

Vinyl chloride still a mystery chemical

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LAST JANUARY a group of high-level chemical company executives and their public relations men huddled in Akron, Ohio, for a most unusual Sunday night strategy session.

The inevitable decision had been made. The bullet had been bitten. The B. F. Goodrich Co. was going to have to "go public" with what this small group of people knew.

Over the past several years at least three workers at the firm's Louisville chemical plant had succumbed to the even exceedingly rare form of cancer of the liver — a type so uncommon that less than two dozen Americans are known to have died of it during all of last year.

Goodrich had resumed its medical testing of other employees at the Bell Lane plant three months earlier. It had hastily arranged a series of meetings with a team of outside medical consultants. And the company's executives were now ready to announce at least their suspicions: The deaths and the indications of liver problems among other workers at the plant might be job-related.

As the carefully worded press release was to phrase it: "The company is investigating whether the cancer deaths of three employees in the polyvinyl chloride operations at its Louisville plant were related to occupational causes. The same release also stressed that 'the reported causes of the deaths are subject to verification.'"

MEANWHILE, however, Goodrich was willing to consider the deaths job-related so that the families of the victims would qualify for special death benefits.

The story outlining the Goodrich announcement was reprinted on an inside page of The Louisville Times because, as an editor noted, the company was uncertain whether or not the deaths were job-related. The monumental implication of that announcement might well have been overlooked in the rush of world events except by those directly involved — but as the evidence mounted in the ensuing weeks, they were not.

Today, some four months later, the number of chemical workers' deaths attributed to their exposure to vinyl chloride

has mounted to 12 worldwide. Five were workers at the Goodrich plant in the Rubberlawn section of Louisville. Two more workers there are now being treated for the dread disease.

And the chemical and plastics industries have been turned topsy-turvy by the confirmation of the industries' worst suspicions: Vinyl chloride, considered by the industries for years as a mundane-but-essential chemical may be an insidious killer.

Equally significant, the four months of fast-paced disclosures about vinyl chloride have raised more questions about its safety than the world's leading chemists, biologists, and doctors have been able to answer for an anxious public.

The questions are significant because vinyl chloride is an essential ingredient of many of the plastics in common use and, until recently, was a commonly used propellant in many household spray products.

HERE ARE SOME of the questions and some of the current, if not complete, answers to many of them based on interviews with chemical and plastics industry officials, biologists, government officials, and doctors over the past four months:

What is vinyl chloride?

It is a highly volatile chemical that is shipped about the country in huge quantities as a liquid. At plants such as the one on Bell Lane, it is converted to a gas and transformed into a more stabilized white powder, resembling sugar, called polyvinyl chloride or, more commonly, PVC. PVC is a basic building block chemical used in the manufacturing of many plastics.

Is the concern about the chemical's effect on health a new one?

No, various technical and medical reports have been circulated since at least 1938 about the possible toxic effects vinyl chloride might have on animals. However, until this year, many chemical com-

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Vinyl chloride: A mystery chemical in the spotlight

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panies have considered these scientific findings to be inconclusive and not necessarily applicable to humans. And these reports were not given broad attention in the mass media until after the Goodrich disclosures.

(At least one chemical company, Dow Chemical Co., found through its own research that vinyl chloride exposure caused liver damage in animals as early as 1962 and began cutting the exposure levels in its plants. Other firms, including Goodrich, began making more dramatic cutbacks in worker exposure early last year. However, the bulk of the new safeguards were not put into effect until this year at Goodrich.)

What is a "safe" exposure level to vinyl chloride?

Apparently nobody in an authoritative position knows for sure. While the industry has been operating under an "emergency" standard setting the maximum exposure at 50 parts of the gas per million parts of air — one-tenth the previous maximum standard — since shortly after the Goodrich announcement, efforts are under way by at least two federal health agencies to forbid any detectable exposure.

