credit for the cumulative effect of the change in accounting principle for the investment tax credit (ITC).

Pro forma net income data are restated to reflect the change in accounting principle for the ITC. (See Note 5, *1980 Accounting Change for the Investment Tax Credit*, on page 30.) Net income per share is based on weighted average number of shares outstanding during the year. Funds from operations include net income and non-cash charges (credits) to net income. (See *Consolidated Statement of Changes in Financial Position.*) *Total debt* consists of short-term debt, long-term debt, and current installments of long-term debt. *Total capitalization* consists of *total debt* plus *minority stockholders' equity in consolidated subsidiaries* and *UCC stockholders' equity*.

Financial Review

The subjects covered by the financial review are found on the following pages:

New Policy for Translating Foreign Currency

Results for 1982 reflect the January 1 adoption of a new policy for translating foreign currencies, Statement of Financial Accounting Standards No. 52. Results for 1981 on a Statement No. 52 basis are presented in Note 2 on page 29. Additional pro forma 1981 information is presented in Notes 6 and 9 on pages 30 and 32. The new procedures are expected to minimize the effect on income of erratic gains and losses arising from foreign currency translation. Generally, other than in Latin America, unrealized gains and losses resulting from translating foreign subsidiaries' assets and liabilities into U.S. dollars are accumulated in an equity account on the balance sheet until such time as the subsidiary is sold or substantially or completely liquidated. An analysis by geographic area of the equity adjustment from translation as of December 31, 1982 is shown below:

Equity Adjustment from Foreign Currency Translation

Millions of Dollars	1982
Africa & Middle East	$ (35)
Canada	(38)
Europe	(152)
Far East	(24)
Total	$(249)

Translation gains and losses relating to our operations in Latin America, where hyperinflation exists, continue to be included in the income statement on essentially the same basis as in prior years.

Lower 1982 Sales

Sales declined 11% to $9,061 million as a result of the lingering worldwide recession. Worldwide volume was 9% lower, mainly due to an 11% decline in domestic volumes. Average selling prices declined 3%, chiefly reflecting lower prices in most non-consumer product lines in the United States. Adjusted for the divestiture of portions of our metals business sold in June 1981, sales of continuing operations decreased 9%. Sales percentage declines were especially severe in our metals, carbon, chemicals, and plastics businesses. Some businesses not related to the housing, steel, and automotive industries improved over last year with batteries, agricultural products and food processing and packaging materials reporting encouraging gains. International sales declined less than domestic sales, in spite of the currency translation effects of a strong U.S. dollar during 1982. Export sales (included in the domestic results) were 14% below last year.

Percent change over prior year	1982	1981	1980
Sales	−11	+2	+9
Average Selling prices	−3	+7	+14
Volume	−9	−5	−4

Year-to-year changes in sales and volume have been affected by our divestiture program, but the effects have been partially offset by increasing revenues from our technology licensing programs.

Lower Gross Margin Ratio

Cost of sales in 1982 decreased 10%, versus the 11% decrease in sales, resulting in a decline in the gross margin ratio to 26.2%. The effect of a stronger international ratio (largely due to Union Carbide's adoption of Statement No. 52 in 1982) was offset by the effect of a considerably weaker domestic ratio. A modest favorable effect on the domestic ratio resulted from LIFO inventory reductions. These reductions were achieved to bring working capital levels in line with a lower level of business activity (see Note 1 on page 29). During the second half of the year domestic operating rates declined, resulting in less favorable absorption of period costs and reduced operating efficiencies. Although hydrocarbon feedstock costs were sharply lower, inflation in fuels, electric power, and labor contributed to higher unit production and distribution costs. Approximate changes in domestic purchased cost indices for three categories of raw materials and energy were as follows:

Percent change over prior year	1982	1981	1980
Hydrocarbon feedstocks	−16	+12	+39
Other major raw materials	−1	+12	+23
Fuels and electric power	+17	+24	+25

In 1981, the gross margin ratio had declined to 26.9% due to the effect of a lower international ratio (primarily due to the negative impact on plant cost of currency rate changes on inventories). Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981, the worldwide gross margin ratio would have been 27.6%. In 1980, the gross margin ratio had declined to 28.1% (Statement No. 8 basis).

For more information about Union Carbide's principal raw materials, markets, and methods of distribution, see page 19. Unless otherwise indicated there, the products of Union Carbide are sold principally by its own sales force directly to customers in the industries named or for the uses mentioned.

Higher Research and Development Expenses

In support of Union Carbide's strategic plans, research and development expenses in 1982 increased 16%, to a total of $240 million. In 1981 these expenses amounted to $207 million.

Selling, Administrative, and Other Expenses

During 1982, Union Carbide benefited significantly from its programs to control overhead costs. Total selling, administrative, and other expenses were $1,249 million, an increase of only 2%. These expenses increased 6% and 9%, respectively, in 1981 and 1980. Selling expenses in 1982 totalled $630 million, an increase of 5%. In 1981 the increase was 7%. Administrative and other expenses of $619 million were virtually unchanged from the $620 million reported last year. These expenses had increased 5% in 1981. Administrative expenses included charitable contributions of $4.7 million in 1982.

Employees

The number of employees and their respective employment costs follow:

Number of Employees

(Year-end)	1982	1981	1980
United States & Puerto Rico	53,379	59,088	62,4[illegible]
Africa & Middle East	3,060	3,132	2,847
Canada	4,209	4,962	5,015
Europe	7,151	7,190	8,731
Far East	19,693	19,968	20,977
Latin America	15,737	15,915	16,042
International Operations	49,850	51,167	53,612
Total UCC Consolidated*	103,229	110,255	116,105

*Does not include 17,814 employees (18,850 in 1981 and 19,755 in 1980) of the Nuclear Division at facilities operated for the United States Government.

Employment Costs*

(Wages, benefits, payroll taxes)	1982	1981	1980
Domestic			
Millions of dollars	$1,854	$1,834	$1,741
Percent of domestic sales	31%	26%	25%
International			
Millions of dollars	$ 574	$ 595	$ 594
Percent of international sales	19%	19%	19%
Total UCC Consolidated			
Millions of dollars	$2,428	$2,429	$2,335
Percent of total sales	27%	24%	23%

*Does not include employment costs of employees of the Nuclear Division at facilities operated for the United States Government.

Increased Depreciation Expense

Depreciation expense in 1982 was $426 million, representing an increase of 10% over 1981. The comparable increase in 1981 was 18%. Although annual capital expenditures have remained relatively constant during the 1980 through 1982 period, they represent dramatic increases over the years prior to 1980, and depreciation expense therefore continued to rise.

Significant Interest Expense Increase

Interest expense on long-term and short-term debt increased 38% to $236 million in 1982. The increase resulted chiefly from higher average levels of short-term debt. Interest expense in 1981 was $171 million, an increase of 12% over 1980.

Favorable "Other Income—Net" in 1982

For the second consecutive year, Union Carbide recorded a significant favorable *Other income—net* position ($162 million and $164 million, respectively, in 1982 and 1981). The major items in 1982, 1981, and 1980 are explained in Note 9 on page 32.

Foreign Currency Adjustments

Foreign currency adjustments included in *Other income—net* were as follows:

Foreign currency adjustments	1982	1981	1980
Millions of dollars	$ 5	$ 67*	$ 1

*Had Statement No. 52 been in effect in 1981 foreign currency adjustments would have been approximately $10 million.

The $5 million gain in 1982, calculated under the new accounting standard for translation of foreign currencies, resulted primarily from devaluation of the Brazilian cruzeiro. Under the new standard (Statement No. 52), only translation gains and losses relating to our operations in Latin America

continue to be included in the income statement. The significant gain in 1981, calculated under the previous accounting standard (Statement No. 8) resulted mainly from the translation into United States dollars of the Brazilian cruzeiro and European currencies.

