

Vinyl chloride

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MEDICAL
DEPARTMENT

UNIROYAL, Inc.

Oxford -- D-1-4

(Location)

October 14, 1974

Dr. Walter Harris
Safety & Plant Protection
E-G-1

Please check through this revised draft of the vinyl chloride story for Uniroyal World. It has been updated to include the permanent standard issued by OSHA. Also, I have incorporated in it suggestions made by you and others involved with the background for this story.

Since another copy is being prepared for review by Mr. McNeill, I would appreciate hearing from you immediately concerning any further changes you find necessary.

Thank you for your cooperation.

Sincerely,

Ray

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Employee Communications
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✓ On Oct. ⁴ the Occupational Safety and Health Administration issued its permanent standard governing employee exposure to vinyl chloride in American factories.

This article describes what Uniroyal is doing, and has done, to protect its employees working with this gas.

WAGING WAR AGAINST VINYL CHLORIDE

Whirling fans...air respirators...gas analyzers...high-pressure water hoses...chemical solvents...medical tests.

These are weapons of war---a war being waged by Uniroyal to protect employees in wake of the vinyl chloride problem.

Last January the huge vinyl plastics industry, including Uniroyal, became a center of controversy. At that time B.F. Goodrich indicated vinyl chloride gas could be the cause of angiosarcoma, a rare liver cancer found in some of its employees.

*is the
watch* Since then 26 cases of this disease have been uncovered in past and present vinyl chloride workers. None of those cases involves Uniroyal employees. *united*

The mere possibility of vinyl chloride causing this disease, however, has threatened extinction for many plastic products and producers. A colorless, sweet-smelling gas, vinyl chloride can be easily converted into the world's most widely used plastic material: polyvinyl chloride. This fine, white powder can be ^{converted} manufactured into almost anything from underground pipes to phonograph records.

"There's no real substitute for PVC," says Martin J. Kleinfeld, commercial planning director for the Chemical Division. "It's extremely versatile. It can be fabricated into many textures and used in many different ways."

Uniroyal's share of this industry is very small. We make all our vinyl chloride in Geismar, La.; converting it into PVC at Painesville, Ohio. All together we account for just two percent of the nearly five billion pounds of PVC produced each year in the United States.

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TM Nevertheless, it's an important two percent. With PVC we make such articles as Naugahyde, ^{with fibers} waterproof footwear and vinyl clothing.

Since that January announcement the United States government, acting through the Occupational Safety and Health Administration (OSHA), has set out to sharply reduce employee exposure to vinyl chloride.

✓C The old standard, dating back to the early 1960's, was 500 parts gas per million parts air. In May that was temporarily lowered to 50 ppm. Four months of public testimony by industrial, labor and medical experts followed before OSHA issued its permanent standard.

That standard, which takes effect Jan. 1, 1975, calls for an allowable exposure level of 1 ppm (averaged over 8 hours), with a 15-minute ceiling of 5 ppm.

"Nobody knows exactly at what level vinyl chloride becomes unsafe," says Dr. Walter Harris, our corporate toxicologist. "We do know, however, that the cases of angiosarcoma discovered so far were in people exposed to high concentrations for long periods of time. Although there's no such thing as a risk-free environment, we are reducing that risk."

During 1974 Uniroyal has invested much money, time and energy into doing just that. Our goal has been two-fold: to maintain the continued health and safety of employees and to preserve their jobs in face of a serious problem.

To show all Uniroyal employees how we are waging this important and necessary war, the following account describes the four-pronged attack being conducted in Painesville.

Painesville was selected because the largest concentrations of vinyl chloride gas occur in PVC plants. Geismar is an open-air operation, meaning most employees work outside where gas emissions quickly dissipate in the atmosphere. *Furthermore the process tends itself to the control of VC release* Exposure levels in fabricating plants generally are well within OSHA standards.

The four parts of the Painesville attack are: *Test* medical surveillance, plant monitoring, engineering control and protective equipment.

Testing Employees

In May we began examining all Painesville employees and recent retirees for any signs of liver problems. This evaluation consisted of a personal medical questionnaire, physical exam and five blood tests designed to spot functional abnormalities in the liver.

Roughly 12 percent of all those tested during this preliminary screening showed signs of one or more liver abnormalities.

