



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

November 28, 1978

Co File

Legal Section
Industrial Commission
246 N. High Street, 1st Floor
Columbus, Ohio 43215

O.D. 12688-22
William T. Smith
Fisher Body
Elyria, Ohio

Attn: Burton Hirsch

Dear Mr. Hirsch:

On March 7 and May 17, 1978, visits were made to the plant of Fisher Body Division, General Motor Corporation, P.O. Box 760, Elyria, Ohio, 44035, to check conditions under which the claimant had worked. There are approximately 2,256 hourly employees and 429 salary employees at this location.

The company manufactures urethane foam seats, wheel covers, various types of engines, and die castings.

According to records, the claimant's experience with this company is as follows:

October 2, 1967	Tool & Die Hardener, Tool Room, Department 20
December 2, 1974	Laid off
March 9, 1975	Sick leave (hospitalized, lung removed)
June 5, 1975	Laid off
October 13, 1975	Rehired as Tool & Die Hardener, Tool Room
February 16, 1978	Laid off
March 13, 1978	Rehired as Tool & Die Hardener, Tool Room

Medical records showed that the claimant had received a total of eight chest X-rays during his employment with Fisher Body. The dates of these are as follows: 1967 (pre-employment physical), 1968, 1969, 1971, 1972, 1973, 1974, and 1975. All X-ray results were negative. However, the 1973 chest X-ray noted "calcification hilar nodes Right with widening and accentuated hilar shadows." The claimant stated that he was not informed that this notation was made on his chest X-ray. According to management, the company medical representatives considered this condition to be normal with the aging process. The chest X-ray in October, 1975, showed that the claimant had surgery for the removal of his right lung.



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Prior to working for Fisher Body, the claimant had previously worked as a heat treater for a number of other employers. His work history prior to his employment with Fisher Body is as follows:

January, 1967 -
September, 1967

Vacuum Heat Treater Operation
Aspro-Vacuum Heat Treat Inc.
5927 West 130th St.
Cleveland, Ohio

September, 1966 -
January, 1967

Plater
Kyron Plating Co.
West 114th St.
Cleveland, Ohio

July, 1966 -
September, 1966

Heat Treater
Rigid Tool
Clark Street
Elyria, Ohio

March, 1966 -
May, 1966

Manager, Plating Plant
Lancer Plating
South Logan St.
Elyria, Ohio

February 1943 -
September, 1953

Metallurgical Processor
N.A.C.A.
Cleveland Airport
Cleveland, Ohio

The claimant's duties included the heat treating of all tool steels that are required to build dies. No resins were used in this process. The original procedure for this heat treating operation required the use of sodium cyanide. According to management representatives, the sodium cyanide was replaced in approximately November, 1975, by another substance referred to as Cherry-red. Enclosed is a detailed description of the heat treating process using Cherry-red as provided by Fisher Body. Company officials stated that the same procedure was used for sodium cyanide. A laboratory analysis of a bulk sample of the Cherry-red showed that no free silica nor cyanide were detected.

During the claimant's first few years with Fisher Body, the sodium cyanide heat treating operation was performed in an open work bench area. In approximately 1970 or 1971, the cyanide process was moved and equipped with local exhaust ventilation. The claimant stated that the ventilation provided was always inadequate. The ventilation system was not in operation at the time of either visit. The claimant also stated that whenever he used sodium cyanide, he felt a burning sensation in his nose and felt nauseated.

At the time of the first visit, the entire operation involving cherry-red was shut down and the claimant was laid off. On a return visit on May 17, 1978, the operation was still indefinitely out of operation; however, the claimant had returned to work. The heat treating process never ran continuously. It was only used intermittently whenever needed. At times it was out of operation for weeks or even months. No documentation could be made in regard to the exact length of times or dates the heat treating process actually did run.

The claimant stated that whenever he used the sodium cyanide it was always in the form of a powder. The procedure he followed was not a molten cyanide bath. According to Mr. Smith, the tool steel was heated to approximately 1600° after which it was then rolled in powdered cyanide. The tool was then reheated and rolled in the powder for two additional times. This procedure was completed upon dipping the heated work into water for cooling. The claimant worked with various sizes of tool steels up to four (4) inches in diameter. He stated that "smoke and fumes were given off when the heated piece was rolled in the cyanide powder."

According to company officials, skin contact was avoided and protective clothing was required in the sodium cyanide surface-hardening process. Attachment I is a material safety data sheet for cherry-red as supplied by the manufacturer. The cherry-red does contain sodium carbonate (soda ash). The following excerpt was taken from Frank A. Patty, Industrial Hygiene and Toxicology, Volume II, page 2274:

It is common practice to provide exhaust ventilation for cyanide baths. This is not because of the production of cyanide fume. The fume consists essentially of sodium carbonate, which is somewhat irritant.

The following excerpt was taken from the U.S. Department of Health, Education, and Welfare, NIOSH, A Recommended Standard for Occupational Exposure to Hydrogen Cyanide and Cyanide Salts:

Hydrogen cyanide (HCN) and its sodium, potassium, and calcium salts manifest their toxicity by way of a common mechanism, namely, inhibition of the respiratory enzyme cytochrome oxidase. This inhibition causes cellular anoxia and, if a large enough dose is received, results in death. Skin contact with solutions of cyanide salts can cause itching, discoloration, or corrosion, which is most likely due to the alkalinity of the solution. Cyanide salt aerosols can cause upper respiratory irritation. Enlargement of the thyroid glands and changes in the chemical and cellular composition of the blood of employees exposed to cyanide have also been reported. An increased occurrence of the subjective symptoms of headache, weakness, changes in taste and smell, irritation of the throat, vomiting, effort dyspnea, lachrymation, abdominal colic, precordial pain, and nervous instability has been noted among workers having long term occupational exposure to low concentrations of HCN.

In summary, the claimant had used sodium cyanide (exposure concentrations unknown) intermittently in the heat treating operations over a period of approximately eight (8) years. The sodium cyanide used in this surface-hardening process was replaced by proprietary cherry-red in November, 1975. This material switch occurred after the claimant had surgery for removal of his right lung in March, 1975. Upon returning to work in October, 1975, from sick leave and layoff which followed, the claimant continued to use the sodium cyanide whenever the heat treating process was in operation until the cherry-red substitute was purchased. The claim was filed in December, 1976.

It is probable that the claimant received exposure to sodium carbonate, which is somewhat of a respiratory irritant, during his work with sodium cyanide and also with the cherry-red replacement. The claimant probably also had exposure to low levels of hydrogen cyanide in addition to sodium cyanide and sodium carbonate. Inasmuch as the actual heat treating process using sodium cyanide could not be observed, nor monitored, no meaningful data can be supplied with regard to the presence of any other materials that might have been present at that time.

Sincerely,

Jane A. Tylka

Jane A. Tylka
Industrial Hygienist

ENCLOSURES:

Description of Cherry-Red Heat Treating Process
Attachment I - Cherry-Red Safety Data Sheet

JAT/nlg