



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

July 12, 1982

Legal Section  
Industrial Commission of Ohio  
246 North High Street  
Columbus, Ohio 43215

OD # 18843-22  
Eva M. Dorsey  
General Motors Corp.  
Assembly Division  
Lordstown, Ohio 44482

Attention: Judy Spencer

Dear Ms. Spencer:

On May 13, 1982, a visit was made to the Lordstown Automobile Assembly Plant of General Motors Corporation, for the purpose of determining conditions under which the above named claimant has worked during two periods of employment. During her first employment at General Motors, from May 22, 1979 until November 26, 1979, Mrs. Dorsey worked as an assembler and spot-welder. She was rehired on June 1, 1981 and worked as a MIG welder until November 10, 1981 when she applied for sick leave. The claimant, whose total length of employment at General Motors is less than one year, had not returned to work at the time of the visit. Mrs. Dorsey's condition has been diagnosed as asthmatic bronchitis, which her doctors feel has been caused by exposure to welding fumes. In addition, although no indication is made in the facsimile file, the claimant is apparently a cigarette smoker. A former fellow worker of the claimant stated that she was "definitely a cigarette smoker," although he could not say how much she smoked.

An observation of the work area in question indicates that welding fumes which are generated are immediately exhausted or dispersed. Slot type exhaust ventilation, approximately three or four feet directly over the welding areas, appears to be drawing the fume away from the work area and the welder's breathing zone. Also, considerable dilution ventilation is provided in this area. The company spokesman stated that the company has never had complaints of health problems in this area and that the claimant, during the six month period she worked as a MIG welder, never complained of any respiratory problems to the company medical department.

In the gas metal-arc (MIG) welding process at G.M., AWS type E70S-3 solid welding wire is used, with carbon dioxide as the inert shielding gas. E70S-3 wire is used widely as a standard carbon

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dioxide filler wire for general purpose fabrication of low to medium carbon mild and low alloy steels. In addition to welding fume, possible contaminants from the process include oxides of nitrogen and ozone. Personal breathing zone monitoring for possible exposures to welding fume was conducted with the use of a personal sampling pump equipped with a tared PVC filter. Ozone, nitrogen dioxide and total oxides of nitrogen were monitored near the welder's breathing zone with Draeger length of stain detector tubes.

The employee TWA exposure to welding fume was  $2.1 \text{ mg/M}^3$ , well below the suggested TWA exposure limit of  $5.0 \text{ mg/M}^3$ , which has been adopted by the American Conference of Governmental Industrial Hygienists (ACGIH). The possible gases, oxides of nitrogen and ozone, were not detected during several checks throughout the day with the Draeger tubes. In summary the testing of the welders' breathing zone for possible contaminants indicates welding fume concentrations at less than one-half the suggested ACGIH threshold limit value (TLV), while the concentrations of gases were below the detectable limits of the Draeger tubes. The test results also add credence to the earlier statements in respect to the removal of contaminants by the ventilation system.

In as much as this claimant worked for less than six months as a MIG welder in a well ventilated atmosphere with a relatively low contaminant level, it is not likely that her symptoms have been caused by work related conditions. Bronchitis, a form of chronic obstructive pulmonary disease, in addition to being caused by industrial irritants, may also result from cigarette smoke. This claimant, according to a fellow worker, is a cigarette smoker, and it has been well documented that cigarette smoke can cause the very same symptoms or act as an additive factor with industrial contaminants in causing bronchitis.

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.

Sincerely,

*Donald B. Meeker*

Donald B. Meeker  
Industrial Hygienist

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