"You would find almost the same percentage if you tested the general population," explains Dr. J. Dexter Forbes, corporate medical director.

"Liver test abnormalities can be caused by many things including too much liquor the week before."

Most of these employees passed a secondary screening held at least two weeks later. Those who did not went through more elaborate tests conducted by the plant physician, Dr. William Fletcher. A few still had persistent and unexplained abnormalities. They went through an extensive medical examination by a private liver specialist, who found a variety of causes--but none related to vinyl chloride.

"So far we haven't detected one single incidence of angiosarcoma among our employees," adds Dr. Forbes. "That also includes former employees whose medical records were examined for cause of death."

If any permanent liver disease should be found, that employee must be transferred away from vinyl chloride operations.

This medical surveillance program has become a way of life at Painesville. All employees will be rechecked at least once a year.

Measuring Employee Exposure

The plant monitoring program is designed to measure employee exposure to vinyl chloride. This involves taking personal air samples and fixed-point samples.

Certain Painesville employees carry small plastic bags into which a pump pushes air samples from wherever the employee works. These samples are then injected into a gas chromatograph, which measures the amount of vinyl chloride in each bag. From this information a "job profile" can be put together, indicating typical exposure levels for each job.

Two other employees, carrying devices similar to geiger counters, make a daily check at 42 selected points around the plant. These devices automatically indicate any vapors present in those work areas.

Another instrument, a portable gas analyzer, can be set up at any location. This instrument takes a continuous reading of that area; producing a graph to show fluctuations in the vapor level.

All vapor levels are recorded and posted for employees to read.

"It's very important to let our people know what they're exposed to and what we're doing about it," says plant manager Ben Leach. "They've been very willing to work with us to solve the problems."

Reducing Employee Exposure

Once an area of high exposure is identified, technicians and engineers immediately try to reduce or eliminate emissions.

Since the monitoring began in April, this engineering control program has been responsible for a 60 percent reduction in vinyl chloride concentrations.

"We've done a lot in a short amount of time," Ben adds, "and we're doing everything we can to reduce it even more."

In some instances, the solution was simply fixing or replacing a leaky valve. Other spots required better ventilation. So sections of wall were removed and fans installed to increase circulation.

Major engineering changes are taking place in the vessel cleaning operation. Vinyl chloride is pumped into one-story high, ball-shaped ^{cylinders} vessels. There it is mixed with a liquid and catalysts, heated under pressure and converted into PVC resin. After each batch of resin is pumped out for drying and packaging, the reactor must be opened and cleaned. ~~Any vinyl chloride that has escaped polymerization then enters~~ the atmosphere.

Take up with Ben: Evacuate 3X before opening. Combine next

Many steps have been taken to reduce these vapors before the vessel is opened. The insides are steamed down, washed out and aired out. High-pressure water hoses and vacuum pumps accomplish this.

Another project involves chemical solvents as cleansing agents. "That could be the ultimate answer," says methods engineering supervisor Jerry Brumbaugh. "If we find one that works well, we could pipe it into the vessel and keep the lid closed most of the time."

Even with improved cleaning techniques, however, some PVC sticks to walls and pipes inside the vessel. Employees then have to climb inside the reactor and scrape off those deposits, which can retain some unreacted gas. During this operation workers must be protected from high concentrations of the sweet-smelling fumes.

Protecting Employees

Under the new standard, workers exposed to vapor levels above the allowable limit must be supplied with a respirator. Until 1976, however, they may choose not to wear that device as long as the level doesn't exceed 25 ppm.

So far 180 air-supplied respirators have been issued to Painesville employees. These full-face masks are connected by hose to a filtering canister. Vessel cleaners, for instance, are breathing fresh, clean air from outside the reactor while chipping away at its insides.

Other protective equipment includes coveralls and gloves, which reduce skin contact with the gas.

Similar programs are being conducted at Geismar. All our fabricating plants, moreover, are being monitored to ~~detect any changes in employee~~ exposure.

Make certain that employees are not exposed above the permissible level.

"We recognize, and accept, our responsibility to protect the health of all of our workers," adds Martin Kleinfeld. "We feel that these programs are doing just that."

Protecting employees, in every facet of our business, is a never-ending war for Uniroyal.