

able places during the manufacturing process.

The previously mentioned worksheet also showed that the concentration of vinylidene, a gas related to vinyl chloride, reached levels of about 1,000 parts per million of air at one place in the plant. The maximum allowable level of vinylidene under government regulations is 20 parts per million.

Asked if concentrations of vinyl chloride ever get as high as 1,000 parts per million, Lawrence replied, "I haven't seen a thousand for a long time. I've seen several hundred. Sure, if he (the monitor operator) puts his tester right at the point where it's leaking he might get a thousand but if he moves it an inch away it may be well below 50."

The worksheet did show that most of the measurements were below 50 parts per million, and Lawrence said the problem of higher levels occurs only rarely.

A study published in 1961 by Dow Chemical Co. scientists reported that animals exposed to levels of 100 parts of vinyl chloride per million parts of air for seven hours a day suffered slight, repairable liver damage. The exposure tests lasted six months.

A Dow spokesman said the company has attempted to maintain the 50 parts per million maximum level for vinyl chloride for 15 years.

Other scientists, however, contested the Dow findings. One study showed no damage at 500, another showed damage at 300 parts per million.

The Manufacturing Chemists Association has been recommending that levels of no more than 200 parts per million of vinyl chloride be allowed in the work place. But it has withdrawn its recommendations pending further investigation into the cancer deaths at Goodrich.

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Goodrich put its 50 parts per million standards into effect last summer, according to plant manager Lawrence.

"It was lots of little things that finally made us decide on the 50 parts per million," he said.

"Knowing these hydrocarbons and seeing an incident here and then an incident there it begins to niggle at you. Just as it began to niggle at Dr. (John) Creech, (the company doctor who discovered that an unlikely number of men were dying of the rare liver cancer). He saw the first case and then the second and then the third--bingo, you've got something. But you can't push the panic button too quickly or you'd be spinning your wheels all the time. You have to let your gut feelings reign."

Interviews with employees over the last two weeks show the company has been making a concerted effort to lessen safety hazards since Lawrence came to the plant a little less than a year and a half ago.

Lawrence says many former practices at the company were less than desirable.

In addition to occasionally bad safety procedures, the fact that there was plenty of vinyl chloride in the past-- a situation changed by the petroleum shortage--also contributed to a more lax attitude toward gas leaks, Lawrence said.

"Years ago there was plenty of monomer (vinyl chloride): so if you lost a pound you just bought another. The economics just didn't always justify recovery. Those economics influenced how we worked then, but now we think about it differently. It's in such short supply that it doesn't make sense to throw any of it away, even if there were no health considerations."

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SOUGHT IMPROVEMENTS

One disgruntled employe at the Bells Lane plant says. "What they are doing now would be fine if they'd have done it 20 years ago. They they wouldn't have dead people and people with liver damage and others running around without their spleens.

"I've seen vinylidene lines leaking out there for weeks with rage wrapped around them. They just wouldn't fix them."

But he added, "You haven't seen any of that in the last month."

Another employe said, "We've been asking and pleading for (safety improvements) for 20 years and we didn't get it. You can't do everything at once like they're trying. They are trying to get ventilation in the buildings, but in order to do it they are taking windows out and knocking walls out. When it gets 20 degrees outside it gets kind of cold in the building. But I guess that's better than getting cancer."

However, the worker, said he is in favor of the crash program that was recommended in part by the federal National Institute for Occupational Safety and Health (NIOSH). But he charged that the company restricted its operations on the day (NIOSH) officials toured the plant.

"When I came in on the 4 o'clock shift after the tour I noticed that things were awful clean. I asked workers on the earlier shift why, and they said they were told not to operate anything or charge (fill) anything," he said.

An operator on that shift who says he saw the tour come through his building supports the charge that there was a cutback in operation.

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"I normally charge six polys (the vessels in which the plastic is made), but I didn't charge any on that day," he said. "The foreman said, 'Don't charge today because we got an inspection coming through and we want it to look good.'"

Lawrence denied the charge and said, "There were no special instructions issued out there. (The foreman) might have said, 'If you miss a charge or two in the process of cleaning up that's all right.'"

Lawrence cites statistics that indicate production was about normal the day of the health officials' tour.

He said so many orders are going unfilled that the company can ill afford cutbacks.

Dr. Gordon Nifong, a NIOSH official who was on the tour, said he had no real feeling that Goodrich was reducing its operations.

You hear these kinds of things all the time, he said. "The only way to tell is to go through the plant a number of times and see if operations are at the same level each time."

NEW EQUIPMENT NEEDED

Lawrence said the problems of leaks will continue at the plant until they can get additional ventilation equipment installed in work areas.

"The only way we'll be able to completely get rid of the problem is to get it ventilated. If we change air often enough and monitor it enough the combination should do it," he said.

Now whenever a leak is detected it is "red tagged" and fixed at the first opportunity, according to Lawrence.

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Most seals in the plant are maintained by members of Pipefitters Local 522. But about a third of the approximately 90 pipefitters there have honored a picket line set up by the International Brotherhood of Electrical Workers Local 369 and District 27 of the International Association of Machinists, which struck the company on Dec. 11.

Many of the pipefitters who are working are putting in large amounts of over

Vinyl Chloride Leaks

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time to keep up with the seal maintenance. One of them reported recently that he was averaging 72 to 78 hours a week.

The leaks occur in the pressurized system during the time the monomer, vinyl chloride, is converted to a polymer, polyvinyl chloride. Other leaks can occur when excess gas, not used in the process, is being recovered.

Anton Vellone, president of B. F. Goodrich Chemical Co., told the federal Occupational Safety and Health Administration Friday that the company reviewed the facts and has concluded that "the existing situation warranted continued operation of the polyvinyl chloride facility."

Vellone worked at the plant from the time it started in 1943 until 1950.

Polyvinyl chloride has been manufactured commercially for more than 35 years. It is used in such things as phonograph records, floor tile and wire insulation and some food containers.

The federal Food and Drug Administration last year banned its use for plastic liquor bottles.

Vinyl chloride, the gas, acts as an anesthetic at levels of 3,000 to 5,000 parts per million, according to a Dow Chemical spokesman. It's always been known that the gas was toxic, but the first indication that it might be cancer-causing came from an Italian study done in 1970.

Before the present precautions were instituted at Goodrich, workers reported that they sometimes felt "high" because of breathing the vapors at the plant. Occasionally they would pass out while cleaning the inside of the vessels in which the plastic is made.

Such occurrences usually happened when the vinyl chloride remaining in the vessel after the polymerization process was finished wasn't fully removed or when something went wrong with the process and the plastic in the vessel formed a solid mass.

On those occasions employees would chip the plastic out with a hammer and chisel and sometimes release pockets of gas large enough to knock them out.

When the mass forms now, an outside contracting firm uses high pressure water to cut the plastic out. Also, for approximately the last month, workers going inside the vessel have used a respirator or with an outside supply of air.