PLAINTIFF'S
EXHIBIT
BRK-21

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Behind the Scenes IN SAFETY AND HEALTH

January 2, 1986

Ms. Judy Spencer
Legal Section
Industrial Commission of Ohio
246 North High Street
Columbus, Ohio 43215

RE: OD 23861-22
Mr. Paul Pollitt
Inland Div.-GM

Dear Ms. Spencer:

As requested, I conducted an Occupational Disease investigation on September 19, 1985, at the Inland Division-GM facility in Dayton, Ohio. Purpose of this visit was to investigate allegations of the claimant regarding "inhalation of TDI, due to exposure to toxic fumes making dashboard pads." The claimant is claiming occupational asthma, induced by isocyanate inhalation and restrictive lung disease.

The delay in writing this report was caused in part by the gathering of information from outside agencies. Namely, OSHA and their air sampling experience at the Inland Plants named for isocyanate exposures. Secondly, the National Institute for Occupational Safety and Health (NIOSH). I have discovered this Federal agency apparently did extensive sampling for isocyanates at the Dayton and Vandalia Inland Plants in 1978, 1979, and 1981. I have been unable to obtain this data even after requesting it formally under the Freedom of Information Act. Last, is the formal reply from Smith & Schmacke attorney Edna Scheuer to the questions I raised during my visit.

OSHA air sampling data was received for these time periods: Aug. 19, 1976 - Sept. 1, 1976, also Nov. 16,1978 - Nov. 21, 1978, and Sept. 17, 1979 - Sept. 19, 1979. Review of the 1976 air sampling data discloses 17 air samples being taken for either TDI or MDI. All were negative with the exception of one air sample taken of a helper in Department 870 Vandalia Plant, where a level of 0.10 mg/M^3 TDI was found over a 30 minute sampling period.

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(Atch. 1). Review of the air sampling data taken in 1978 (11/17/78) reveals no TDI detected on Lines 1 & 2, 3 & 4, of Department 870 (Atch. 2). On September 17, 1979 an air sample of the foamer head operator was reported as "less than 0.02 mg/M^3" of toluene di-isocyanate. Line 1 was reported similarly (Atch. 3). Interestly, if I interpret the work history correct (Atch. 4) the claimant never worked in this department (870) during the time periods mentioned or in fact, at any time. The work history further reflects the claimant working in only one department where there could of been any isocyanate exposure. That is Department 776 where he apparently worked from August 11, 1980 to September 15, 1980, and again May 16, 1983 - August 1, 1983. Exposure would have been to Methylene bisphenyl isocyanate (MDI) in this Department (Atch. 5). Of interest is the exposure would have been over 5 years ago for one period and two years ago for the latter. He does (claimant) report the symptoms first appeared August 6, 1983. As reported by Smith and Schmacke attorney Edna Scheuer, MDI monitoring of Department 776 by their senior industrial hygienist, revealed MDI to be nondetectable within the capability of their instrumentation which is reported to be sensitive down to one part per billion. Also, that there were no spills or incidents reported involving TDI/MDI during the time periods the claimant worked in Department 776 (Atch. 6, 7).

Other statements or allegations made by the claimant in the facsimile file are reported as follows with my subsequent findings (or as answered by attorney Scheuer).

- Claimant stated he inhaled TDI from fumes through leakage of tanks located in Department 776. Response: TDI never used here, but MDI is in fabrication of instrument panel pads. Bulk storage tanks are stored on the outside in a separate locked building.

- Occupational Health Center, Cincinnati, ltr. dtd. June 27, 1984, comments June 1983 seizure of isocyanate bolt line . . . one month later, different job with possible isocyanate exposure, had seizure again. February 1984 lost consciousness to unknown fume (chloroform). Response: Nothing in the Inland Claimant Medical Records reflect any isocyanate seizures in June or July 1983. Inland reported claimant fainted in Department 170. Physician who treated him attributed it to the 3 medications found in his pocket (per Inland). There is a vapor tank where it was proven in a previous claim that exposure was supposingly nil or non-existent with levels of

1-15 parts per million. NOTE: The 8 hr./TLV for chloroform is 10 ppm, with a short-term exposure limit (STEL) of 50 ppm.

- University of Cincinnati ltr. dtd, 8/22/83 statement "exposed to 10 spills of TDI in the late 1970's Response: Claimant actually worked in Department 730, Brakelining, where there was no isocyanates used -- therefore, there was no isocyanate exposures.

