



Continental Oil Company
P.O. Box 1267
Ponca City, Oklahoma 74601
(405) 762-3456

CHEMICALS
RESEARCH

[The page contains faint horizontal lines, suggesting it was part of a ledger or form.]

Dear Ken:

In this case, the subject is extraction of VCM by water in a static exposure test patterned after the NSF method for metals extraction. I think the accompanying letter and data will answer most of your questions.

We would be happy to have your comments or answer any questions.

Sincerely,

rh			
Enc			
BCC:	KLS	CJS	FK



CHEMICALS
RESEARCH

Research & Development Department
202 Technical Service Center

Continental Oil Company
P.O. Box 1267
Ponca City, Oklahoma 74601
(405) 762-3456

SEP 19 1974

FK
WSPA
CCM
AMM
WMS
LM

September 16, 1974

Mr. Wayne Peek
Certain-Teed Products Corporation
P. O. Box 988
McPherson, Kansas

Dear Wayne:

I am enclosing a letter we are sending to the FDA as part of our policy of making available any information we have that could contribute to a better understanding of the VCM safety question. This letter will become a part of the publicly available files of the FDA.

In this case, the subject is extraction of VCM by water in a static exposure test patterned after the NSF method for metals extraction. I think the accompanying letter and data will answer most of your questions.

The sources for the pipe tested are not identified in the letter to the FDA; but for your information, pipe supplied to us by your company is sample 149-C in the data table.

We would be happy to have your comments or answer any questions.

Thanks for supplying part of the pipe samples for the test.

Sincerely,

W. R. Sorenson
Director, Plastics
Chemicals Research Division

rh

Enc

BCC: KLS CJS FK

Excerpt from "An Economic Impact and Technological Feasibility Study for the Compounders, Processors and Fabricators of Polyvinyl Chloride Resins"

Of the three industry layers in question, the compounders have the most exposure. Processing has less exposure by virtue of the fact that it subjects PVC compounds, which still contain some small amounts of residual VCM to heat pressure. Fabricating, the fashioning of a finished product from an intermediate one made through processing, is the most removed from possible worker exposure to VCM.

Some reasons for the feasibly higher exposure levels at the compounding layer are:

- (1) Compounders work with raw resin which still has much of the original residual VCM entrapped within it. This is especially true today due to the high market demand for PVC. Raw resin spends very little time in inventory between the time it is produced and the time it is compounded. The result is that the release of residual monomer, which naturally takes place over time, is limited.
- (2) The mixing and blending operations accelerate the release of residual VCM by heating the resin. Even though venting is done above the mixers and mixer operators do not normally get near the top of an operating vessel, there is an inevitable release of residual into the ambient air of the workplace.

It can be argued, however, that processors, fabricators, and processors/fabricators really do not have an exposure problem at all. Referring back to our monitoring data, 81% of all readings from both the hearings and OSHA inspections taken at these layers indicate exposure levels of one ppm (TLV) or less. The evidence becomes even stronger if allowable exposure becomes defined as an eight hour time weighted average (TWA) which allows for excursions above one ppm and gives a better picture of the true exposure level.

NRD 0002007136

Estimates for all of the above are not able to be made at this time. Although it would certainly be useful to be able to include these costs, particularly numbers 7 and 8, it is felt that they quite simply cannot be accurately estimated. In view of this, leaving them unanswered seems more constructive than answering them with possibly mistaken or erroneous information.

As alluded to in Section III, cost impact information at the compounder, processor and fabricator level is just not readily available. These industry layers seem to feel that they ought to be treated separately by any regulation and thus have not themselves examined the possible direct impact resulting from the proposed standard. The standard itself is viewed as having been written with the VCM and PVC producers in mind.

Unfortunately, there also exist no good estimates of engineering costs related to compliance with the proposed standard. Again, since almost all compounders, processors and fabricators are currently operating at exposure levels well below both the Emergency Temporary Standard and the VCM and PVC producers, and since it is generally believed that the permanent

⁶Snell Preliminary Report, Appendix F.

⁷Ibid.

