



PLAINTIFF'S EXHIBIT

FD 1781

Inter Office

Personnel and
Organization StaffMr. G. P. McKay, Manager
Ypsilanti Plant

March 30, 1978

cc A. G. Constantinides, D.O.
L. Jacob
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Subject: Plant-wide Industrial Hygiene Survey

As a result of the plant-wide industrial hygiene audit completed on November 1, 1977, a follow-up survey was conducted the week of January 9, 1978 to quantitate employee exposure levels to potentially hazardous materials and/or operations. Employee breathing zone air samples were obtained for the following toxicants and operations:

- Chronic acid and sulfuric acid mists at the chrome plating operation in Department 491-0.
- Lead and tin fumes at selected soldering operations in departments 460-5, 497-0, 455-6, and 455-7.
- Solvent vapors from painting and miscellaneous operations in departments 497-0 and 493-7.
- Copper dust and total particulate at the lo-swing lathes in department 452-4.
- Asbestos fibers at the injection molding operations in department 452-5 and the lo-swing lathes in department 452-4.
- Oil mist at the Verson press in department 455-9.
- Carbon monoxide levels throughout plant facilities.

Results of these surveys are attached and show that all exposure levels found were within Ford Motor Company industrial hygiene standards. Applicable recommendations to ensure these levels are maintained and employee health is protected are contained in the "recommendations" section of this report.

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Industrial Hygienist
Industrial Hygiene & Toxicology Department

MS
Attachments (7)

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Recommendations

Chrome Plating Operation

- . Develop a comprehensive ventilation maintenance and evaluation program to ensure the ventilation system is functioning properly and effectively at all times.
- . Make plating operation supervisory personnel and employees aware of procedures and requirements contained in Industrial Relations Bulletin No. 10, entitled: "Safe Use and Handling of Corrosive Materials (strong acids, strong bases, caustics, etc.)."

Lo-swing Lathe and Injection Molding Operation

- . Medically evaluate employees found to have asbestos exposure levels above 0.1 fibers/cc (see data sheet and refer to OSHA standard 1910.1001).
- . Re-engineer and balance present exhaust systems to help control copper dust, asbestos fiber and total particulate exposures.

Verson Press

- . Provide oil mist collector; for levels found during the survey (see data sheet) were approaching the permissible exposure limit and at given times are likely to be exceeded. In addition, continuous employee complaints may be expected if oil mist levels are not reduced.

Soldering Operations

- . Develop a comprehensive ventilation maintenance and evaluation program to ensure exhaust systems are functioning properly and effectively at all times.
- . Comply with all applicable procedures and requirements as guidelineed in the Ford Motor Company Lead Control Program.

Data Sheet

Industrial Hygiene Services Section - Industrial Hygiene & Toxicology Department - Employee Health Services

Insilanti Parts Plant - Plant-wide Survey

January 2, 1978 through January 13, 1978

Chrome Plating Operation - Department 4910

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8-Hr. Time-weighted Avg. Exposure Limit (TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Chromic Acid	0.1 mg/m ³	0.1 mg/m ³ for 15 minutes
Sulfuric Acid	1.0 mg/m ³	1.0 mg/m ³ " " "
Equivalent Exposure (additive effects)	1.00	2.0 " 30 "

Location & Remarks

Results

Department 491-0

	<u>Chromic Acid</u> <u>mg/m³</u> (TWAE)	<u>Sulfuric Acid</u> <u>mg/m³</u> (TWAE)	<u>Equiv.</u> <u>Exposure</u>
Employee P. G. Schall, SS #368-66-7418, loading parts	.006	--	
" W. F. Shapley, SS #540-48-5734, handling stock	.014	--	
" A. B. Micevicius, SS #364-70-7253, setting up plater	.005	--	
" E. A. Townsend, SS #385-40-1950, maintaining solutions	.002	.097	.12

Sample Data Retrieval Nos.: AK 512 through AK 516

Equipment: MSA Model G Air Sampling Pumps; PVC and AA Millibore filters in plastic cassettes

Analysis: Ford Motor Company Industrial Hygiene Laboratory

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Soldering Operations

Departments 4605, 497-0, 455-7, and 455-6

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8-Hr. Time-Weighted Avg. Exposure Limit (TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Lead (Pb)	0.2 mg/m ³	0.6 mg/m ³
Tin (Sn)	2.0 mg/m ³	
Equivalent Exposure (additive effects)	1.00	2.00 for 30 minutes

Results

<u>Location & Remarks</u>	<u>Pb mg/m³</u>	<u>Sn mg/m³</u>	<u>Equiv. Exposure</u>
<u>Department 460-5</u>			
Employee V. Foster, SS #376-32-0457, hand soldering printed circuits	.001 (TWAE)	.013 (TWAE)	.002 (TWAE)
<u>Department 455-7</u>			
Employee L. C. Schoffnea, SS #344-09-8170, hand soldering clips to 4" field coils	.013 (STEL)	.21 (STEL)	.18 (STEL)
<u>Department 455-6</u>			
Employee R. A. Ferguson, SS #369-46-1208, solders ends of field coils	.01 (TWAE)	.01 (TWAE)	.01 (TWAE)
<u>Department 497-0</u>			
Employee L. Murphree, SS #383-34-2766, tin soldering misc. parts	.041 (TWAE)	.02 (TWAE)	.22 (TWAE)

Sample Data Retrieval Nos.: RMK 295 through RMK 298

Equipment: Bendix BDX 41 Personal Air Sampling Pumps with 37mm membrane filters in plastic cassettes