Supplementary Income Statement Data

Supplementary income statement data for 1982, 1981, and 1980 are shown below:

Millions of dollars	1982	1981	1980
Taxes other than income taxes	$271	$271	$261
Maintenance and repairs	$579	$658	$634
Domestic advertising expenditures	$ 90	$ 90	$ 74
International advertising expenditures	40	35	39
Total advertising expenditures	$130	$125	$113

Favorable Balance of Payments

A favorable balance was again achieved in 1982, although exports were significantly below those of 1981. Details are shown below:

Millions of dollars	1982	1981	1980
Exports to customers from domestic operations	$ 574	$ 671	$ 769
Exports to subsidiaries from domestic operations	405	419	471
Total exports	979	1,090	1,240
Proceeds from 14.75% notes issued abroad	148	—	—
Net dividends from international affiliates	35	53	71
Other receipts	66	99	50
Total dollar inflow	$ 1,226	$ 1,242	$ 1,36[illegible]
Total imports	$ 345	$ 493	$ 385
International investments	63	26	15
Other disbursements	101	80	143
Total dollar outflow	$ 509	$ 599	$ 543
Net favorable balance	$ 719	$ 643	$ 818

Unusually Low 1982 Effective Income Tax Rate

The effective income tax rate in 1982 was 15.1% versus 28.2% in 1981. The low rate was the result of an increased proportion of income from areas subject to lower tax rates and increased investment tax credits as a proportion of income before tax. The effective income tax rate in 1981 had declined 6 percentage points from the 34.2% reported in 1980 essentially as a result of the same factors. An analysis of the major items in 1982, 1981, and 1980 is included in Note 8 on page 31.

Lower 1982 Minority Interest

The minority stockholders' share of income declined in 1982 by 23% to $36 million. A 4% decrease was reported in 1981. The most significant decrease for both years occurred in Canada as a result of the prolonged recession.

Lower 1982 Income from Equity Companies

Our share of income of companies carried at equity in 1982 was $19 million, a decline of 50% from the $38 million reported in 1981 ($28 million on Statement No. 52 basis). The largest decrease between the two years on a Statement No. 52 basis resulted from Canadian equity company earnings. In 1981, our share of income from companies carried at equity increased 27% due primarily to more favorable net currency gains (under Statement No. 8 procedures) for several companies and increased earnings of equity companies in Canada.

Net Income

Net income in 1982 was $310 million, 52% lower than the $649 million reported in 1981. Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981, net income for that year would have been approximately $655 million. Net income as reported in 1981, decreased 4% from that of the previous year.

Analysis of Change in Earnings Per Share

Dollars per share	1982 vs. 1981	1981 vs. 1980
Earnings per share, 1981 and 1980	$9.56	$10.08*
Domestic gross margin		
Selling prices	−1.79	+5.32
Volume	−2.28	−1.10
Manufacturing and distribution costs	−0.15	−3.24
	−4.22	+0.98
International gross margin		
Selling prices	−0.66	+1.46
Volume	−0.29	−0.31
Manufacturing and distribution costs	+1.34	−2.83
	+0.39	−1.68
Total gross margin	−3.83	−0.70
Research and development	−0.35	−0.40
Selling, administrative and other expenses	−0.29	−0.69
Depreciation	−0.43	−0.60
Other income-net	−0.04	+1.23
Interest on long-term and short-term debt	−0.69	−0.18
Effective income tax rate	+0.74	+0.83
Minority stockholders' share of income	+0.17	+0.04
Share of income of companies carried at equity	−0.28	+0.12
Increase in shares outstanding	−0.09	−0.17
Net Change	−5.09	−0.52
Earnings per share, 1982 and 1981	$ 4.47	$ 9.56

*1980 earnings per share are before the cumulative effect of a change in accounting principle.

Quarterly Data

Millions of dollars	1st quarter	2nd quarter	3rd quarter	4th quarter	Year
1982					
Net sales	$2,312	$2,299	$2,165	$2,285	$9,061
Cost of sales	1,693	1,636	1,644	1,714	6,687
Depreciation	106	106	106	108	426
Net income	91	118	71	30[a]	310
1981					
Net sales	$2,640	$2,674	$2,425	$2,429	$10,168
Cost of sales	1,915	1,931	1,781	1,804	7,431
Depreciation	93	92	93	108	386
Net income[b]	178	193	138	140	649

Quarterly Data

Dollars per share	1st quarter	2nd quarter	3rd quarter	4th quarter	Year
1982					
Net income	$ 1.32	$ 1.71	$ 1.02	$ 0.42[a]	$ 4.47
Dividends	0.85	0.85	0.85	0.85	3.40
Market price (high)[c]	52	48½	51¼	61	61
Market price (low)[c]	42⅜	40⅛	41	47⅛	40⅛
1981					
Net income[b]	$ 2.64	$ 2.86	$ 2.02	$ 2.04	$ 9.56
Dividends	0.80	0.80	0.85	0.85	3.30
Market price (high)[c]	62⅛	61¾	59¾	53¾	62⅛
Market price (low)[c]	49½	52¾	45¼	46⅛	45¼

[a]Includes the favorable effect of LIFO inventory reductions (see Note 1 on page 29) and a net gain of $23 million ($0.33 per share) related to an advance sale of uranium.

[b]Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981 (see Note 2 on page 29), net income and net income per share by quarter in 1981 would have been approximately as follows:

	1st quarter	2nd quarter	3rd quarter	4th quarter	Year
Net income	$ 166	$ 183	$ 156	$ 150	$ 655
Net income per share	2.46	2.70	2.30	2.20	9.66

[c]Prices are based on New York Stock Exchange composite transactions tape.

Dividends Maintained

The cash dividend in 1982 was maintained at an annual rate of $3.40 per share, despite the significant earnings decline for the year. The dividend was last increased in September 1981 from the previous rate of $3.20 per share. Of the total dividends declared in 1982, $56 million, or 24%, was reinvested in Union Carbide Corporation common stock through our Dividend Reinvestment and Stock Purchase Plan. Total dividends declared in 1982, 1981, and 1980 were $235 million, $224 million and $206 million, respectively. Dividends as a percent of funds from operations for the past three years were as follows:

	1982	1981	1980
Dividends/funds from operations	33%	19%	17%

Capital Expenditures Stabilize

These expenditures include additions to property, plant, and equipment, and additions to capital leases and capitalized interest. Our capital expenditures program is managed to support approved strategic plans for the businesses in our portfolio. Real capacity expansions, representing about half of total capital expenditures in recent years, were tightly controlled in 1982. Other capital expenditures are directed primarily to replacements, cost reductions and energy conservation, and to projects in support of health, safety, and environmental standards.

In addition to tighter controls, the lower level of capital expenditures in 1982, is due, in part, to moderating inflation and lower requirements for our new headquarters in Danbury, Connecticut, as it neared completion.

The total expenditures of $1,179 million in 1982 represented a decrease of 1% from the 1981 total of $1,186 million. 1981 expenditures had increased 5% from the $1,129 million in 1980. Capital expenditures in 1982, 1981 and 1980, as required by accounting standards, include capitalized interest totalling $73 million, $58 million and $46 million, respectively.

In 1980 and 1981 approximately three-quarters of the total capital spending was in the United States and Puerto Rico. In 1982 this ratio declined to about 70% due mainly to significant expenditures for new ethylene glycol facilities at Prentiss, Alberta, Canada.

At December 31, 1982, the cost of completing authorized construction projects for added capacity, cost reduction, replacement, and other purposes is estimated at $1.1 billion. A portion of this amount is covered by firm commitments, which are expected to be financed by a combination of internally generated cash flow and external financing.

Working Capital Decreases

In 1982, working capital declined by $400 million, or 19%. Accounts receivable decreased by 6% mainly due to lower sales levels in the final quarter of 1982. In terms of days' sales outstanding at year-end (based on fourth quarter sales), receivables represented about 57 days at year-end 1982 as compared to 57 and 54 days, respectively, at the end of 1981 and 1980.

Total inventories at year-end 1982 were 9% lower than at year-end 1981. Inventories were considerably higher during the year, due partly to seasonal factors, but were reduced by year-end as a result of tight inventory control.

Lower Cash Flow Provided by Operations

Cash flow from operations, as a percent of the total sources of funds, declined to 47% in 1982 and represented the lowest percentage reported in recent years. The ratio had been 66% and 98%, respectively, in 1981 and 1980. Funds from operations consists of net income before non-cash items such as depreciation and deferred income taxes.

Debt Ratio Contained

Borrowings are the main source of funds supplementing funds generated by operations. In spite of the lower cash flow provided from operations in 1982, debt was controlled resulting in a relatively low debt ratio of 33.9% by year end. When prospects dimmed for the year, we moved quickly to reduce construction expenditures, cutting our 1982 construction budget of $1.5 billion by $321 million. In addition, we extended efforts to control working capital, and activated new programs to keep down overhead costs. Year-end ratios of total debt to total capitalization have been as follows:

	1982	1981	1980
Debt Ratio	33.9%	30.3%	29.9%

Total debt includes short-term debt, long-term debt, and the current portion of long-term debt; total capitalization consists of total debt plus minority stockholders' equity in consolidated subsidiaries and UCC stockholders' equity.

Our target debt ratio is approximately 30–32%.