⁸Ibid.

standard will be less stringent than the proposed standard, possible engineering changes and the costs associated with them have not in most cases, been planned for. These three industry layers have adopted a "wait and see" attitude towards the whole question of control of vinyl chloride exposure. Most firms are doing nothing, with the possible exception of some personal monitoring. They are waiting to learn what they will be required to do.

Aside from the obvious difficulty this creates in trying to estimate cost impact, this situation may also produce real logistical problems once a permanent standard has been promulgated. The Department of Labor may be faced with 8,000 or more compounders, processors and fabricators all straining simultaneously to secure the same limited supply of equipment and technical expertise. The industries that provide these services and equipment will most certainly not be able to meet this sudden surge in demand, thus creating shortages and long lead times. This would be especially critical if deadlines are written into the permanent standard.

The upshot of this discussion is that a comprehensive picture of cost impact has not been able to be presented. Due to the scarcity of information necessary for making such estimates, the question of direct economic effect on the compounder, processor and fabricator level, is still an open one.

SUBCHAPTER D—DRUGS FOR HUMAN USE

PART 310—NEW DRUGS

Subpart E—Requirements for Specific New Drugs or Devices

SUBCHAPTER G—COSMETICS

PART 700—GENERAL

Subpart B—Requirements for Specific Cosmetic Products

Vinyl Chloride as an Ingredient of Drug and Cosmetic Aerosol Products

In the FEDERAL REGISTER of April 22, 1974 (39 FR 14215), the Commissioner of Food and Drugs issued a notice of proposed rule making regarding all drug and cosmetic aerosol products containing vinyl chloride as an ingredient, including propellant. The proposal was based on the Commissioner's determination that there are sufficient scientific data on which to base a decision that: (1) Vinyl chloride presents an unnecessary hazard to the public health when it is used as an ingredient in cosmetic aerosol products, and that such use should be banned; and (2) vinyl chloride, when used as an ingredient in drug aerosol products, is not generally recognized as safe and effective, is a new drug within the meaning of section 201(p) of the Federal Food, Drug, and Cosmetic Act, and requires an approved new drug application as a condition of marketing. Interested persons were invited to submit comments regarding the proposal on or before May 22, 1974.

Comments were received from the American Academy of Pediatrics, a municipal consumer affairs unit, and an individual. All the comments were in support of the Commissioner's proposal. Accordingly, the Commissioner concludes that the regulations should be adopted as proposed.

The notice of proposed rule making also requested data regarding the use of polyvinyl chloride in containers for food and cosmetics, and in devices. The Commissioner urgently requested that certain data be submitted on the extent of the usage of polyvinyl chloride containers, the rates of extraction of vinyl chloride monomer from these containers, and other matters that will pertain to the safety of these containers. The time limit for submission of data requested in the proposal was on or before June 21, 1974. However, to date, the Commissioner has received only a few responses and again requests that the pertinent information be sent to the Hearing Clerk, Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, MD 20852, as soon as possible.

A companion notice in the same issue of the FEDERAL REGISTER (39 FR 14238) required each registrant under section 510 of the Federal Food, Drug, and Cosmetic Act to submit a list of all human drugs which are being manufactured, prepared, propagated, compounded, or processed for commercial distribution and which contain vinyl chloride as an ingredient or are packaged in polyvinyl chloride containers. The notice also requested registrants to furnish certain ad-

ditional information relating to vinyl chloride and polyvinyl chloride.

Data being received by the Food and Drug Administration as a result of the FEDERAL REGISTER notices are being compiled and reviewed to determine whether any additional action by the Commissioner is needed to protect the public health.

Therefore, pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (secs. 502, 505, 601(a), 701(a)), 52 Stat. 1050-1055, as amended; 21 U.S.C. 352, 355, 361(a), 371(a)) and under authority delegated to the Commissioner (21 CFR 2.120), Parts 310 and 700 are amended as follows:

1. By adding a new § 310.506 to Subpart E to read as follows:

§ 310.506 Use of vinyl chloride as an ingredient, including propellant, of aerosol drug products.