- Comment "open process where they pour foam in molds . . . on clothes." Response: MDI tape readings have always shown non-detectable readings in Department 776 from 1977 to present. NOTE: This response did not answer the question about getting MDI on workclothes. MDI, as other isocyanates, are generally reported to be irritating to skin, eyes and respiratory tract, causing damage to mucous membranes and are a common cause of allergic sensitization of the respiratory tract. 1

- Did the claimant work in demold? Describe "putting skins in." Response: The company cannot prove or disprove the claimant worked in demold. "Putting skins in" means putting a vinyl strip in the mold -- an automatic or robotic system since inception.

- The comment about spills around pumps in 1983 -- were they isocyanate spills? Response: There were no reported MDI spills. The company would investigate such incidents.

Toxicology and physiological effects

Although MDI or Methylene bisphenylisocyanate is somewhat less irritating than TDI or toluene diisocyanate, there is no reason to assume that the typical respiratory toxic and sensitization responses attributed to TDI will not occur. MDI has a low volatility, so that at normal operating temperatures, hazardous concentrations of vapors are less likely to occur. It is true that the vapor hazard is less, but many applications involve the spraying of reacting isocyanate/resin mixtures. In this situation a hazardous aerosol or mist can be created. 2

The threshold limit value (TLV) for MDI has been set by the American Conference of Governmental Industrial Hygienists at 0.02 parts per million of air (ppm) and it is a maximum value not to be exceeded. A criteria document proposed October 20, 1978, by the National Institute for Occupational Safety and Health (NIOSH)

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has set the TLV for diisocyanate at 0.005 for a time-weighted averate for up to a 10-hour workshift, 40 hour workweek; and 0.02 ppm as a ceiling concentration for any 10 minute sampling period.

Skin sensitization has been produced in humans whose respiratory tracts were protected by airline respirators but who had repeated skin contact. [3]

The lowest concentration to which pharmacologic response has occurred following exposure was 0.13 ppm for 30 minutes. One man in seven experienced a body temperature rise to 101° F about 6 hours after initial exposure. [4]

Potential hazards associated with the use of isocyanates include sensitization, respiratory and eye irritation from vapor, and skin irritation from liquid. These hazards arise from inadequate ventilation, spills, improper storage, improper disposal of containers and waste, and poor housekeeping. The most common hazard associated with the use of isocyanates arises from inhalation of vapors or mist. [5]

Continued inhalation of isocyanate vapors or mists can cause nausea, headaches, coughing, irritation of the nose and throat, shortness of breath and chest discomfort. Massive exposure, as in large spills, can cause severe coughing spasms, bronchitis, bronchial spasms and chemical pneumonitis. Some people can become sensitized to isocyanates and may suffer asthmatic attacks and respiratory distress when subsequently exposed to very low concentrations. [6]

Liquid isocyanates splashed in the eye(s) can cause irritation. Skin contact with liquid isocyanates can cause reddening, irritation, dermatitis and, in some individuals, sensitization. [7]

In another reference [8] it is stated "Because of TDI's high volatility, exposure can occur in all phases of its manufacture and use. MDI has a much lower volatility, and problems generally arise only in spray applications. This same reference states sensitization to TDI and MDI may occur, which may cause an asthmatic reaction with wheezing, dyspnea, and cough. These symptoms may first occur during the night following exposure to these chemicals. Some decrease in lung function in the absence of symptoms has been observed in some workers exposed to TDI for long periods of time.

Summary and Conclusions:

This investigation reveals the claimant's exposure, if any, to be to the chemical agent MDI not TDI. Further, that work in

the MDI department (776) occurred in 1980 for approximately five weeks and again in 1983 for approximately two and one-half months. Therefore, the total exposure time to MDI, if any, was three plus months. During the time the claimant worked in Department 776 Inland reports no incidents with MDI. Review of the air sampling data as provided by OSHA discloses (even though it does not relate to the time period when the claimant worked at the Vandalia plant) that normally airborne emissions of isocyanates would not be expected. However, it is well-documented in the literature of the toxicological response, particularly sensitization of the respiratory tract, from that produced by exposure to methylene bisphenyl isocyanate.

Respectfully submitted,

Glenn L. Davis

GLENN L. DAVIS
Industrial Hygienist

GLD/cls

Attachments (7)

References

1. American Conference of Governmental Industrial Hygienists, Documentation of the TLV's, 1984, p. 274.

2. Paul F. Woolrich. American Industrial Hygiene Journal, (43) 2/82. Toxicology, industrial hygiene and medical control of TDI, MDI, PMPPI.

3. Ibid.

4. Ibid.

5. Ibid.

6. Ibid.

7. Ibid.

8. Dept. of HHS, NIOSH, Occupational Diseases, A guide to their Recognition. 1977. p. 234.