Funds from External Sources

In 1982, Union Carbide used both long- and short-term borrowings to supplement funds from operations. Funds from financing of $472 million included proceeds from the May issuance in the international capital markets of $150 million 14.75% U.S. dollar guaranteed notes due 1989.

In addition, revenue bonds totalling $59 million were issued by local authorities to finance pollution control and other facilities.

During 1982, average levels of short-term borrowing increased steadily as the effects of the recession became more intense, reaching $653 million by the end of the third quarter. By year-end, however, total short-term debt had been reduced to $328 million. During the year, part of the short-term borrowings were rolled over into the longer term borrowings above. Short-term debt outstanding at year-end for the past three years was as follows:

Millions of dollars	1982	1981	1980
Domestic short-term debt	$110	$ –	$ 61
International short-term debt	218	217	205
Total	$328	$217	$266

Various lines of credit are also available to the Corporation and its subsidiaries. The principal domestic line of credit provides for borrowings up to $1 billion at rates to be negotiated. This line is subject to customary review and annual renewal.

Funds obtained from the sale of stock through Union Carbide's Dividend Reinvestment and Stock Purchase Plan amounted to $60 million in 1982 and $50 million in 1981.

Management's Statement of Responsibility For Financial Statements

Union Carbide's financial statements are prepared by management, which is responsible for their fairness, integrity, and objectivity. The accompanying financial statements have been prepared in conformity with generally accepted accounting principles applied on a consistent basis, except for the change described in Note 2 and, accordingly, include amounts which are estimates and judgments. All historical financial information in this Annual Report is consistent with the accompanying financial statements.

Union Carbide maintains accounting systems, including internal accounting controls monitored by a staff of internal auditors, which are designed to provide reasonable assurance as to the reliability of financial records and the protection of assets. The concept of reasonable assurance is based on the recognition that the cost of a system must not exceed the related benefits. The effectiveness of those systems depends primarily upon the careful selection of financial and other managers, clear delegation of authority and assignment of accountability, inculcation of high business ethics and conflict-of-interest standards, policies and procedures for coordinating the management of corporate resources, and the leadership and commitment of top management.

Union Carbide's financial statements are examined by Main Hurdman, independent certified public accountants, in accordance with generally accepted auditing standards. These standards provide for a review of internal accounting control systems and tests of transactions to the extent they deem appropriate. The accountants' report appears on page 37.

The Audit Committee of the Board of Directors, which consists solely of non-employee directors, is responsible for overseeing the functioning of the accounting system and related controls and the preparation of annual financial statements. The Audit Committee recommends to the Board of Directors the selection of the independent auditors, subject to the approval of shareholders. The Audit Committee periodically meets with the independent auditors, management and internal auditors to review and evaluate their accounting, auditing and financial reporting activities and responsibilities. The independent and internal auditors have full and free access to the Audit Committee and meet with it, with and without management present.

Consolidated Statement of Income and Retained Earnings

Union Carbide Corporation and Subsidiaries

Millions of dollars (except per share figures) year ended December 31	1982	1981	1980
Net sales	$ 9,061	$10,168	$ 9,994
Deductions (additions)			
Cost of sales	6,687	7,431	7,186
Research and development	240	207	166
Selling, administrative, and other expenses	1,249	1,221	1,152
Depreciation	426	386	326
Interest on long-term and short-term debt	236	171	153
Other income—net	(162)	(164)	(41)
Income before provision for income taxes	385	916	1,052
Provision for income taxes	58	258	360
Income of consolidated companies	327	658	692
Less: Minority stockholders' share of income	36	47	49
Plus: UCC share of income of companies carried at equity	19	38	30
Income before cumulative effect of change in accounting principle	310	649	673
Cumulative effect of change in accounting principle for the investment tax credit (Note 5)	—	—	217
Net income	310	649	890
Retained earnings at January 1	4,595	4,170	3,486
	4,905	4,819	4,376
Dividends declared	235	224	206
Retained earnings at December 31	$ 4,670	$ 4,595	$ 4,170
Per share			
Income before cumulative effect of change in accounting principle*	$ 4.47	$ 9.56	$ 10.08
Cumulative effect of change in accounting principle for the investment tax credit*	$ —	$ —	$ 3.28
Net income*	$ 4.47	$ 9.56	$ 13.36
Dividends declared	$ 3.40	$ 3.30	$ 3.10

*Based on 69,305,609 shares (67,862,233 shares in 1981 and 66,714,481 shares in 1980), the weighted average number of shares outstanding during the year.

The Notes to Financial Statements on pages 29 through 37 should be read in conjunction with this statement.

Consolidated Balance Sheet

Union Carbide Corporation and Subsidiaries

Millions of dollars at December 31	1982	1981
Assets		
Cash	$ 34	$ 93
Time deposits and short-term marketable securities	120	160
	154	253
Notes and accounts receivable	1,420	1,513
Inventories:		
Raw materials and supplies	542	558
Work in process	473	551
Finished goods	725	793
	1,740	1,902
Prepaid expenses	187	208
Total current assets	3,501	3,876
Property, plant, and equipment	10,793	10,047
Less: Accumulated depreciation	4,437	4,253
Net fixed assets	6,356	5,794
Companies carried at equity	293	307
Other investments and advances	125	104
Total investments and advances	418	411
Other assets	341	342
Total assets	$10,616	$10,423

	1982	1981
Liabilities and stockholders' equity		
Accounts payable	$ 415	$ 440
Short-term debt	328	217
Payments due within one year on long-term debt	59	108
Accrued income and other taxes	164	193
Other accrued liabilities	788	771
Total current liabilities	1,754	1,729
Long-term debt	2,428	2,101
Deferred credits	944	1,001
Minority stockholders' equity in consolidated subsidiaries	331	329
UCC stockholders' equity:		
Common stock		
Authorized—1[illegible]0,000,000 shares (90,000,000 shares in 1981)		
Issued—70,24[illegible],377 shares (68,668,845 shares in 1981)	739	669
Equity adjustment from foreign currency translation	(249)	—
Retained earnings	4,670	4,595
	5,160	5,264
Less: Treasury stock, at cost—86,888 shares in 1982 and 1981	1	1
Total UCC stockholders' equity	5,159	5,263
Total liabilities and stockholders' equity	$10,616	$10,423

The Notes to Financial Statements on pages 29 through 37 should be read in conjunction with this statement.

Consolidated Statement of Changes in Financial Position

Union Carbide Corporation and Subsidiaries

Millions of dollars, year ended December 31	1982	1981	1980
Cash and time deposits and short-term marketable securities at beginning of year	**$ 253**	$ 243	$ 449
Funds provided by			
Net Income	**310**	649	890
Noncash charges (credits) to net income			
Depreciation	**426**	386	326
Deferred income taxes	**(34)**	133	185
Cumulative effect of change in accounting principle for the investment tax credit (Note 5)	**–**	–	(217)
Other noncash charges–net	**13**	4	27
Total funds from operations	**715**	1,172	1,211
Long-term debt			
New borrowings	**421**	457	164
Reductions	**(81)**	(153)	(73)
Increase in short-term debt and current portion of long-term debt	**62**	15	109
Increase in common stock	**70**	62	50
Total funds from financing	**472**	381	250
Portions of metals business sold (Note 4)			
Inventories	**–**	109	–
Net fixed assets	**–**	169	–
Long- and short-term debt assumed by purchaser	**–**	(60)	–
Other assets and liabilities–net	**–**	(9)	–
Net assets sold	**–**	209	–
Decrease (increase) in notes and accounts receivable	**93**	82	(165)
Decrease (increase) in inventories	**142**	(124)	(113)
Reductions of net fixed assets			
Disposals	**18**	66	55
Translation adjustments	**76**	–	–
Total funds from other sources	**329**	233	(223)
Total funds provided	**1,516**	1,786	1,238
Funds used for			
Dividends	**235**	224	206
Capital expenditures	**1,179**	1,186	1,129
Increase (decrease) in investments and other assets	**9**	177	(22)
Decrease in payables and accruals	**55**	111	78
Equity adjustments from foreign currency translation	**108**	–	–
Other–net	**29**	78	53
Total funds used	**1,615**	1,776	1,444
Net increase (decrease) in funds	**(99)**	10	(206)
Cash and time deposits and short-term marketable securities at end of year	**$ 154**	$ 253	$ 243

Amounts reported for 1982 changes in certain balance sheet accounts are exclusive of changes in account balances resulting from the aggregate equity adjustment from foreign currency translation at the beginning of the year of $(141) million relating primarily to fixed assets. See Note 2.

Amounts reported for 1981 changes in balance sheet accounts are exclusive of changes in account balances resulting from the sale of portions of the metals business, which are reported separately in this statement.