(a) Vinyl chloride has been used as a propellant in aerosol drug preparations. Evidence indicates that vinyl chloride inhalation can result in acute toxicity manifested by dizziness, headache, disorientation, and unconsciousness where inhaled at high concentrations. Cardiac effects, bone changes, and degenerative changes in the brain, liver, and kidneys have been reported in animals. Studies also demonstrate carcinogenic effects in animals as a result of inhalation exposure to vinyl chloride. Recently, vinyl chloride has been linked to liver disease, including liver cancer, in workers engaged in the polymerization of vinyl chloride.

(b) The Commissioner finds that there is a lack of general recognition by qualified experts of the safety or effectiveness of aerosol drug preparations containing vinyl chloride as an ingredient, including propellant. Therefore, any such product containing vinyl chloride is a new drug and a new drug application approved under section 505 of the Federal Food, Drug, and Cosmetic Act is required for marketing.

(c) A completed and signed "Notice of Claimed Investigational Exemption for a New Drug" (Form FD-1571), as set forth in § 312.1 of this chapter, is required to cover clinical investigations designed to obtain evidence that such preparations are safe and effective for the purposes intended.

(d) Any such drug within the jurisdiction of the act which is not in accord with this regulation is subject to regulatory action.

2. By adding a new § 700.14 to Subpart B to read as follows:

§ 700.14 Use of vinyl chloride as an ingredient, including propellant of cosmetic aerosol products.

(a) Vinyl chloride has been used as an ingredient in cosmetic aerosol products including hair sprays. Where such aerosol products are used in the confines of a small room, as is often the case, the level of vinyl chloride to which the individual may be exposed could be significantly in excess of the safe level estab-

lished in connection with occupational exposure. Evidence indicates that vinyl chloride inhalation can result in acute toxicity manifested by dizziness, headache, disorientation, and unconsciousness where inhaled at high concentrations. Studies also demonstrate carcinogenic effects in animals as a result of inhalation exposure to vinyl chloride. Furthermore, vinyl chloride has recently been linked to liver disease, including liver cancer, in workers engaged in the polymerization of vinyl chloride. It is the view of the Commissioner that vinyl chloride is a deleterious substance which may render any cosmetic aerosol product that contains it as an ingredient injurious to users. Accordingly, any cosmetic aerosol product containing vinyl chloride as an ingredient is deemed to be adulterated under section 601(a) of the Federal Food, Drug, and Cosmetic Act. (b) Any cosmetic aerosol product containing vinyl chloride as an ingredient shipped within the jurisdiction of the act is subject to regulatory action.

Effective date. This order shall be effective September 25, 1974.

(Secs. 502, 505, 601(a), 701(a), 52 Stat. 1050-1055, as amended; 21 U.S.C. 352, 355, 361(a), 371(a).)

Dated: August 20, 1974.

SAM D. FINE,
Associate Commissioner
for Compliance.

[FR Doc. 74-19857 Filed 8-23-74; 8:45 am]

CHAPTER II—DRUG ENFORCEMENT ADMINISTRATION, DEPARTMENT OF JUSTICE

PART 1308—SCHEDULES OF CONTROLLED SUBSTANCES

Exempt Chemical Preparations

The Administrator of the Drug Enforcement Administration has received applications pursuant to § 1308.23 of Title 21 of the Code of Federal Regulations requesting that several chemical preparations containing controlled substances be granted the exemptions provided for in § 1308.24 of Title 21 of the Code of Federal Regulations.

The Administrator hereby finds that each of the following chemical preparations and mixtures is intended for laboratory, industrial, educational, or special research purposes, is not intended for general administration to a human being or other animal, and either (a) contains no narcotic controlled substances and is packaged in such a form or concentration that the package quantity does not present any significant potential for abuse, (b) contains either a narcotic or nonnarcotic controlled substance and one or more adulterating or denaturing agents in such a manner, combination, quantity, proportion or concentration, that the preparation or mixture does not present any potential for abuse, or (c) the formulation of such preparation or mixture incorporates methods of denaturing or other means so that the controlled substance cannot in practice be removed, and therefore

Vinyl Chloride Link to Cancer

Known in 1971, Report Says

By Bob Kuttner

Washington Post Staff Writer

Evidence existed as early as 1971 that low doses of vinyl chloride caused cancer in laboratory animals, according to an internal technical report by the World Health Organization's International Agency for Research on Cancer.