Analysis: Ford Motor Company Industrial Hygiene Laboratory; atomic absorption spectrophotometry

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Data Sheet
Solvent Operations
Departments 497-0 and 493-7

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8-Hr. Time-Weighted Avg. Exposure Limit(TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Toluene (skin)	200 PPM	500 PPM for 10 minutes
Xylene	100 PPM	150 " " 15 "
Benzene (skin)	1.0 PPM	10 " " " "
Methyl Chloroform	350 PPM	450 PPM " " "
Mineral Spirits (as hexane)	500 PPM	750 PPM " " "
Equivalent Exposure (additive effects)	1.00	2.00 " 30 "

Results

<u>Location & Remarks</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylene</u>	<u>Mineral</u>	<u>Methyl</u>	<u>Equiv.</u>
<u>Department 493-7</u>	<u>PPM</u>	<u>PPM</u>	<u>PPM</u>	<u>Spirits</u>	<u>Chloroform</u>	<u>Exposure</u>
<u>Employee SS #</u>				<u>PPM</u>	<u>PPM</u>	
N. Kalowick 234-36-8217 spray painting shock absorbers (set-up man)	.03	.03	9.0	17.4	--	.12
<u>Department 497-0</u>						
J. Ing 366-46-0328 painting distributor caps	.05	.52	0.23	1.6	--	.06
C. Patrian 372-34-3606 Eckman drill operator	--	--	--	--	12	--

Sample Data Retrieval Nos.: RMK 299 through RMK 301

Equipment: Dupont P200 Personal Air Sampling Pumps with standard size activated charcoal tubes

Analysis: Ford Motor Company Industrial Hygiene Laboratory; gas chromatography

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Data Sheet

Lo-Swing Lathe and Injection Molding Operations

Departments 452-4 and 452-5

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8 Hr. Time-Weighted Avg. Exposure Limit (TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Asbestos Fibers	2.0 fibers/cc	10 fibers/cc for 15 minutes
Copper Dust	1.0 mg/m ³	2.0 mg/m ³ " " "
Total Dust	15 mg/m ³	

Results

<u>Location & Remarks</u>	<u>Asbestos fibers/cc</u>	<u>Copper Dust mg/m³</u>	<u>Total Dust mg/m³</u>
<u>Department 452-5</u>			
Employee E. H. Publiski, SS #385-40-1505, injection mold operator	.09 (TWAE)	--	--
Same as above	0.1 (STEL)	--	--
<u>Department 452-4</u>			
Employee F. Williams, SS #376-34-8813, lo-swing lathe operator #1	1.2 (STEL)	.15 (TWAE)	6.24 (TWAE)
" B. Norris, SS #426-78-1709, #2 " " operator	1.3 (STEL)	.07 (TWAE)	4.0 (TWAE)
" F. L. Linn, SS #233-50-2774, #6 " " "	.56 (STEL)	.15 (TWAE)	3.5 (TWAE)
" J. Borgman, SS #370-48-3101, #4 " " "	2.28 (STEL)	--	--
" D. Boone, SS #375-48-4630, #3 " " "	--	.07 (TWAE)	2.72 (TWAE)

Sample Data Retrieval Nos.: RMK 280 through RMK 286 and RMK 289 through RMK 293

Equipment: Bendix BDX 41 and MSA Model G Personal Air Sampling Pumps with AA Millipore filters in plastic cassettes

Analysis: Ford Motor Company Industrial Hygiene Laboratory; Copper Dust and Total Dust
Clayton Environmental Consultants; Asbestos Fibers

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Data Sheet

Verson Press

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8-Hr. Time-Weighted Avg. Exposure Limit (TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Oil Mist	5 mg/m ³	10mg/m ³ for 30 minutes

Results

Department 455-9

Location & Remarks

Oil Mist
mg/m³

Employee

A. Waller, SS #399-05-6167, Verson press operator

3.09 (TWAE)

S. R. Smith, SS #377-60-0509, loading parts for press

2.16 "

Data Retrieval Nos.: RMK 302 and RMK 303

Equipment: MSA Model G Personal Air Sampling Pumps with glass fiber filters in plastic cassettes

Analysis: Ford Motor Company Industrial Hygiene Laboratory

Plant-wide Carbon Monoxide Survey

Permissible Occupational Exposure Limits to Airborne Contaminants:

	<u>8-Hr. Time-Weighted Avg. Exposure Limit (TWAE)</u>	<u>Short-Term Exposure Limit (STEL)</u>
Carbon Monoxide (CO)	50 PPM	400 PPM for 15 minutes

Results

<u>Area/Department*</u>	<u>Range - PPM</u>	<u>Comments</u>
Oil filled coils	5-10	
PGM (bumper shock)	5-10	Mig welders - 5-8 PPM
A/C clutch	6-20	
Horn	8-25	25 PPM @ paint dip operation
Fox Strut (sub-assembly)	8-35	25 PPM @ mig welders
Press Room	6-20	
Tool Room	5- 8	
Shock & miscellaneous annex operations	5-32	

*Readings taken at employee work stations

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Data Sheet

Carbon Monoxide (continued)

<u>Area/Department*</u>	<u>Range - PPM</u>	<u>Comments</u>
Warehouse	5-25	25 PPM @ loading docks
Building #1 (starter)	12-30	
Powerhouse	3-5	
Distributor	7-38	
Regulator	6-17	
Quality Control	4-6	
Oil House	3-20	
Garage Area	15-25	

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* Readings taken at employe work stations
Equipment: Energetic Science Carbon Monoxide Ecolyzer Model 2400