

Mr. Johnson,

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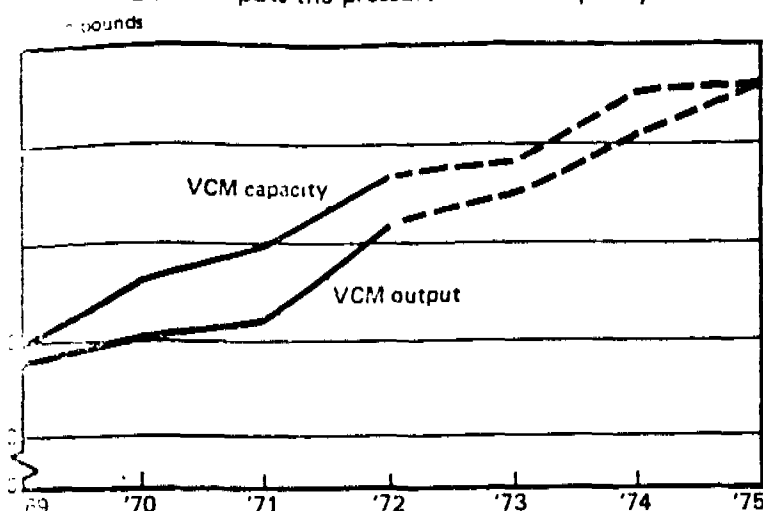
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2.9	1.10	20
6.3	4.10	9
3.0	1.34	15
4.6	3.33	8
3.0	2.50	8

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RICE INDEX

19 Oct Nov Dec

Demand puts the pressure on VCM capacity



VC puts the squeeze on VCM

growing PVC markets are spawning big boosts in resin capacity, but monomer expansions are not keeping pace

S. output of vinyl chloride monomer led for a record-breaking 5.5 billion lbs. this year, a solid 6% increase over '72 production. Yet, polyvinyl chloride producers cannot get all they want. The shortage is worldwide.

The PVC producer sums up the situation: "We've run exhaustive studies and confirmed that there is none to be had. The shortage won't be overcome until enough ethylene and chlorine are available to make substantially larger quantities of the material. That could be several years away, may depend on the development of petrochemical complexes and on gas from Middle East oil fields."

Recent operating difficulties in widely scattered parts of the world have added to the problem. For example, BP is operating its big Baglan Bay, Wales, VCM plant at considerably less than its rated capacity of 260,000 metric tons/year (*CW Market Newsletter*, July 11).

Ethylene feedstock for the Baglan Bay plant is also tight because of operating problems at the company's 340,000-metric-ton/year ethylene unit at the same location (*CW*, July 25, p. 25). And a breakdown at ICI's 450,000-metric-ton/year ethylene unit at Wilton, Teesside, has made the shortage of VCM even worse.

Japanese ethylene supplies are also being hampered by operating difficulties. A fire at Mitsui's big unit at Tokuyama City has

forced its shutdown for an indefinite period of time (see *Market Newsletter*, p. 25).

As a result, there's no near-term prospect of an ease in VCM supplies. And the U.S., a substantial exporter of VCM in recent years, may have to cut exports to keep domestic PVC plants running. Exports are now at the rate of about 500 million lbs./year. But one PVC maker says, "I doubt if the total will be more than 400 million lbs./year at the end of the year."

Exports were about 621 million lbs. last year, slightly more than the 619.5 million lbs. exported in '71. Most of it went to Europe, but Central and South America were also substantial customers.

No Solution: However, even complete elimination of exports will not solve the U.S. shortage of VCM. Reasons: PVC production is now at a rate of 4.6 billion lbs./year, which calls for about 5.1 billion lbs. of monomer. PVC producers are boosting capacity by more than 1.3 billion lbs., which will require three new VCM plants within the next few years. And only one major VCM expansion is in the works—Shell's 700-million-lbs./year plant at Norco, La., due onstream by the end of the year.

Other VCM makers might be coaxed into building if they could get prices much higher than the current 4.5¢/lb. At that price they can make a razor-thin

profit if they operate near, or above, practical capacity (about 90% of nameplate capacity).

Moreover, higher costs seem to be in the cards for ethylene and chlorine and for the construction of new plants. This could mean that anyone commissioning a new plant now will have to sell VCM at close to 7¢/lb. by the time the unit comes onstream.

Who Will Build: Everyone agrees that when new plants are built, the companies that are basic in ethylene, chlorine, or both, will do the job.

That probably means the trend toward merchant production by a small number of large-volume manufacturers will accelerate.

Some companies have been successful as VCM and PVC makers. But PVC producers are market-oriented, and the most successful tend to integrate forward. On the other hand, Dow, PPG and Shell—three of the four largest VCM producers—do not make the polymer and are considered unlikely to do so. The fourth, Goodrich, is boosting PVC capacity to bolster its strong market position. Other exceptions: Conoco and Ethyl, which say they expect to continue vertical integration.

