Another challenge to which the Company can respond lies in the largest segment of the U.S. coke industry—blast furnace coke used by steel producers. Since 1975, 15% of the industry's coking capacity has been shut down by a combination of environmental regulations and aging facilities. Numerous other plants have suffered lowered production due to environmental pressures. The outlook is further darkened by the fact that 40% of domestic furnace coke production comes from facilities at least 25 years old, which is the approximate life expectancy of a furnace coke battery.

As a result, the American steel industry imported a record 5.5 million tons of furnace coke in 1978 to maintain primary steel production at 85% of total capacity. Substantially more coke will be needed in 1979. Much of this imported furnace coke comes from large inventories that had been built primarily in Europe and that will not be available beyond 1980.

Contracts for construction of new furnace coke capacity have been at a low level for more than two years, as steel producers have faced depressed operating rates, rising costs, a growing volume of imported steel and increasingly complex environmental regulations at all levels of government. Obviously, this situation will have to be remedied if the industry is to remain viable. Koppers is positioned to participate in the expected turnabout.

**Road Materials.** More than 20% of Koppers capital expenditures over the past five years have gone into expansion of road materials capacity. In an industry essentially composed of regional markets, the Company's long-range objective is to become a nationwide integrated supplier of materials for construction and maintenance.

More than one-half of the 3.8-million-mile U.S. road system is unpaved. According to the Federal Highway Administration, roads and streets are wearing out half again as fast as they are being replaced. About 900,000 miles of roads urgently need repair or upgrading.

Many parts of the interstate highway network are 20 years old, as against an average life expectancy of 16 years for paved road surfaces. Some 28,000 miles of the 38,900 now open do not meet current safety and other standards, and about 5,000 miles need to be resurfaced.

Over-all, Koppers foresees that the moderate rise in public and private construction expenditures after a slowdown in 1975 and 1976 will develop into a much more rapid expansion in the 1980s.

**Engineered Metal Products.** Capital investment in Engineered Metal Products over the past five years has brought about an extension of capabilities, progressing from machinery components to complete machinery systems.

In Koppers major component line—piston rings and seals—capacity has risen by 40% since 1973 and is undergoing continual expansion to supply the 10% annual growth in demand expected over the next several years. A worldwide trend toward diesel power is propelling this growth.

Despite the current depressed state of investment in the ore processing industry, there will be pressure in a resource-hungry world to enlarge the search for minerals and to use them more efficiently. Mineral processing systems made by Koppers should be increasingly active in this effort.

The Company's SPROUT-WALDRON specialized food and feed processing machinery will find growing applications in areas that have large agricultural potentials. Particularly promising opportunities exist in the developing nations of the world as they progress toward more efficient food and grain processing.

From SPROUT-WALDRON'S process technology has come thermomechanical pulping (TMP). Applied in papermaking, TMP uses steam and pressure to convert wood chips to pulp with higher productivity and greater economy, with no environmental problems.

The drive to improve and protect the environment has become an integral part of our culture and is being stimulated by efforts to conserve and recycle energy and natural resources. These trends will continue to provide growth opportunities for Koppers environmental systems.

**Organic Materials.** Allocation of a significant portion of Koppers total capital investment since 1973 has substantially increased output of such traditional coal-derived products as carbon binder pitch and various resins and industrial chemicals. These products are vital to the basic industries to which they are sold.

From its chemical base, Koppers makes some 60 types of polyester resins, which are used to form strong, lightweight, durable reinforced and unreinforced plastic products being used in many industries to reduce weight and thereby conserve energy. This year, Koppers will boost capacity by 25% to help handle sales that have grown by 15% a year.

KMM roofing membrane, a relatively recent addition to the Company's mix of offerings, was developed for use on sloped roofs as well as flat. It enables Koppers to serve a far greater segment of the large North American roofing market. It is applied cold and forms a monolithic membrane that shuts out moisture. By speeding installation and cutting costs, it provides competitive advantages that should enable Koppers to fare well in the strong construction market expected over the years ahead.

**Forest Products.** Koppers has maintained its position as the world's leading supplier of pressure-treated wood products. It has done so in anticipation of greater acceptance of these materials as permanent building products. This also will serve as a base for our continuing interest in expanding our position as a supplier in the light industrial and residential construction markets. Our expertise lies not only in the manufacture of laminated and chemically treated end products, but in the chemistry that underlies the process.

Koppers should profit also from a U.S. market for crossties that will be strengthened by the revival of long-deferred programs for railway roadbed improvement. Crossties account for approximately 40% of Koppers pressure-treated wood sales and, as an indication of how this market is expected to improve over the next decade, demand for crossties by Class I railroads should grow to 30 million ties per year, up from the current 25 million.

These are only a few of the areas in which Koppers capital investment strategy—launched in the mid-1960s to establish a solid base for diversity in manufacturing businesses—has paid off. As a result, the Company now enjoys the financial strength needed to take advantage of future opportunities.

There is no cut-off point in this program. Koppers will continue to use its strength in cash flow growth as the seed for further expansion.