FILE NAME: Goodyear (GY)

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DIVISION OF SAFETY AND HYGIENE
THE INDUSTRIAL COMMISSION OF OHIO

October 19, 1964

The Goodyear Tire & Rubber Company
Akron, Ohio

1) On September 15, 1964 a visit was made to the above named company to check various conditions involving industrial health, at the request of the Union. The company also concurred in the request.

2) Contact was made with Robert Manning, Safety Director; T. J. Hemsley, Chairman of the Union Safety Committee; H. L. Munford, Vice Chairman of the Union Safety Committee; W. L. Wadworth, Secretary of the Union Safety Committee; J. G. Ricketts, District Plant Manager, Pittsburgh Plate Glass Company; Charles Reigle, Maintenance Chemical Resistance Coating, Pittsburgh Plate Glass Company; R. K. Rubright, Manager, Engineering, Plant C, Goodyear Tire & Rubber Company.

3) The company manufactures rubber, polyurethane, chemicals and other products.

4) PLANT C - SPRAY PAINTING

The company has been spray painting toilets in Plant C with an epoxy resin. They use an airless paint spray gun. They apply approximately 8 mills to the surface being coated. Following is an analysis of the paint used:

a. Enamel:

Pigment			40.3%
Titanium Dioxide	89.0%		
Silica and Silicates	11.0%		
	100.0%		
Vehicle			59.7%
Non-Volatile		56.3%	
Polyester Resin	100.0%		
Volatile		43.7%	
Aromatic Hydrocarbon	15.3%		
Xylol	68.5%		
Ethyl Cellosolve Acetate	16.2%		
	100.0%	100.0%	100.0%

b. Curing Agent:

Non-Volatile		54.4%
Epoxidized Oil	100.0%	
Volatile		45.6%
Aromatic Hydrocarbons	79.3%	
Ethyl Cellosolve Acetate	20.7%	
	100.0%	100.0%

The two ingredients are mixed in a 50-50 ratio before applying.

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A typical locker room is approximately 15' x 9' x 9'. It requires from eight to ten gallons of the paint to cover one locker room and this is done in about eight hours. There is a fan in the room to circulate the air in the room during painting and some air spills out the door. In one locker room that was carefully studied, the area outside the door was approximately 75' x 75' x 20' to the ceiling. About 20% make-up air is used in heating this area. In other words, eight to ten thousand cubic feet of air per minute is added. Exhausts in other parts of the building remove the excess air so the building is actually under a vacuum. There was, of course, pocketing of paint mist and vapors outside the door of the washroom that was being painted.

Two or three persons are used on a crew in spray painting toilets. One person does the spray painting and another mixes the paint and sees that everything goes well. The third person, of course, stands outside the locker room door. Before July 1, employees complained about undue exposure to mists and vapors and the company stopped all operations until such time as a qualified industrial hygiene engineer from the State of Ohio could be called in. Employees originally wore a gauze type respirator for spray painting, but they had access to other types of respirators, such as a chemical cartridge respirator which would have been more effective. Employees were eventually provided with an air line rubberized fabric helmet, manufactured by the Chicago Eye Shield Company and an Ace High disposable paper suit. It should be mentioned this work is done only over the weekends. The suits would be used once and then discarded.

5) The threshold limit values of some of the ingredients used are as follows:

INGREDIENTS	THRESHOLD LIMIT VALUES (Parts per Million)
Aromatic hydrocarbons	500
Cellosolve acetate (probably ethyl)	100
Xylol	200

6) It is probable that the threshold limit values are exceeded in the room where the spraying is done and just outside the door. However, employees both inside and outside the washroom have access to airline helmets and/or chemical cartridge respirators so they should be adequately protected. This is maintenance work; not production work. How much spray painting of this character will be done is not known. However, it is probable that all washrooms throughout the entire plant will eventually be spray painted. One employee doing spray painting complained of respiratory irritation. It should be pointed out that there is no evidence to connect that irritation with his occupation. The diagnosis on this case is reported to be allergic bronchitis.

7) No recommendations are made with respect to spray painting operations.

8) PLANT C - DEPARTMENT 070 - POLYURETHANE CURING

In this department polyurethane seats for automobiles and crash pads are made. This company has made numerous tests for

Tolylene Diisocyanate (TDI) and report that the threshold limit value for TDI has never been exceeded. The problem, however, is not TDI vapors, but is a fog of mysterious origin.

9) The polyurethane curing department is approximately 200' x 125' x 24' to the ceiling. Air is exhausted by the process at the rate of 96,000 cubic feet per minute (cfm). Replacement air comes from whatever source it can. In the summer it comes through open windows.

10) The mysterious fog, probably is ammonium chloride, the ammonia coming from the amines that are used in the TDI process and the hydrogen chloride (HCL) coming from another plastic process in the same plant. In order to overcome the fog, man-cooling fans were set up at different locations to blow the accumulated fog from the dead air spaces.

11) The roof of the building was visited and it was observed that the stacks from hydrogen chloride scrubbers extended only approximately twelve feet above the roof. On the date of this visit, there was a strong northeast wind and the visible vapors or mist from the scrubber tanks dropped to the roof within twenty or thirty feet of the stacks. The effluent continued to drift along the roof a distance of 250 feet where the inlet for the ventilation system for the entire plant are located. Incidentally, this was an ideal time to visit the plant because the northeast wind made conditions as bad as any ever encountered in the plant except, possibly, in the wintertime, when the windows are closed.

12) Thirty or forty thousand cfm are added to the polyurethane curing area. The company plans to provide an additional eight thousand cfm of tempered replacement air.

13) Ammonium chloride is a nuisance material and no TLV has been set on it by the American Conference of Governmental Industrial Hygienists. It is not considered toxic and an abundance of it has been encountered in the galvanizing industry without causing any apparent ill effects to employees.

14) It is suggested that:

a. The height of the stacks be increased as much as possible, and, if possible, the diameter at the point where they are discharged, be decreased so as to force the effluent higher into the air.

b. The company provide replacement air as they had planned.

15) PLANT C - DEPARTMENT 056 - SEAMING (CEMENTING) ROOM

In this room Minute Man Missiles are manufactured. The room was approximately 15' x 40' x 14' to the ceiling. No exhaust ventilation is provided. However, there are two windows. About three quarts of Toluene is used per week. Toluene is a hydrocarbon which has a threshold limit value of about 200 ppm.

16) The engineering department is in the process of providing local exhaust ventilation by means of 8" diameter flexible duct, together with an appropriate hood. The velocity of the air in the duct will be about 1500 or 2000 fpm.

Cleaning (Cementing) Room
10-19-56 (4)

17) Neither Union or Management considered it necessary to visit this department since the company already has plans for providing exhaust ventilation. No recommendations are made.

DeWitt Huffman,
Assistant Chief
Engineering and Hygiene.

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