

— OSHA AMBIENT AIR —
VINYL CHLORIDE

VVC 000010105



Interoffice Communication

To James DeBernardi - Lake Charles VCM Plant

From Oran D. Steffey - Ponca City, Oklahoma

Date November 4, 1976

Subject PROCEDURES TO BE USED FOR MONITORING BY THE OCCUPATIONAL
SAFETY AND HEALTH ADMINISTRATION

Attached to this communication is a general policy for procedures which will be followed by OSHA for monitoring for substances in the workplace. Attention should seriously be given to this since your area of operations will be subject to such scrutiny, and hopefully we will know and should be aware of the status of the conditions as related to materials present, used or manufactured in the workplace.

We would invite your comments, questions, or discussions concerning these important coming requirements which will potentially effect every workplace. This communication is supplemental to previous information which has for the past year been issued by the medical department concerning requirements of the joint OSHA-NIOSH Standards Completion Project.

A handwritten signature in cursive script, reading "Oran D. Steffey", is positioned above the typed name.

Oran D. Steffey
Industrial Hygienist

rla
Att.

VVC 000010106

NEW HEALTH STANDARDS - PROCEDURES FOR MONITORING

A list of standards to be issued within the next three months and new procedures for monitoring by Occupational Safety and Health Administration industrial hygiene officers have been announced.

The coke oven emissions standard should be issued soon and others shortly following will include noise, rules on cotton dust, lead, mercury, silica, ketones, sulfur dioxide, and ammonia. Each standard will include new rules on recordkeeping procedures and on physical examinations for employees.

On the new monitoring procedures the OSHA Field Operations Manual will be revised. The provisions will provide general policies on inspections of plant operations for potential health hazards in the workplace.

The national office will coordinate this program among the OSHA regions and an industrial hygienist will be appointed for each region. Consultation and technical assistance will be made available to these regional hygienists.

An OSHA program for training industrial hygienists will include the education of some 400 personnel over the next three or four years. This will involve a three-year training program and the trainees will accompany senior hygienists on some inspections during that period.

Responsibilities of the senior industrial hygienist will include providing guidelines for determining non-compliance, contested case information preparation, and training for use of equipment.

The industrial hygienist, in making inspections, will be checking for such potential hazards as eye irritations, visible clouds from ventilation systems, visible fumes released in the workplace, a noise level which causes raised voices, chemical handling techniques, and workers' comments or symptoms. If an industrial hygienist finds a potential hazard, he must report the name of the plant, the location of the hazard, the reasons for suspecting the hazard, comment by employer and employees, and samples. Details of industrial hygiene inspections will include checking the requirements for recordkeeping, engineering controls, work practice controls, protective devices, and housekeeping practices.

Copy to CHW
JAG
PLF

Dow tests show HCB is carcinogenic, but there may be threshold limits

Tests at Dow's toxicology labs indicate there is a threshold limit for carcinogenic effects of hexachlorobutadiene (HCB). Dosages of 20 mg./kg. of animal body weight per day caused multiple toxicologic effects, including kidney cancer, in rats tested. But dosages of 2 mg./kg. caused damage that was considered reversible, and dosages of 0.2 mg./kg. caused no adverse effects. Dow reports. Other tests showed no effects on reproduction. HCB is a major component of the tarry wastes from the manufacture of trichloroethylene, perchloroethylene and carbon tetrachloride. Reviews of health data on workers in areas where HCB has been found indicate no abnormalities or deaths that could be attributed to the chemical. The company says concentrations of HCB in its commercial products is well below 1 ppm.

Bayer waste treatment method makes better use of oxygen in air

Bayer has developed a new method of treating waste water. Air is injected through spray nozzles into towers up to 60 ft. high. Purpose: to get better utilization of the oxygen, which sustains life of the bacteria that consume the organic wastes. Bayer researchers say that of the 21% oxygen in air, only 5% is actually utilized in conventional waste-water treatment in which aeration takes place in relatively shallow lagoons or holding basins. The company says its method, which it calls tower biology, uses 13% of the oxygen in the air. Result: less air has to be blown in, so energy costs can be cut as much as 50%. Bayer also claims space requirements and capital cost savings. The company plans to build a tower biology unit at the treatment plant adjoining its giant Leverkusen works.

ERDA and USDA to test use of power plant wastes for agricultural purposes

Can power plant wastes be used as fertilizer? The Energy Research and Development Administration and the Agriculture Dept. are cooperating in a \$1.7-million, five-year study of the use of solid wastes from coal-fired boilers that burn coal mixed with limestone in a fluidized bed for fertilizers and soil treatment. The project will include chemical and physical analysis of the combustion wastes, followed by studies of the materials in greenhouses, growth chambers and fields. Field studies will evaluate use of varying amounts of the waste on marginal soils and land areas. The wastes will also be tested for possible role in neutralizing acidity in strip-mined land.