The Notes to Financial Statements on pages 29 through 37 should be read in conjunction with this statement.

Notes to Financial Statements

1. Summary of Significant Accounting Policies

Principles of consolidation—The consolidated financial statements include the assets, liabilities, revenues, and expenses of all significant subsidiaries except Ucar Capital Corporation, which is carried at equity in net assets. All significant intercompany transactions have been eliminated in consolidation. Investments in significant companies 20 to 50 percent owned are carried at equity in net assets, and Union Carbide's share of their earnings is included in income. Other investments are carried generally at cost or less.

Marketable securities—Marketable securities are carried at the lower of cost or market. Carrying value was substantially the same as market value at December 31, 1982 and 1981.

Inventories—Inventory values, which do not include depreciation, are stated at cost or market, whichever is lower. Cost is determined generally on the "last-in, first-out" (LIFO) method for U.S. companies and for certain subsidiaries operating outside the United States. The "average cost" method is used by most other subsidiaries.

Approximately 67% of inventory amounts before application of the LIFO method at December 31, 1982 (64 percent at December 31, 1981) have been valued on the LIFO basis. It is estimated that if inventories had been valued at current costs, they would have been approximately $1,176 million and $1,187 million higher than reported at December 31, 1982, and December 31, 1981, respectively.

Reduction of inventory quantities in 1982 resulted in a liquidation of certain LIFO inventory quantities, principally domestic chemicals and plastics inventories, acquired at lower costs prevailing in prior years. The effect of this liquidation was to decrease cost of sales in 1982 by approximately $56 million and increase 1982 net income by $30 million, or $0.43 per share.

Fixed assets and depreciation—Fixed assets are carried at cost. Expenditures for replacements are capitalized and the replaced items are retired. Gains and losses from the sale of property are included in income.

Depreciation is calculated on a straight-line basis. The Corporation and its subsidiaries generally use accelerated depreciation methods for tax purposes where appropriate.

Patents, trademarks, and goodwill—Amounts paid for purchased patents and for securities of newly acquired subsidiaries in excess of the fair value of the net assets of such subsidiaries have been charged to patents, trademarks, and goodwill. The portion of such amounts determined to be attributable to patents is amortized over their remaining lives and the balance is amortized over the estimated period of benefit, but not more than 40 years.

Research and development—Research and development costs are charged to expense as incurred. Depreciation expense applicable to research and development facilities and equipment is included in *Depreciation* in the income statement ($8 million in 1982, $7 million in 1981 and 1980).

Income taxes—Provision has been made for deferred income taxes where differences exist between the period in which transactions affect taxable income and the period in which they enter into the determination of income in the financial statements.

Benefits from investment and energy tax credits and research and experimentation tax credits are included currently in net income.

Retirement program—The Corporation's contribution to the U.S. retirement program in each year is based on the recommendation of an independent actuarial firm using the entry age normal method. Accrued costs are funded for all employees age 25 and over, with unfunded prior service costs being amortized over periods up to 30 years.

Program costs of consolidated international subsidiaries are accounted for substantially on an accrual basis.

Net income per share—Net income per share is based on the weighted average number of shares of common stock outstanding in each year. There would have been no material dilutive effect on net income per share for 1982, 1981 or 1980 if convertible securities had been converted and if dilutive stock options had been exercised.

2. Foreign Currency Translation

Effective January 1, 1982, Union Carbide adopted Statement of Financial Accounting Standards No. 52, Foreign Currency Translation, which replaces Statement No. 8. Had the provisions of Statement No. 52 been applied in 1981, net income and net income per share would have been approximately $6 million and $0.10 per share higher than reported. Computation of the effect on 1982 net income of adopting Statement No. 52 is not practical under the system of translation required by the Statement.

The following is an analysis of the new component of stockholders' equity, *Equity adjustment from foreign currency translation*, included in the 1982 balance sheet in accordance with the provisions of Statement No. 52.

Millions of dollars	1982
Aggregate equity adjustment at beginning of year	$ (141)
Adjustments during the year (principally translation adjustments)	(108)
Balance at December 31	$ (249)

3. Ucar Capital Corporation

Ucar Capital Corporation (Capital), a wholly-owned finance subsidiary, purchases without recourse certain customer obligations from Union Carbide at a discount sufficient to yield earnings of not less than one and one-half times its fixed charges. In the Consolidated Statement of Income and Retained Earnings, Capital's income before income taxes, which amounted to $11 million in 1982 ($10 million in 1981 and $9 million in 1980), is included in *Other income—net* as a reduction of discount expense, and the related income tax is included in *Provision for income taxes.*

The average effective interest rate on Capital's borrowings, which consist of $100 million of 15-year notes due from 1983 to 1992 and $117 million of commercial paper ($68 million in 1981), was 10% in 1982 (9.7% in 1981 and 8.4% in 1980). In 1981, borrowings also included $38 million of 5-year notes, which matured in September 1982.

Additional financial information relating to Capital is presented below:

Millions of dollars, December 31	1982	1981
Total assets	$288	$267
Less: Total liabilities	225	210
Net assets	$ 63	$ 57

4. Sale of Portions of the Metals Business

In June 1981, the Corporation completed the sale of portions of its metals business, including ferroalloys operations in the United States and Norway, for net proceeds after expenses of $181 million plus assumption by the purchaser of $60 million in long- and short-term debt. A charge of $22 million ($27 million after tax, or $0.40 per share) representing the loss on this transaction was included in *Other income—net* in 1980.

5. 1980 Accounting Change for the Investment Tax Credit

In 1980, Union Carbide changed from the deferred method of accounting for the investment tax credit to the flow-through method. The cumulative effect of deferred investment tax credits for the periods through December 31, 1979, which amounted to $217 million, or $3.28 per share, was reported as a non-recurring credit in the 1980 Consolidated Statement of Income and Retained Earnings under the caption *Cumulative effect of change in accounting principle for the investment tax credit.*

6. International Operations

The following are financial summaries of consolidated international subsidiaries and international companies carried at equity:

	Consolidated Subsidiaries		
Millions of dollars	1982	1981	1980
Net sales	$3,010	$3,189	$3,149
Net income	$ 121	$ 146[a]	$ 239[b]
UCC Share	$ 86	$ 101[a]	$ 192[b]
Total assets	$3,343	$3,121	$3,055
Less: Total liabilities	1,709	1,433	1,460
Net assets	$1,634	$1,688	$1,595
UCC Equity	$1,309	$1,366	$1,299

[a]Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981 (see Note 2), net income would have been approximately $18 million (UCC share $16 million) higher than reported.

[b]Includes a charge of $28 million representing accrual of the loss on the sale of ferroalloys operations in Norway. See Note 4.

	Companies Carried At Equity		
Millions of dollars	1982	1981	1980
Net sales[a]	$ 978	$1,182	$1,106
Net income	$ 60	$ 81[b]	$ 61
UCC Share	$ 19	$ 37[b]	$ 29
Total assets	$1,046	$1,201	$1,201
Less: Total liabilities	612	715	780
Net assets	$ 434	$ 486	$ 421
UCC Equity	$ 177	$ 204	$ 172

[a]Exclusive of $113 million net sales to UCC and its consolidated subsidiaries in 1982 ($145 million in 1981 and $82 million in 1980).

[b]Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981, net income would have been approximately $23 million (UCC share $10 million) lower than reported.

7. Segment Information

Audited industry and geographic segment data are presented in the tables and accompanying footnotes appearing on pages 12 through 17 and in the Notes to Segment Review appearing on page 18.

Union Carbide's businesses and products are described on pages 11 through 19 and also on pages 4 through 9.

8. Income Taxes

The following is an analysis of income tax expense:

Millions of dollars	1982		1981		1980	
	Current	Deferred	Current	Deferred	Current	Deferred
U.S. Federal income taxes	$ 1	$ 5	$ 35	$ 148	$ 62	$ 167
U.S. investment tax credit	(6)	(49)	(9)	(44)	(44)	(9)
U.S. energy tax credit	(3)	—	(8)	—	(7)	—
U.S. research and experimentation tax credit	(8)	—	(3)	—	—	—
U.S. state and local taxes based on income	—	—	4	—	13	—
Non-U.S. income taxes	108	10	106	29	151	27
	$ 92	$ (34)	$ 125	$ 133	$ 175	$ 185
Provision for income taxes	$ 58		$258		$360	

Deferred U.S. Federal income taxes include $71 million in 1982 ($110 million in 1981 and $127 million in 1980) related to depreciation timing differences. Additionally, 1982 includes $(60) million applicable to pension timing differences; $(14) million related to timing differences for long-term contracts accounted for on a percentage of completion basis; $14 million related to sales of tax benefits through tax leases; and $(9) million related to costs associated with an advance sale of uranium. Deferred Non-U.S. income taxes include $9 million in 1982 ($28 million in 1981 and $35 million in 1980) related to depreciation timing differences. The effects of timing differences for other items are not material.