INDUSTRY SPOKESMEN have replied that this proposed new standard would be impossible to comply with because they claim technology and equipment for compliance do not exist. And if it did, they add that it would be economically impossible to install such strict safeguards in such a high-volume, low-profit industry. Hearings are expected on the issue in June.

Meanwhile Goodrich and others are operating at what they say are exposure levels below the 50 parts per million level although they acknowledge that

from time to time "surges" and leaks send the exposure levels above the standard, requiring workers to wear protective breathing equipment. Goodrich has said it will "meet any reasonable standard" but a spokesman has been unable to define what the company considers a "reasonable standard."

Why has there been such a heavy incidence of the liver cancer at the Louisville plant?

Chemical industry officials generally concede that exposure levels have been highest at the older, less efficient plants and all studies indicate that prolonged exposure greatly increases the chances of a worker contracting the disease. The Bells Lane plant of Goodrich, which began production in 1942, is one of the oldest still operating in the industry. Federal officials have also criticized the housekeeping and safety precautions at the plant since the January announcement. Goodrich has since greatly expanded its safety and vinyl chloride monitoring operations there.

BECAUSE the plant has operated longer than most, more workers have been exposed to greater concentrations of the chemical for longer periods. And because of the rarity of the liver cancer, called angiosarcoma, cases of the disease among other workers may have been improperly diagnosed.

One of the Goodrich deaths, for example, went undetected in the investigation until The Louisville Times in its own check of medical records pointed it out to company officials.

Is the chemical dangerous to consumers?

Apparently nobody knows for sure. Federal authorities last year banned the use of PVC bottles for liquor because vinyl chloride was found leaching out of

the bottles into the liquor in small quantities after the products were stored for some months. The liquor and plastics industries said the findings were inconclusive although Goodrich confirmed the methodology used in the testing.

And tests indicate that aerosol sprays produce brief exposure levels that are higher than those allowed for chemical workers. However, again, the industries say the findings are inconclusive.

MANY aerosol manufacturers have stopped using vinyl chloride as the propellant while the government, under prodding from the media and consumer advocates, has asked the remaining firms to voluntarily do the same.

Manufacturers and suppliers contend that the breakdown of PVC and the release of vinyl chloride is very slow and the gas is quickly dissipated in the air. However, in the absence of any documented "safe" exposure standard, research is continuing.

Is the chemical a danger to the environment and people residing or traveling through areas near the chemical plants?

