



The Industrial Commission
Of Ohio
Division Of Safety & Hygiene
246 N. High St., Col. O. 43215

October 5, 1983

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

Re: Gertrude Scott
OD #20335-22
Fisher Body Division
General Motor Corporation
Elyria, Ohio
Risk #SI 2647

Dear Ms. Spencer:

On September 2, 1983, a visit was made to the Fisher Body plant in Elyria, Ohio for the purpose of gathering industrial hygiene information, relative to the occupational disease claim of Gertrude Scott OD #20335-22.

The claimant alleges that her condition which has been diagnosed as "Allergic Respiratory Disease" is as a result of "Exposure to TDI (Toluene 2,4 di-isocyanate) Fumes", at work.

The claimant's previous work history obtained from her original employment application is as follows:

3-1-72 to 7-30-73

Lake Erie Plastics
Adams and Bond
Elyria,

(The company is now doing business as
The Ames Company (216) 323-7511)

The claimant's complete work history at Fisher Body was provided by the company and has been enclosed. The highlighted portions of the claimant's working history represent the amount of time that the claimant worked in Department 5 (Badge number 052...). The amount of time worked in Department 5 adds up to approximately 26 weeks spread out over a seven and one half year period.

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According to A Guide to the Work-Relatedness of Disease, Toluene Di-isocyanate (TDI) is a liquid used in the manufacture of polyurethane. The liquid, vapor, and aerosol forms are powerful irritants to all tissue. The vapor is a potent respiratory irritant and sensitizer. In some cases where sensitization has occurred, violent respiratory symptoms can develop on exposure to very low concentrations. It is not now known if all or only some people may become sensitized.

The irritating effects of TDI include rhinitis (inflammation of the mucous membrane lining of the nose), pharyngitis (inflammation of the pharynx), bronchitis, and in severe exposures inflammation of the bronchioles. Occasionally the onset is with an attack of asthma. Usually the signs and symptoms of chest involvement subside when the exposure ceases.

The reference goes on to state, under the heading of "signs and symptoms, sensitization reaction."

- onset (usually without realization) of respiratory problems which become progressively worse with continuous exposure to TDI.
- shortness of breath occurring at night (nocturnal dyspnea) and/or a nocturnal cough followed by development of asthmatic bronchitis.
- exposure of sensitized persons to TDI, even at low levels, can promote a severe asthmatic attack, and may cause death.

In some instances, workers with only minimal respiratory symptoms or no apparent effects for several weeks at low level exposures may suddenly develop an acute asthmatic attack.

Acute respiratory effects from TDI exposure are often completely reversible, but continued exposure of affected workers to TDI vapor may result in:

- Asthmatic Bronchitis,
- Broncho-pneumonia, and
- Chronic Bronchitis, Emphysema, and COR Pulmonale (right heart failure)

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According to the Hazard Line print-out for TDI (enclosed) the applicable limits for exposure to TDI are as follows:

- OSHA 0.02 ppm C
- NIOSH Recommended TWA 5 ppb (0.005 ppm)
- ACGIH 0.02 ppm.*

(The ACGIH recently lowered their TLV to 0.005 ppm)

Again from the reference, A Guide To The Work-Relatedness Of Disease, "Elkins published a report on a five (5) year study of TDI exposure in 14 plants. The author concluded that 0.01 ppm for TDI was "a not unreasonable limit." "

"Glass and Thom report a study in 3 plants in New Zealand. In one plant where polyurethane foam was produced in a batch molding process, atmospheric TDI concentrations ranged from 0.003 to 0.0123 ppm and three cases of respiratory sensitization were reported in one year."

"In a second plant (similar to the first), TDI concentrations in air ranged from 0.005 to 0.100 ppm and two mild cases of coryzal (nasal irritation) symptoms, and one case of possible sensitization, and one case of acute asthma attack on heavy exposure (with no evidence of sensitization) were reported."

"In the third plant, polyurethane foam was produced in the continuous slab process. Air concentrations of TDI ranged from 0.000 to 0.018 ppm. Two cases of mild coryzal symptoms with no evidence of sensitization were reported... .)

Threshold Limit Values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. Because of wide variations in individual susceptibility, however, a small percentage of workers may experience discomfort from some substances at concentrations at or below the threshold limit; a smaller percentage may be affected more seriously by aggravation of a pre-existing condition or by development of an occupational illness.

The company monitors the air in Department 5, in 42 locations on a monthly basis, with MDA Model 7005 and MDA MCM personal, TDI monitoring equipment.

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The sensitivity of this as reported by a company representative is such that readings under 4 ppb (0.004 ppm) only indicate the presence of TDI, where as an instrument reading of 5 ppb (0.005 ppm) or greater is reported to be an accurate indication that a concentration of 5 ppb or a greater amount is present.

The representative stated that the company strives to maintain a level below 5 ppb. He further stated that over the years the company has collected so much data in regard to TDI monitoring results, that records would be made available for specific time periods if requested. The company does not deny the claimant's exposure to the presence of TDI only that she was not exposed to levels in excess of the OSHA permissible exposure limit (PEL) of 0.02 ppm (20 ppb).

The particular job classifications at which the claimant worked while in Department 5 were practically inclusive of all jobs in the department. For example, strip, trim, and clean is probably one of the most ambiguous classifications in the department. Particular jobs were selected and worked based upon plant seniority.

The company provides pulmonary function testing and chest x-rays for all employees working in Department 5. Records indicate the existence of chest x-rays for the claimant dated July, 1973 and January, 1976, as well as a pulmonary function test dated January 7, 1976. Also, in the facsimile file is a medical history report dated July 10, 1973, upon which the claimant denies having asthma.

The company contends that possible exposures at the claimant's previous place of employment (Lake Erie Plastics) or the likelihood of a pre-existing condition (recurrent episodes of allergic bronchial asthma with bronchitis, since 1976). From a letter written by Dr. Radha Baisnab May 29, 1981) may deem this case non-occupational in nature.

In closing the claimant had the very real potential for exposure to TDI vapors for a period of about 26 weeks spread over a 7-1/2 year period. However, because of individual sensitivity, an incomplete past medical history, and the possibility of potential exposures at a previous place of employment, the fact that whether or not the claimant's condition is as a result of exposure to TDI vapors at Fisher Body cannot be firmly established from the

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industrial hygiene perspective. As noted earlier, the potential for exposure is firm, but pinpointing the precipitative agent is difficult.

Respectfully submitted,

William J. Brutsche
William J. Brutsche
Industrial Hygienist

WJB/get

Enclosure:

Employment history of the claimant hazard line printout
TDI (4-12-83)

CERTIFICATE OF AUTHENTICITY

I certify that the microphotographics on this roll of film or microfiche are true and accurate productions of records generated by or received by the Ohio Bureau of Workers' Compensation, an agency of the State of Ohio, as required by Ohio Revised Code Section 4123.52 and Section 9.01 which require optimum protection from hazards of accidental destruction of records.

It is further certified that the photographic processes used for microfilming the above records were accomplished in a manner and on microfilm which meets the requirements of the National Bureau of Standards for permanent photographic copy.

William D. Kaye
Supervisor, Microfilming Unit

Date Filmed: 1-3-85

By: *John Frey*
(Camera Operator)

BWC-8226 (11/82)
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