At December 31, 1982, the Corporation had $112 million of Investment Tax Credit carryforward, which has been recognized for book purposes as a reduction in the provision for deferred income taxes in current and prior years.

Portions of the income of several subsidiaries operating in Puerto Rico and outside the United States are exempt from income taxes under local tax statutes. Non-U.S. income taxes were reduced by $30 million in 1982 ($57 million in 1981 and $33 million in 1980) as a result of these exemptions, which expire principally in 1989.

The consolidated effective income tax rate was 15.1% in 1982, 28.2% in 1981 and 34.2% in 1980. An analysis of the difference between the provision for income taxes and the amount computed by applying the statutory Federal income tax rate to consolidated income before provision for income taxes is as follows:

	1982		1981		1980	
	Millions of dollars	Percent of pretax income	Millions of dollars	Percent of pretax income	Millions of dollars	Percent of pretax income
Tax at statutory Federal rate	$ 177	46.0	$ 422	46.0	$ 484	46.0
Taxes related to operations in Puerto Rico and outside the United States	(36)	(9.4)	(61)	(6.6)	(44)	(4.1)
U.S. investment, energy, and research and experimentation tax credits	(66)	(17.1)	(64)	(7.0)	(60)	(5.7)
Allowable depletion in excess of cost depletion	(10)	(2.6)	(10)	(1.1)	(11)	(1.1)
Domestic International Sales Corporation	(7)	(1.8)	(15)	(1.6)	(17)	(1.7)
Other, net	—	—	(14)	(1.5)	8	0.8
	$ 58	15.1	$ 258	28.2	$ 360	34.2

8. Income Taxes (Con't)

The following is a summary of the U.S. and Non-U.S. components of income before provision for income taxes:

Millions of dollars	1982	1981	1980
Income before provision for income taxes:			
U.S.	$ 62	$ 501	$ 585
Non-U.S. (includes Puerto Rico)	323	415	467
	$ 385	$ 916	$1,052

The Corporation provides for taxes on undistributed earnings of affiliates included in consolidated retained earnings to the extent such earnings are planned to be remitted and not reinvested indefinitely. Undistributed earnings of affiliates intended to be reinvested indefinitely amounted to $1.9 billion at December 31, 1982.

9. Other Income—Net

The following is an analysis of Other income—net:

Millions of dollars	1982	1981	1980
Investment income (principally from short-term investments)	$ 52	$ 42	$ 46
Foreign currency adjustments	5	67[a]	1
Net discount expense on sales of customer obligations to Ucar Capital Corporation	(21)	(20)	(17)
Sales of tax benefits through tax leases[b]	53	10	—
Sales and disposals of businesses and other assets	21	14	(14)
Other	52	51	25[c]
	$ 162	$ 164	$ 41

[a]Had the new accounting standard for translation of foreign currencies adopted in 1982 been in effect in 1981, foreign currency adjustments would have been approximately $10 million.

[b]Represents the sale of tax benefits (investment and energy tax credits and depreciation) on $243 million of equipment expenditures ($46 million in 1981). The effect in 1982, after providing for income taxes and adjusting for the lower investment tax credit, was to increase net income by $4 million.

[c]Includes a charge of $22 million representing accrual of the loss on the sale of portions of the Corporation's metals business. See Note 4.

10. Supplementary Balance Sheet Detail

Millions of dollars at December 31	1982	1981
Notes and accounts receivable		
Trade	$ 1,247	$ 1,344
Other	201	197
	1,448	1,541
Less: Allowance for doubtful accounts	28	28
	$ 1,420	$1,513
Fixed assets		
Land and improvements	$ 530	$ 516
Buildings	1,191	1,057
Machinery and equipment	8,121	7,603
Construction in progress and other	951	871
	$10,793	$10,047
Other assets		
Deferred charges	$ 83	$ 91
Long-term receivables	194	194
Patents, trademarks, and goodwill	64	57
	$ 341	$ 342
Short-term debt		
Commercial paper	$ 110	$ —
Bank loans	218	217
	$ 328	$ 217
Other accrued liabilities		
Accrued accounts payable	$ 358	$ 385
Payrolls	151	143
Other	279	243
	$ 788	$ 771
Deferred credits		
Income taxes*	$ 765	$ 810
Deferred revenue from sales of certain customer obligations to Ucar Capital Corporation	114	107
Other	65	84
	$ 944	$ 1,001

*Deferred income taxes related to current items are included in accrued income and other taxes in the amount of $9 million in 1982 ($20 million in 1981).

11. Long-Term Debt

Millions of dollars at December 31	1982	1981
Union Carbide Corporation		
3.50% Notes due semiannually to 1984	$ 30	$ 45
3.625% Notes due semiannually to 1990, issued at a discount (effective rate 4.50%)	20	23
4.50% Notes due semiannually to 1996	28	30
4.50% Notes due annually, 1985 to 1994	200	200
5.30% Sinking Fund Debentures, with equal annual sinking fund payments to 1997	140	151
7.50% Sinking Fund Debentures due 2006, issued at a discount (effective rate 7.55%) with annual sinking fund payments, 1987 to 2005	200	200
8.50% Sinking Fund Debentures due 2005, with annual sinking fund payments, 1986 to 2004	300	300
9.125% Notes due 1986, issued at a discount (effective rate 9.22%)	100	100
9.35% Sinking Fund Debentures due 2009, with annual sinking fund payments, 1990 to 2008	200	200
10.00% Notes due annually, 1984 to 1987	100	100
10.00% Convertible Subordinated Debentures due 2006, convertible into common stock at $65.875 per share	150	150
14.50% Notes due 1991, issued at a discount (effective rate 14.69%)	150	150
Pollution control and other facility obligations	183	126
Obligations under capital leases	38	37
Other debt	3	–
Domestic subsidiary		
4.75% Guaranteed Debentures due 1982, convertible into Union Carbide Corporation common stock at $56.00 per share	–	36
International subsidiaries		
8.375% Canadian Dollar Notes due 1992	17	18
9.25% Canadian Dollar Notes due 1982	–	25
9.75% Canadian Dollar Debentures due 1986	17	19
10.75% Canadian Dollar Debentures due 1995	55	58
14.75% U.S. Dollar Guaranteed Notes due 1989	150	–
16.00% Canadian Dollar Debentures due 1989	41	–
Canadian Dollar Bank Loan at prime rate	82	–
Other debt – various maturities and interest rates	283	241
	$ 2,487	$ 2,209
Less: Payments due within one year	59	108
	$ 2,428	$ 2,101

During 1982, $11 million of the 5.30% Sinking Fund Debentures were purchased by the Corporation to apply against future sinking fund requirements. Previously, the Corporation and a subsidiary had purchased $99 million of the debentures.

Pollution control and other facility obligations represent state, commonwealth, and local governmental bond financing of pollution control and other facilities and are treated for accounting and tax purposes as debt of Union Carbide Corporation. These tax exempt bonds mature at various dates from 1983 through 2012 and have an average annual effective interest rate of 8.19%. At December 31, 1982, the Corporation had a contingent obligation with respect to $42 million of pollution abatement facility obligations assumed by purchasers of Union Carbide facilities.

International subsidiaries' debt includes $220 million ($75 million in 1981) due in U.S. dollars. At December 31, 1982, $323 million of international consolidated assets was pledged as security for $95 million of international subsidiaries' debt.

Payments due on long-term debt in the four years after 1983 are: 1984, $110 million; 1985, $125 million; 1986, $263 million; 1987, $124 million.

Various lines of credit are available to the Corporation and its subsidiaries. The principal domestic line of credit, which is subject to customary review and annual renewal, provides for borrowings up to $1 billion at rates to be negotiated. At December 31, 1982, there were no outstanding borrowings under this arrangement. The Corporation compensates banks for credit lines and services by maintaining bank balances and/or paying fees.