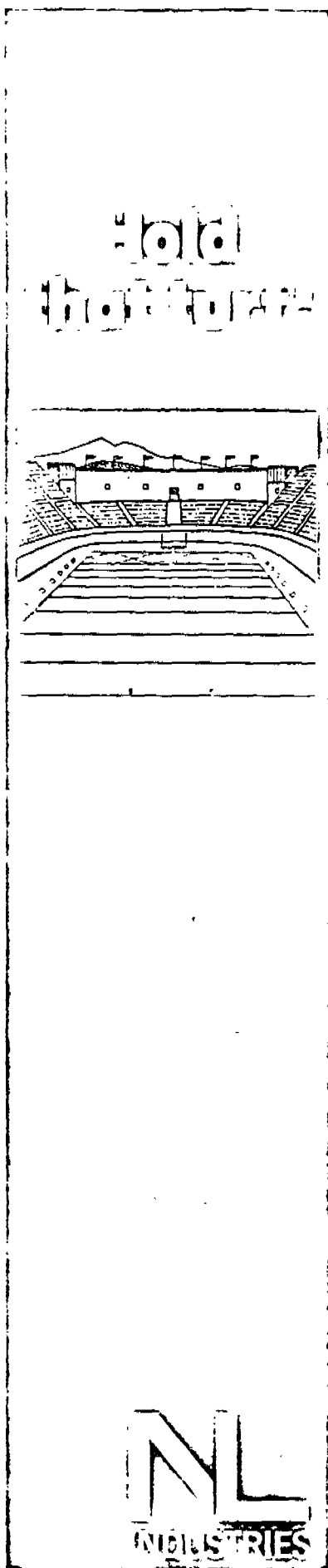
Fast Pace: PVC growth has topped 15%/year for most of the past 10 years. Forecasters don't see that rate continuing indefinitely, although they point out that per-capita use of PVC is still much lower in the U.S. than it is in Western Europe. They see growth of 8-10%/year for the next 10 years, provided VCM is available. Thus, demand for PVC could grow more than 60%, hit 7.5 billion lbs. by '78 and top 10 billion lbs. by '81.

VCM capacity

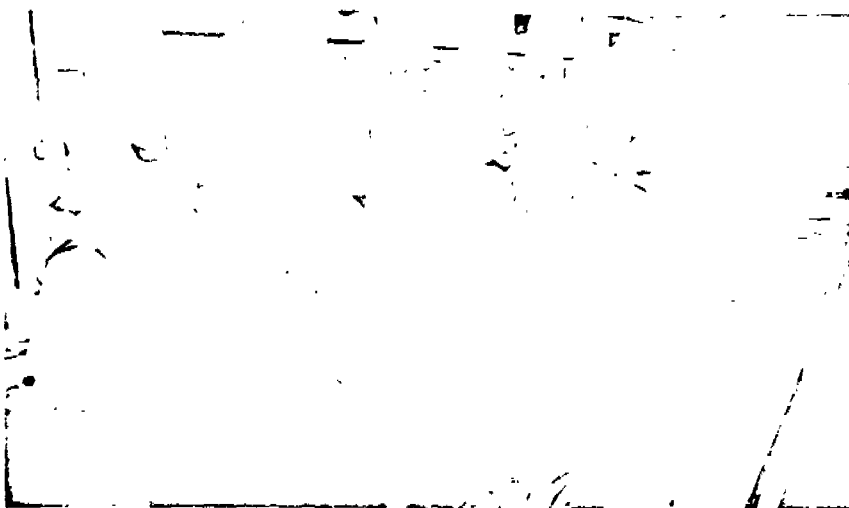
Million lbs./yr.

Allied	250-300
American Chemical (Stauffer-Arco)	170
Conoco	625
Dow	1,220
Ethyl	475
Goodrich	1,000
Monochem (Borden-Uniroyal)	250-300
PPG	800
Shell	750
Tennaco	225
TOTAL	5,765-5,865

Source: CW estimates.



Markets



BOOMING DEMAND for PVC keeps Conoco's Aberdeen, Md., plant running full tilt.

PVC is second in volume to low-density polyethylene and leads all plastics in the number of markets into which it goes. That diversity of outlets means that the material is not highly vulnerable to cyclical downturns in one or two industries, although some major PVC markets are highly cyclical. For example, close to 37% of the '72 total production of about 3.7 billion lbs. was in building and construction and 14-15% in home furnishings. But housing markets have dropped below their peaks, and most forecasters see lower housing activity next year. Home furnishing markets have been strong, but some forecasters see them turning down also.

The transportation market accounted for about 6% of last year's PVC output, most of it in auto seat covers. Many marketers are predicting an automotive downturn of about 10% next year, which would slow this PVC outlet.

PVC penetration of major markets, will, however, be helped by higher prices of competing materials such as wood and metals. And marketers say they expect to continue to reap benefits from the removal of building code restrictions on the use of plastic piping. The pipe and fittings market vaulted about 40%, to about 1 billion lbs., last year, topping all other outlets for PVC.

PVC penetration of the furniture markets is also expected to continue strong growth. Furniture took more than 300 million lbs. of the material last year, a solid 27% increase from the '71 level. Low cost and improved products are expected to help growth in this application even during the years when furniture markets are lagging.

Moreover, higher PVC prices aren't expected to hurt these markets. PVC makers say that the point at which price

will make a difference to users is so much higher than current tabs that they can't foresee the time when pricing will be a significant factor in competing with other materials.

Some Hesitation: Some PVC producers say they are interested in building VCM capacity, but they are hesitant for several reasons. For example, one company says, "We are waiting until we're sure more ethylene is on the way. It takes three years to build an ethylene plant and a VCM plant only two years, so we figure we have time to work things out." At present, ethylene capacity is committed for several years to come.

Others are worried about costs. PVC and VCM have been unprofitable for many producers in recent years.

Some substantial producers have already bowed out of VCM, PVC or both and say they have no interest in re-entering the business.

Monsanto, for example, has discontinued VCM production and has sold its PVC business to Borden. Airco sold its PVC business to Air Products, and Allied Chemical sold its Painesville, O., PVC plant to Robintech, although it remains a supplier of VCM to that company. Other PVC plants have reportedly been offered for sale, but as one producer says, "Who would want them?"

And despite their optimism about the growth of PVC, some producers fear that competition for markets may put the material back into an all-too-familiar round of price attrition.

Proof that PVC and VCM are really entering an era of greater profitability may be all that is needed for a flood of new commitments for VCM plants. But until that time, users of the material will have to struggle along with the squeeze between capacity and demand.