Reflux refining will be tested to make lead

A new lead refining process will be tested in a 1-metric-ton/hour pilot plant being built by Broken Hill Associated Smelters at Port Pirie, Australia. The process, called "reflux refining," was developed by the government-run Commonwealth Scientific and Industrial Research Organization (CSIRO). The Australians think it shows promise of making a lead product with fewer impurities than current commercial processing. Moreover, it uses less energy and can recover valuable by-products. CSIRO's experiments have shown that lead ingots containing 1,700 ppm. of silver can be processed to contain only 0.5 ppm. of silver. At the same time, the other main impurity, bismuth, can be reduced from 320 ppm. to 80 ppm. In comparison, the existing process at Port Pirie leaves 1.8 ppm. of silver in the lead without reducing the bismuth concentration.

2-chloroethanol

To - Plant Safety Directors.

Copies to - Roy Baresi, Flynt Kennedy, R.E.
Lohmkuhl, Oran Steffey

From - D. A. Kuhn 9-30-76

Subject - Hazard of Epichlorohydrin.

Here's new information about the dangers of this chemical. I encourage you to check its use in laboratories and to consider whether it's a by-product of the v.c. plant. Other than that, I don't know where we use it. Is it present in epoxy resin like we in pvc, or a residual? D

THE WALL STREET JOURNAL

Thursday, Sept. 30, 1976

Exposure of Workers to Epichlorohydrin Should Be Slashed, Federal Scientists Say

By GAIL BRONSON

Staff Reporter of THE WALL STREET JOURNAL

Federal scientists are urging major cut-back in the occupational exposure of an estimated 5,000 workers to the chemical compound epichlorohydrin.

In a report not yet released publicly, researchers at the National Institute for Occupational Safety and Health recommended that an environmental limit of 0.5 parts of the chemical for each million parts of air be allowed in factory areas, it was learned. This is a tenth of the current federal limitation of five parts per million.

Epichlorohydrin is an organic chemical compound synthesized from petroleum products to make epoxy resins in the plastics industry. Epichlorohydrin belongs to the same family of halogenated hydrocarbons as vinyl chloride and BIS (bichloromethyl) ether.

Vinyl chloride was discovered two years ago to be linked with at least 19 cases of a rare liver cancer among chronically exposed workers. BIS, chloromethyl ether, used in making ion exchange resins, was linked in 1974 to the deaths of 15 Form & Hus Co. workers who died of lung cancer after prolonged exposure in a Philadelphia plant.

Two companies make most of the 350 million pounds of epichlorohydrin produced annually in the U.S. One is Dow Chemical Co., which has a plant in Freeport, Texas. The other is Shell Chemical Co., a subsidiary of Shell Oil Co., with plants in Deer Park, Texas, and Norco, La. The number of chemical companies that use epichlorohydrin wasn't immediately available.

Whether the institute's recommendation will be enforced is up to the Labor Department's Occupational Safety and Health Administration, which will determine if the institute's standard should become a government regulation.

Chronic Human Exposure

Although the consequences of chronic human exposure to the chemical aren't yet well documented, the institute believes that sufficient evidence derived from animal tests indicates that exposure to epichlorohydrin may "result in severe deleterious effects," an institute official said. This is "causing grave concern" that the chemical is a potential mutagen and carcinogen in humans, he explained.

Based on research conducted so far, an Institute Institute document states:

"Epichlorohydrin is a very reactive molecule which will react with many constituents of the cell. Following acute exposure to epichlorohydrin, significant changes have been observed in the lungs, liver, kidney, testes, skin and other organs. An increased frequency of mutation has been observed in bacteria and other lower organisms following exposure to epichlorohydrin, although such mutations haven't yet been observed in man or higher mammals."

Dow Chemical provided the institute with medical data concerning the epichlorohydrin exposure of two workers to a level more than 15 parts per million for about two hours, while they cleaned up a spill in the plant last year. Sources said that tests on urine samples from these workers showed the presence of some mutagenic substances.

Dr. D. Jack Kilian, an occupational health director for Dow Chemical and a review consultant to the institute on its recommendation, said: "Dow has never had any seriously injured people (from epichlorohydrin exposure). We've found no ill health effects over a 20-year period; only some eye irritations and some skin burns."

When asked about the two workers who were acutely exposed, Dr. Kilian said there was "borderline evidence of mutagenic substances in the body." Apparently the workers haven't suffered any further ill effects.

Dr. Kilian said Dow Chemical is checking on the deaths of all employees who worked at the epichlorohydrin plant. The research will take about six months, he said.