12. Interest Costs

The following is an analysis of *Interest on long-term and short-term debt:*

Millions of dollars	1982	1981	1980
Interest incurred on debt	$ 309	$ 229	$ 199
Less: Interest capitalized	73	58	46
	$ 236	$ 171	$ 153

13. Leases

Leases that meet the criteria for capitalization set forth in Statement of Financial Accounting Standards No. 13 have been classified and accounted for as capital leases. For noncapitalized leases, primarily involving distribution equipment and facilities, commitments under noncancelable leases extending for one year or more will require the following future payments:

Millions of dollars					
1983	$ 79	1986	$ 35	1993-1997	$ 68
1984	57	1987	29	1998-2002	41
1985	43	1988-1992	113	After 2002	7

Total lease and rental payments under noncapitalized leases extending one month or more were $109 million in 1982 ($98 million in 1981 and $96 million in 1980).

14. UCC Stockholders' Equity

At December 31, 1982, there were 25,000,000 shares of preferred stock ($1 par value) authorized and unissued (10,000,000 shares at December 31, 1981).

Issuances of shares of common stock were as follows:

	1982	1981	1980
Dividend Reinvestment and Stock Purchase Plan			
Issued at 95% of market price for dividend reinvestments	1,250,080	923,470	874,822
Issued at market price for optional cash payments	75,480	54,507	71,383
Purchased at market price by the Trustee under the Savings Plan for Employees	186,887	133,091	192,471
Issued on conversion of convertible debentures	—	54,296	—
Issued under employee stock option plans	59,085*	49,808*	22,348
	1,571,532	1,215,172	1,161,024

*1982 and 1981 issuances are net of 838 shares and 1,728 shares, respectively, which were returned and cancelled.

During 1980, the Corporation transferred 202 shares of treasury common stock in business combination transactions.

Shares of common stock were reserved for issuance as follows:

At December 31	1982	1981
For sale under the Dividend Reinvestment and Stock Purchase Plan	289,301	1,614,861
For conversion of convertible debentures	2,277,040	2,912,434
For stock option plans:		
Options granted but not exercised	1,131,458	877,634
Available for granting future options	331,618	694,002
For sale to Trustee under the Savings Plan for Employees	423,573	610,460
	4,452,990	6,709,391

At December 31, 1982, *Retained earnings* included $26 million and $170 million, representing the Corporation's share of undistributed earnings of a nonconsolidated finance subsidiary and 20 to 50 percent owned companies, respectively, accounted for by the equity method. The corresponding amounts at December 31, 1981, were $20 million and $150 million, respectively. Dividends received by the Corporation and the Corporation's share of dividends received by consolidated subsidiaries from companies carried at equity aggregated $5 million in 1982, $10 million in 1981 and $13 million in 1980.

15. Retirement Program

The retirement program of Union Carbide Corporation covers substantially all U.S. employees and certain employees in other countries. Various arrangements for providing retirement benefits are maintained by consolidated international subsidiaries. Total program costs for 1982 amounted to $201 million ($203 million in 1981 and $193 million in 1980) of which $177 million ($176 million in 1981 and $167 million in 1980) related to the U.S. Retirement Program.

A comparison of accumulated plan benefits and plan net assets for the U.S. Retirement Program is presented below:

Millions of dollars at January 1	1982	1981
Actuarial present value of accumulated plan benefits		
Vested	$ 1,206	$ 1,239
Non-Vested	98	108
	$ 1,304	$ 1,347
Net Assets Available for Benefits	$ 1,732	$ 1,683

The weighted average assumed rates of return used in determining the actuarial present value of accumulated plan benefits were approximately 10% for 1982 and approximately 9% for 1981. The rates used reflect the expected (market) rates of return during the periods of benefit deferral as required by Statement of Financial Accounting Standards No. 36. These rates are approximately equivalent to rates established by the Pension Benefit Guarantee Corporation, a non-profit Federal Government Corporation within the Department of Labor.

16. Incentive Programs

In 1978, stockholders approved the five-year Union Carbide Incentive Compensation Plan. The Plan, which became effective January 1, 1979, provides for granting stock option awards and annual bonus awards to key employees. Employees awarded options may also be awarded stock appreciation rights related to part or all of the optioned shares. On exercise, such rights would enable a holder to receive in cash or common stock the amount by which the market price of the common stock on the date of exercise exceeds the option price. The number of shares subject to options may not exceed 1,500,000 under this Plan. Option prices are 100 percent of fair market value on the date of the grant. Options, and any related stock appreciation rights, generally become exercisable two years after such date. Options may not have a duration of more than ten years. Annual bonus awards are cash bonuses which are intended to provide incentives for meritorious performance and total compensation levels comparable to those of major competitive employers.

Previously, in 1974, stockholders had approved the Union Carbide Incentive Program for key employees. No further awards may be made under the 1974 program.

When shares are issued upon exercise of options, no charges are made to income and the entire proceeds when received are credited to the common stock account. For stock appreciation rights granted, income is charged in each quarter for their appreciation. The charge is based on the amount, if any, by which the market price of the common stock exceeds the option price set forth in the related stock option.

The status of options is as follows:

Number of shares of common stock	1982	1981
Outstanding at January 1	877,634	683,767
Granted during the year*	362,384	271,763
Exercised during the year	59,923	51,536
Canceled or expired during the year	48,637	26,360
Outstanding at December 31	1,131,458	877,634

*Includes 114,273 shares granted in 1982 with stock appreciation rights attached (82,732 shares in 1981). After exercise of 28,069 shares in 1982, there were 340,008 stock appreciation rights outstanding at December 31, 1982 (253,804 at December 31, 1981).

17. Commitments and Contingencies

The Corporation and its consolidated subsidiaries have various purchase commitments for materials and supplies incident to the ordinary conduct of business; and commitments for product purchases from a company in which a subsidiary of the Corporation has an investment. The commitments are, in the aggregate, not expected to have a material adverse effect on the consolidated financial position of the Corporation.

In the normal course of business, the Corporation and its consolidated subsidiaries are involved in a number of legal proceedings and claims with both private and governmental parties. These cover a wide range of matters, including trade regulation; product liability; utility regulation; Federal regulatory proceedings; health, safety, and environmental affairs; patents and trademarks; contracts; and taxes. In some of these cases, the remedies that may be sought or damages claimed are substantial. In the opinion of counsel, the outcome of the legal proceedings and claims are not expected to have a material adverse effect on the consolidated financial position of the Corporation. Should any losses be sustained, in excess of provisions therefor, they will be charged to income in the future.

18. Supplementary Data on Changing Prices (Unaudited)

During the past decade inflation had an increasingly significant impact on the economy, resulting in the concern that conventional financial statements were not fully measuring the real growth of business enterprises. In response to this concern, the Financial Accounting Standards Board (FASB) issued Statement No. 33, which requires companies to adjust historical financial statements for the effects of changing prices. This Statement was recently amended by Statement No. 70, which reconciles the new foreign currency translation method adopted in Statement No. 52 with Statement No. 33 requirements. The presentation of historical cost information measured in units of constant purchasing power is no longer required for corporations that measure a significant part of their operations in currencies other than the U.S. dollar.

The accompanying summary statement of income, summary balance sheet data, and five-year comparisons were prepared in accordance with Statement No. 33 as amended by Statement No. 70. The methodology required is experimental in nature, and because of the different assumptions and the variety of methods permitted, this information should not be considered precise when making comparisons with other companies.

In the accompanying statements the "current cost" method adjusts for "changes in specific prices." The objective of this method is to measure resources and their consumption at

Data on Changing Prices

Millions of dollars, year ended December 31, 1982

Summary Statement of Income Adjusted for Changing Prices	At historical cost (nominal dollars)	Adjusted for changes in specific prices (current cost—nominal dollars)
Net sales	$ 9,061	$ 9,061
Cost of sales	6,687	6,767
Depreciation	426	657
Other operating expense—net	1,308	1,308
Interest expense	236	236
Provision for income taxes	58	58
Minority share of income	36	23
Net income	$ 310	$ 12
Per share	$ 4.47	$ 0.17
Gain due to decline in purchasing power of net monetary liabilities		$ 95

Summary Balance Sheet Data Adjusted for Changing Prices		
Inventories	$ 1,740	$ 2,916
Property, plant, and equipment, net of accumulated depreciation	6,356	8,030
UCC stockholders' equity	5,159	8,009

Five-Year Comparisons	**1982**	1981	1980	1979	1978
Net sales					
At historical cost	**$ 9,061**	$10,168	$9,994	$9,177	$7,870
In average 1982 dollars		10,795	11,711	12,208	11,648
Net income*					
Current cost—in average 1982 dollars	**12**	414	555	527	
Per share	**0.17**	6.10	8.33	8.02	
Stockholders' equity					
Current cost—in average 1982 dollars	**8,009**	8,193	8,171	8,117	
Dividends per share					
At historical cost	**3.40**	3.30	3.10	2.90	2.80
In average 1982 dollars		3.50	3.63	3.86	4.14
Market price per share (at year-end)					
At historical cost	**52.88**	51.38	50.25	42.00	34.00
In average 1982 dollars	**52.30**	52.50	55.90	52.41	48.24
Average consumer price index (1967 = 100)	**289.2**	272.4	246.8	217.4	195.4

*1980 net income excluded provisions for a then-pending sale of certain metals businesses.

the current cost of replacing these resources, rather than the historical cost amounts actually expended to acquire them. This method measures the effects of actual price changes directly related to a company rather than those from general inflation. The effect of general inflatio on current cost data for foreign operations is measured after translation (translate-restate method) based upon the U.S. Consumer Price Index for all Urban Consumers (CPI-U).