The researcher isn't identified, but several prominent U.S. cancer scientists believe he is Dr. P. L. Viola, the Italian researcher whose earlier work first alerted the chemical industry to the possible carcinogenic — cancer-causing — effects of high doses of vinyl chloride.

So far, 14 deaths from a rare liver cancer called angiosarcoma

have been reported among U.S. chemical workers exposed to vinyl chloride gas, which is the base ingredient for one of the most common plastics, polyvinyl chloride.

The disclosure Jan. 22 by the B. F. Goodrich Co. that three workers in its Louisville, Ky., plant died of angiosarcoma led to a crash research program by several federal agencies, including the National Institute of Occupational Safety and Health and the Labor Department's Occupational Safety and Health Administration (OSHA).

Consequently, OSHA adopted an emergency standard lowering exposure limits to vinyl chloride workers from 500 parts per million to 50 parts per million, and NIOSH

has recommended a permanent permissible level of zero.

In addition, dozens of consumer aerosol products containing vinyl chloride gas as a propellant have been withdrawn from the market.

In the wake of these findings, the chemical industry has been sharply criticized by cancer scientists for failing to fully inform either the government or its own plant physicians about the results of European studies showing links to cancer as early as 1971.

"If the latest report means what it seems to mean," said Dr. Irving Selikoff, director of the Environmental Sciences Laboratory at Mt. Sinai School of Medicine in New York, "then we're nearly four

years behind where we should be."

"You don't automatically assume that animal studies are conclusive, but the industry should have at least notified their own doctors," he added.

"It's inexcusable that they didn't tell the government," said Dr. Sidney Wolfe, director of the Nader-sponsored Health Research Group.

"It would have been appropriate for them to tell us about the European studies as soon as they knew," added a NIOSH scientist.

According to the Manufacturing Chemists Association, the principal industry trade association, the MCA invited Dr. Viola to discuss his study with U.S. industry representatives in May, 1971. The prelim-

inary studies showed vinyl chloride was carcinogenic at levels of 30,000 parts per million.

By November, 1971, the MCA was aware that concentrations of 5,000 parts per million "and perhaps less" also could cause tumors in laboratory animals.

According to the latest World Health Organization report, which summarizes a meeting held last June, a laboratory in Italy during that period—presumably Dr. Viola's—was also finding that concentrations as low as 500 parts per million could cause tumors, including angiosarcomas of the liver. Those results have not yet been published.

Subsequently, the European

chemical industry sponsored another series of experiments by a second Italian scientist, Dr. Cesare Maltoni. The U.S. Manufacturing Chemists Association learned of Dr. Maltoni's studies in late 1972. Those studies showed that animal tumors could be produced at concentrations as low as 250 parts per million, or half the permissible exposure levels for workers in the United States.

However, the MCA did not share the information with government agencies, having promised its European counterparts to keep the findings secret.

Instead, the MCA and several of its member companies contracted for new animal studies in the United States.

It also arranged for an epidemiological survey, to study the health records of workers exposed to vinyl chloride.

In June, 1973, at a meeting with NIOSH officials, industry representatives are said to have downplayed the significance of the European findings.

Although the 1973 Maltoni research indicated that liver cancer could be caused at concentrations as low as 250 parts per million, NIOSH director Dr. Marcus Key told an Aug. 21 Senate hearing on vinyl chloride that at the meeting "no mention was made to us about liver cancer and no mention was made to us about the name of the Italian scientist."

Only after B. F. Goodrich reported that its Louisville plant physician, Dr. John Creech, independently discovered three cases of angiosarcoma did the trade association fully reveal the Maltoni findings to NIOSH officials. Even at that point, according to NIOSH sources, the MCA asked NIOSH to keep the findings secret.

Dr. Maurice Johnson, Goodrich's medical director, corroborated that he knew about the Maltoni study but said that he saw no need to notify the company's plant physicians. "It was by no means a finished study," he said.

When Goodrich's Dr. Creech found the third case of angiosarcoma among plant workers, Dr. Johnson said, "that was the clincher."

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