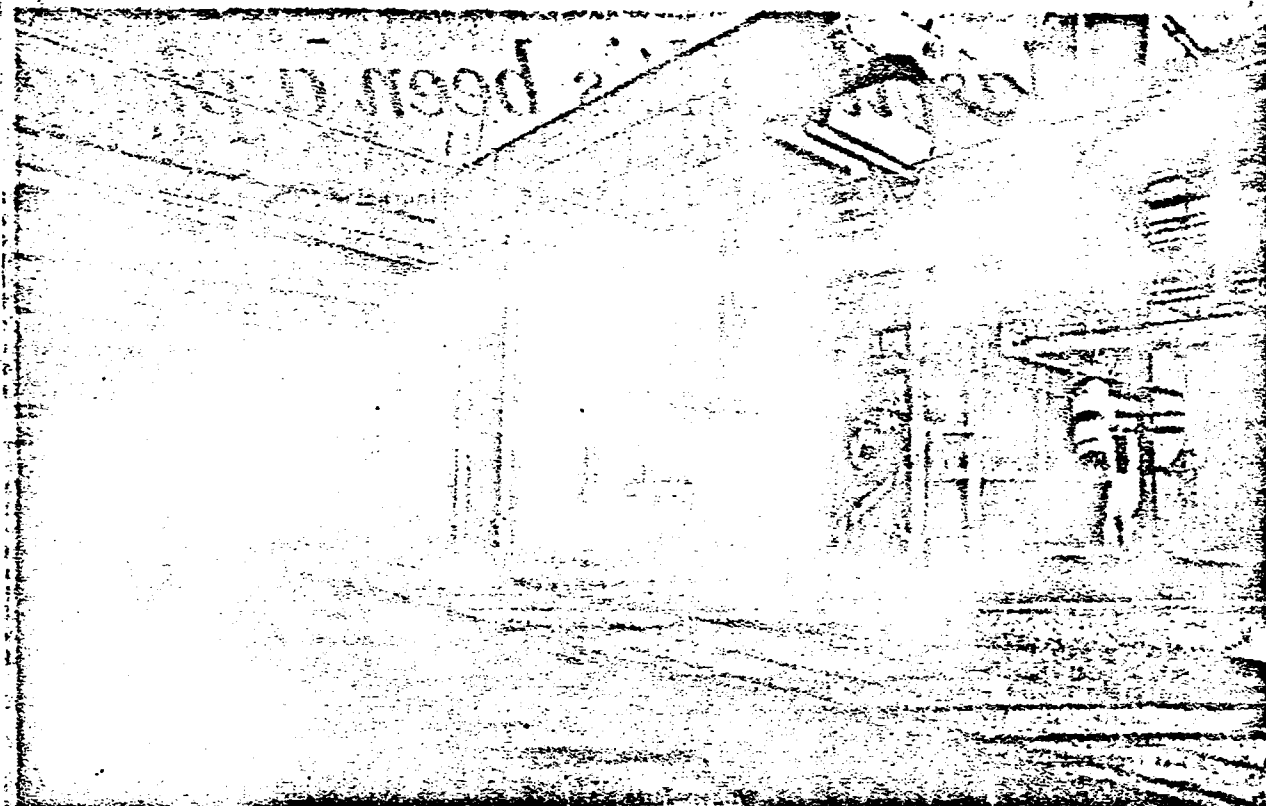
Again, apparently nobody knows for sure. The industry people say no. Government investigators are now monitoring the chemical in the air and Ohio River water near the Bells Lane plant to see just what the exposure levels are. And the industry is continuing to bury its sludge or chemical residues in ordinary landfills and pump its treated liquid wastes into sewage systems.

Why can't the industry stop producing vinyl chloride and PVC or reduce its exposure levels to undetectable levels?

The chemical is essential to a number of other industries producing a variety of plastic products — from phonograph records to floor tiles—which employ hundreds of thousands of people. There is no

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Staff Photo by Larry Schmitt

It's in these buildings at the Belle Lane Goodrich plant that the polymerization vessels are located.

In the vessels, vinyl chloride is mixed with other chemicals to form polyvinyl chloride.

readily available substitute. And cutting off exposure to the chemical would require the replacement of many of the older plants and stringent new safeguards in the newer ones. Both measures that would require uncalculated expenses running well into the hundreds of millions of dollars.

How are the exposure levels being reduced in the industry now?

Mainly through better ventilation of the older plants with large volumes of air being sucked out of the work environment into the outside air and by plugging leaks in the extensive piping networks within the plants. Better housekeeping measures have been ordered at some

plants and major new safety equipment measures have been taken at many plants in recent months.

Can the liver cancer, angiosarcoma, be detected?

Unfortunately the only certain diagnosis can be made when the disease is at an advanced stage. While the industry generally has begun routine and continuous medical screening of its employees, the early detection techniques are not always 100 per cent accurate. One hoped for testing technique for angiosarcoma has proved unsuccessful since the public concern began this year.

Does vinyl chloride cause other diseases?

Again, apparently nobody knows for sure although some researchers have preliminary evidence indicating a link between exposure to the chemical and other liver and medical disorders.

Must the chemical industry test new chemicals before putting them into production?

In most cases, no, but legislation is now pending in Congress that would require this. Some 10,000 chemicals, many of them perfectly safe, are now in production and an average of eight new chemicals are considered for production each week.

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