It was very discouraging to me that they (the institute) still want to drastically reduce the levels of epichlorohydrin. . . I was willing to compromise at one or two parts per million," said Dr. Kilian. Dow Chemical officials said that since 1970, worker exposure to the chemical hasn't been higher than two parts per million.

A Shell Chemical spokesman said none of its employees has suffered anything more than nose or throat irritations, or skin burns, after exposure to epichlorohydrin. "I don't think the data show the need for any change in the standard," said Howard Krasnow, manager of safety and health for a manufacturing operations.

Mr. Krasnow added that Shell has been well in compliance with the five-parts-per-million standard, although he couldn't specify the current exposure levels. Shell workers wear air supply respirators when attending to leaks, he added. Dow Chemical said its workers wear cartridge respirators when collecting chemical samples from storage tanks. Epichlorohydrin is usually kept in liquid form, but vaporizes quickly in the air.

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Despite the doubts by industry officials toward the proposed institute standard, researchers believe evidence implicates epichlorohydrin as a potential carcinogen. The document recommending a revision of the standard noted that "available information indicates that large doses of epichlorohydrin induce antifertility effects on rats; however, no effects on potency have been found."

Research on Mice

The research of Dr. Benjamin L. Van Duuren, professor of environmental medicine at New York University Medical Center, was submitted to the institute's review committee. Dr. Van Duuren injected epichlorohydrin under the skin of 30 mice, and as a result, two developed malignant tumors. "These results create concern," he said. Dr. Van Duuren said his research on epichlorohydrin was an outgrowth of his work on 313 (chloromethyl) ether in the 1960s.

Inhalation tests were begun last year at the medical center under contract from the National Cancer Institute. Sidney Laskin, a pharmacologist and director of the study, said it will be a year or two before test results are available. "But preliminary tests have shown that epichlorohydrin is a mutagen and carcinogen," he said.

The institute reviewed the environmental limits on epichlorohydrin as part of its mission under the Occupational Safety and Health Act, which calls for it to set exposure standards for the lifetime of workers. The institute has turned over its recommended standard on epichlorohydrin to the Occupational Safety and Health Administration.

"We don't have a complete set of epidemiological data," said Jerome Chandler, a biochemist at the institute. "Every occupational standard is a theoretical extrapolation from a more limited set of data. But we do know epichlorohydrin induces mutation and reacts with DNA in lower organisms. We recognize these bits of data as tips of the iceberg of an unknown size."

J. epichlorohydrin.

To: Doug Michels - Aberdeen, Alan Goldfarb - Baltimore,
Art Russell - Hammond, Jack Cearley - LCCP, Paul Fetzner -
LCVCM, Dick Frohreich - OKE, George Habermann -
Newark.

Subj: - Analytical Procedure Substitution

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FRIDAY, AUGUST 20, 1976

[FRL 596-2]

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Revision to Emission Monitoring Requirements

On October 8, 1975 (40 FR 46250), under section 111 of the Clean Air Act, as amended, the Environmental Protection Agency (EPA) promulgated emission monitoring requirements and revisions to the performance testing methods in 40 CFR Part 60. The provisions of § 60.13(d) allow the Administrator to approve alternatives to monitoring procedures or requirements only upon written application by an owner or operator of an affected facility; monitoring equipment manufacturers would not be allowed to apply for approval of alternative monitoring equipment. Since EPA did not intend to prevent monitoring equipment manufacturers from applying for approval of alternative monitoring equipment, § 60.13(d) is being revised. As revised, any person will be allowed to make application to the Administrator for approval of alternative monitoring procedures or requirements.

This revision does not add new requirements, rather it provides greater flexibility for approval of alternative equipment and procedures. This revision is effective (date of publication).

(Sections 111, 114, and 301(a) of the Clean Air Act, as amended by sec. 4(a) of Pub. L. 91-604, 84 Stat. 1573 and by sec. 15(c)(2) of Pub. L. 91-604, 84 Stat. 1713 (42 U.S.C. 1857c-6, 1857c-9, and 1857g(a)).)

Dated: August 13, 1976.

RUSSELL E. TRACY,
Administrator.

In 40 CFR Part 60, Subpart A is amended as follows:

1. Section 60.13 is amended by revising paragraph (d) as follows:

§ 60.13 Monitoring requirements.

(d) After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the following:

[FRL Doc. 76-24558 Filed 8-19-76; 8:45 am]

Here is a new regulation that improves our flexibility to choose analytical procedures. It means an equipment owner can seek approval of his equipment not just an "owner". Your equipment suppliers can thus offer you "ok'd" equipment that they have processed for EPA approval.

D.

9-1-76

J - EPA

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