The domestic earnings were severely impacted by the prolonged recession in the U.S. and in many of our key overseas markets. When measured under the current cost method, the 1982 reported net income declined to $12 million. In comparison, the prior year's current cost net income was $390 million in 1981 dollars. The 1982 decline was mainly in U.S. operations, due to: (a) the increase in depreciation expense when reported on the current cost basis; (b) the cost of sales adjustment resulting from our inventory reduction program of historical cost LIFO inventories; and (c) the requirement in Statement No. 33 that the reported provision for income tax not be restated for increased operating costs calculated under the current cost method.

Specific prices of inventories and fixed assets held during 1982 increased by $307 million more than the general rate of inflation principally due to lower inflation rates. During 1981 and 1980 the general rate of inflation exceeded the specific prices of these assets by $345 million and $638 million, respectively.

Gains due to declines in purchasing power of net monetary liabilities amounted to $95 million in 1982 ($229 million in 1981 and $270 million in 1980). These unrealized gains reflect the fact that the Corporation's obligations will be repaid in dollars of declining purchasing power.

The foreign currency translation adjustment, calculated on the U.S. inflation-adjusted current cost of net assets, reflects exchange rate changes during the year. This translation adjustment, net of income taxes, reduced stockholders' equity by $88 million in 1982.

Current cost values presented in the supplementary data were determined as follows:

• *Inventories and Cost of Sales*—LIFO inventories and cost of sales were adjusted to reflect current material, labor and overhead costs.

• *Property, Plant, and Equipment*—The current cost of property, plant, and equipment is defined by Statement No. 33 as the current cost of acquiring the same service potential embodied by the asset owned. The current cost of an asset will be directly affected by the differences between its operating costs and the operating costs of a technologically superior asset as it becomes available. Therefore, the estimated current cost of fixed assets was calculated by the application of indices, adjusted for technological change, to historical cost of assets. Indices appropriate to domestic operations were selected on the basis of applicability to major business segment facilities. For foreign fixed asset calculations, indices utilized were selected based on major country/company operations. Adjustments for technology change based on representative facilities were extended to related asset groups before incorporation into the indices ultimately utilized. Land values have been based on estimates of current cost.

• *Depreciation*—Current cost depreciation is calculated on a straight line basis using estimated useful lives consistent with those used in the historical dollar financial statements.

Report of Independent Certified Public Accountants

To the Stockholders and Board of Directors
of Union Carbide Corporation

We have examined the consolidated balance sheet of Union Carbide Corporation and subsidiaries at December 31, 1982 and 1981, and the consolidated statements of income and retained earnings and of changes in financial position for the years ended December 31, 1982, 1981 and 1980 (pages 26 through 37). Our examinations were 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, the consolidated financial statements identified above present fairly the financial position of Union Carbide Corporation and subsidiaries at December 31, 1982 and 1981 and the results of their operations and the changes in their financial position for the years ended December 31, 1982, 1981 and 1980, in conformity with generally accepted accounting principles consistently applied during the period subsequent to the 1980 change in method of accounting for the investment tax credit (Note 5), except for the 1982 change in method of accounting for foreign currency translation (Note 2). We concur with the foregoing accounting changes.

Main Hurdman

Certified Public Accountants

900 Bedford Street
Stamford, Connecticut
February 15, 1983

Union Carbide Corporation

Directors

Warren M. Anderson[4]
Chairman of the Board and Chief Executive Officer of Union Carbide Corporation

R. Manning Brown, Jr.[1,6]
Director of various corporations; retired Chairman of New York Life Insurance Company

Roberto de Jesus Toro[5,6]
Director and Chairman of the Executive Committee of the Board of Banco de Ponce

James L. Ferguson[1,4,5]
Chairman and Chief Executive Officer of General Foods Corporation

Alec Flamm[4]
President and Chief Operating Officer of Union Carbide Corporation

Harry J. Gray[2,6]
Chairman, President, and Chief Executive Officer of United Technologies Corporation

James M. Hester[3,5]
President of The New York Botanical Garden

Jerome H. Holland[3,4,5]
Director of various organizations

Jack B. Jackson[2,6]
Director of various organizations

Horace C. Jones[2,3]
Chairman of the Executive-Finance Committee of Burlington Industries, Inc.

C. Peter McColough[2,3,4]
Chairman of Xerox Corporation

Ian D. Sinclair[2,6]
Chairman of Canadian Pacific Enterprises Limited

William S. Sneath[3,4,6]
Director of various corporations; retired Chairman of the Board of Union Carbide Corporation

Russell E. Train[1,3]
President of World Wildlife Fund—U.S.

F. Perry Wilson[1,2]
Director of various corporations; retired Chairman of the Board of Union Carbide Corporation

Kathryn D. Wriston[1,4,6]
Director of various organizations

Notes

[1]Member of Audit Committee
(Chairman: Mrs. Wriston)

[2]Member of Compensation and Management Development Committee
(Chairman: Mr. Jones)

[3]Member of Public Policy Committee
(Chairman: Mr. Hester)

[4]Member of Executive Committee
(Chairman: Mr. Anderson)

[5]Member of Nominating Committee
(Chairman: Sr. de Jesus Toro)

[6]Member of Finance and Pension Committee
(Chairman: Mr. Sinclair)

Management

Warren M. Anderson
Chairman of the Board and Chief Executive Officer

Morse G. Dial, Jr.
Vice-President and Secretary

A. C. MacLeod
Vice-President, Employee Relations

John A. Stichnoth
Vice-President and General Counsel

Alec Flamm
President and Chief Operating Officer

H. F. Tomfohrde III
Vice-President, Corporate Strategic Planning

Robert E. Pyle
Vice-President

R. F. Hibbs
President, Nuclear Division

J. Clayton Stephenson
Executive Vice-President and Chief Financial Officer

L. G. Peloubet
Vice-President and Controller

Rolf H. Towe
Vice-President and Treasurer

A. S. Hart
Vice-President, Public Affairs

J. C. Rowland
Vice-President—Federal Government Relations

John H. Field
Executive Vice-President

J. R. MacLean
President, Linde Division

F. V. McMillen
President, Metals Division

J. W. Rawlings
Chairman, Union Carbide Southern Africa, Inc.

J. B. Reid
President, Carbon Products Division

K. D. Rutter
Chairman, Union Carbide Pan America, Inc.

Robert D. Kennedy
Executive Vice-President

J. H. Bees
President, Ethylene Oxide/Glycol Division

R. G. Chenoweth
President, Engineering and Hydrocarbons Division

J. S. Dewar
Chairman, Union Carbide Canada Limited

W. N. Kissick
President, Union Carbide Canada Limited

J. W. Luchsinger
President, Polyolefins Division

A. W. Lutz
President, Ethylene Oxide Derivatives Division

L. A. Wilkinson
President, Solvents and Coatings Materials Division

J. M. Rehfield
Executive Vice-President

F. P. Holloway
President, Electronics Division

R. W. King
President, Medical Products Division

J. B. Law
Chairman, Union Carbide Eastern, Inc.

N. S. Livingston, Jr.
President, Battery Products Division

B. Sokoloff, Jr.
Chairman, Union Carbide Africa and Middle East, Inc.

Elio E. Tarika
Executive Vice-President

G. E. Bailie
President, Films-Packaging Division

A. C. Egler
President, Home and Automotive Products Division

P. F. Hilton
Chairman, Union Carbide Europe, Inc.

W. H. Joyce
President, Silicones and Urethane Intermediates Division

R. Oldford
President, Union Carbide Agricultural Products Company, Inc.

W. F. Silvia
President, Engineering Products Division

T. T. Szabo
President, Specialty Polymers and Composites Division

N. L. Zutty
President, Specialty Chemicals Division

Operating Units

Union Carbide Corporation's business worldwide is conducted through the divisions and subsidiaries listed in boldface type below. Major affiliates owned by the Corporation as of December 31, 1982 which were actively producing during 1982 are listed beneath the division or subsidiary having management responsibility for them. Subsidiaries and affiliates are 100% owned by the Corporation unless otherwise indicated.

Union Carbide Agricultural Products Company, Inc.

Battery Products Division

Carbon Products Division

Electronics Division

Engineering and Hydrocarbons Division

Engineering Products Division

Ethylene Oxide Derivatives Division

Ethylene Oxide/Glycol Division

Films-Packaging Division

Home and Automotive Products Division

Linde Division

Medical Products Division

Metals Division

Nuclear Division
Operates facilities owned by the U.S. Government

Polyolefins Division

Silicones and Urethane Intermediates Division

Solvents and Coatings Materials Division

Specialty Chemicals Division

Specialty Polymers and Composites Division

Union Carbide Africa and Middle East, Inc.
Egypt
Union Carbide Egypt S.A.E. – 75%
Ghana
Union Carbide Ghana Limited – 66.67%
Ivory Coast
Union Carbide Cote d'Ivoire
Kenya
Union Carbide Kenya Limited – 65%
Nigeria
Union Carbide Nigeria Limited – 60%
Sudan
Union Carbide Sudan Limited – 84%

Union Carbide Canada Limited – 74.73%

Union Carbide Eastern, Inc.
Australia
Chemos Industries Pty. Limited – 60.02%
Union Carbide Australia Limited – 60.02%
Hong Kong
Sonca Industries Limited
Union Carbide Asia Limited
India
Union Carbide India Limited – 50.9%
Indonesia
P. T. Agrocarb Indonesia – 67.6%
P. T. Union Carbide Indonesia
Japan
Nippon Unicar Company Limited – 50%
Union Showa K.K. – 50%
Sony-Eveready, Inc. – 50%
Union Carbide Services Eastern Limited
Korea
Union Gas Company Limited – 86.15%
Malaysia
Union Carbide Malaysia Sdn. Bhd. – 80%
Union Polymers Sdn. Bhd. – 60%
New Zealand
Union Carbide New Zealand Limited – 60.02%
Philippines
Union Carbide Philippines, Inc.
Republic of Sri Lanka
Union Carbide Ceylon Limited – 60%
Singapore
Metals and Ores Pte. Limited
Union Carbide Singapore Pte. Limited
Thailand
Union Carbide Thailand Limited

Union Carbide Europe, Inc.
Belgium
Union Carbide Benelux N.V.
Indugas N.V. – 50%
France
La Littorale S.A. – 99.96%
Union Carbide France S.A.
Viscora, S.A.
Germany (West)
Union Carbide Deutschland G.m.b.H.
Union Carbide Industriegase G.m.b.H.
Greece
Union Carbide Hellas Industrial and Commercial S.A.
Italy
Elettrografite Meridionale S.p.A.
Uniliq S.p.A.
Unisil S.p.A.
Union Carbide Italia S.p.A.
Spain
Argon, S.A. – 50%
Union Carbide Iberica, S.A.
Union Carbide Navarra, S.A.
Sweden
Unifos Kemi AB – 50%
Union Carbide Norden AB
Switzerland
Union Carbide Europe S.A.
United Kingdom
Union Carbide U.K. Limited
Viskase Limited

Union Carbide Pan America, Inc.
Argentina
Union Carbide Argentina S.A.I.C.S. – 99.99%
Brazil
Eletro Manganes Ltda. – 55%
Tungstenio do Brasil Minerios e Metais Ltda.
S.A. White Martins – 50.14%
S.A. White Martins Nordeste – 50.14%
Union Carbide do Brasil Ltda.
Colombia
Union Carbide Colombia, S.A.
Costa Rica
Union Carbide Centro Americana, S.A.
Ecuador
Union Carbide Ecuador C.A.
Mexico
Union Carbide Mexicana, S.A. de C.V. – 45.70%
Venezuela
Union Carbide de Venezuela, C.A.

Union Carbide Puerto Rico, Inc.
Union Carbide Caribe Inc.
Union Carbide Films – Packaging, Inc.
Union Carbide Grafito, Inc.

Union Carbide Southern Africa, Inc.
Republic of South Africa
Elektrode Maatskappy Van Suid Afrika (Eiendoms) Beperk – 50%
Tubatse Ferrochrome (Proprietary) Limited – 49%
Ucar Chrome Company (S.A.) (Proprietary) Limited
Ucar Minerals Corporation
Zimbabwe (Unconsolidated subsidiaries)
Zimbabwe Mining and Smelting Company (Private) Limited
Union Carbide Zimbabwe (Private) Limited

Information for Investors

1983 Annual Meeting

The 1983 annual meeting of stockholders will be held on April 27, in the Grand Ballroom of the Host International Hotel, Tampa International Airport, Tampa, Florida, beginning at 10:00 A.M.

A notice of annual meeting and proxy statement, and a proxy voting card, are mailed to each stockholder in March, together with a copy of the current annual report.

A report on the annual meeting, including a summary of proceedings and the results of voting on items of business, appears in the June quarterly report to shareholders.

General Offices

The general offices of Union Carbide Corporation are located at Old Ridgebury Road, Danbury, Connecticut 06817 (Tel. 203/794-2000).

Stock Exchanges

Union Carbide Corporation stock is traded primarily on the New York Stock Exchange (Ticker Symbol: UK). The stock is also listed on the Midwest Stock Exchange and on the Pacific Stock Exchange in the United States, and overseas on the exchanges in Amsterdam, Basel, Brussels, Frankfurt, Geneva, Lausanne, London, Paris, and Zurich.

Stock Records and Transfer

The Corporation acts as its own stock transfer agent through Shareholder Services, Union Carbide Corporation, Tarrytown, N.Y. 10591 (Tel. 914/789-3651).

Shareholder Services maintains stockholder records, transfers stock, and can answer questions regarding stockholders' accounts, including dividend reinvestment accounts. Stockholders wishing to transfer stock to someone else or to change the name on a stock certificate, should contact Shareholder Services for assistance.

The Registrar is Manufacturers' Hanover Trust Company, 4 New York Plaza, New York, N.Y. 10004.

Dividend Reinvestment

Through Union Carbide's Dividend Reinvestment and Stock Purchase Plan, stockholders may purchase shares free of commissions and service charges.

A prospectus explaining the plan in detail may be obtained from Shareholder Services, Union Carbide Corporation, P.O. Box 340, Tarrytown, N.Y. 10591.

Inquiries

Inquiries about stockholder accounts and dividend reinvestment should be directed to Shareholder Services, at the address and telephone number indicated above.

Inquiries about Union Carbide as an investment or questions about the company should be directed to Investor Relations, Section D4, Union Carbide Corporation, Old Ridgebury Road, Danbury, Connecticut 06817 (Tel. 203/794-6446).

"Investor Insight," a package of financial material that recapitulates quarterly results, is available upon written request to Investor Relations at the address above.

Form 10-K and Other Reports

A Form 10-K Report for the year ended December 31, 1982 will be available in April of 1983. A copy may be obtained without charge upon written request to the Secretary at Union Carbide Corporation, Section D4, Old Ridgebury Road, Danbury, Connecticut 06817.

Quarterly financial statements are mailed to stockholders in March, June, September, and December.

The Corporation annually publishes a list of organizations receiving charitable, educational, cultural or similar grants of $5,000 or more made by the Corporation or its subsidiaries during the preceding year. A copy may be obtained without charge upon written request to the Secretary at the address above.

Union Carbide Corporation supports the operation of the Union Carbide Corporation Political Action Committee as authorized by, and in accordance with, Federal law. Shareholders desiring additional information about the activities of the Committee may write to the Secretary at the address above.

Publications

The following are available from the Public Affairs Department. To obtain copies, write to Key Issues, Box Z-7, Union Carbide Corporation, Old Ridgebury Road, Danbury, Connecticut 06817.

- "Natural Gas: A Burning Issue for Union Carbide"—Impact on Union Carbide of Congressional decisions on natural gas policy.
- "Quiet Crisis in American Agriculture"—Challenges facing U.S. agriculture and the chemical industry that serves it.
- "Energy Efficiency: How Good a Job Can Industry Do?"—How industry responds to economics of the energy marketplace—and how government can help.
- "Key Public Issues 1983"—Union Carbide's positions on issues most critical to the Corporation.
- "Natural Gas Policy: Seeking Workable Solutions"—Problems created by the Natural Gas Policy Act of 1978 and possible solutions.
- "Electricity Pricing: Choices for the 80's"—American attitudes on electricity pricing and economic growth.

UNION CARBIDE

Union Carbide Corporation
Old Ridgebury Road
Danbury, CT 06817