



TO NAME	DEPT	DIVISION	FILE CODE	DATE
3. F. Hecht	General Mfg. Manager	Chemcial		January 2, 1968
FROM NAME	DEPT	DIVISION		PLANT OFFICE
P. M. Roggenbaum	Industrial Hygiene	Personnel		Highland Park

SUBJECT
Periodic Industrial Hygiene Survey

A periodic industrial hygiene survey of the Trenton Chemical Plant was conducted by A. H. Gomez and the writer during the period of December 4 through December 6, 1967. Concentrations of air-borne dust, toluene, methyl ethyl ketone and monochlorobenzene vapors and carbon monoxide gas were determined. Exhaust ventilation systems were evaluated. The data pertinent to the recommendations listed below appear on the attached data sheets. Other data is retained in our files and is available upon request.

Summary and Recommendations

1. Air-borne Dust - Excessive concentrations of air-borne asbestos dust were measured in the breathing zone of the employees who work on the balcony in the Brake Lining Building. It was understood from Plant Personnel that a project has been initiated which will result in the revamping of this operation. The following are recommendations irrespective of the completion of the proposed project:
 - (a) The employees on the balcony should wear approved type respiratory protection until the project has been completed and the air-borne dust concentrations determined.
 - (b) The transferring and weighing of reclaimed asbestos should be done under an enclosed type exhaust ventilated hood with a minimum exhaust volume of 75 cubic feet per minute (cfm) per square foot of hood opening.
 - (c) The balcony floor and mixers should be cleaned daily with an industrial type vacuum cleaner.
2. Solvent Vapor - Excessive solvent vapors were measured at the brake lining extruders, brake lining adhesive application, and at the drum-off area for the new paint mixers in the Process Building. The following recommendations are therefore made:
 - (a) An exhaust ventilated drying hood should be installed between the two brake lining adhesive application operations.
 - (b) The doors on the brake lining drying hoods must be kept in a closed position so the exhaust system will capture the solvent vapor. If enforcement is not possible, metal sheets

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The exhaust ventilation systems discussed under Recommendation 3c do not provide an effective capture velocity. In most instances the capture velocity is zero. The low capture velocities are due to changes in the method or process without corresponding changes in the ventilation system, insufficient air volumes, crimped or broken flexible duct work or poorly designed systems. Toxic materials such as lead and zinc chromate are poured from the balcony into the mixers on the main floor. It is imperative that the exhaust systems provide effective control at locations where the materials can become air-borne. Therefore, it is recommended that a capture velocity of 100 fpm be provided at the operations in question.

Carbon Monoxide - The State of Michigan Division of Occupational Health has established the limit for carbon monoxide at 50 ppm. The limit was consistently exceeded in the shipping and receiving area of the Brake Lining Building. Until the gasoline powered lift trucks are replaced with battery operated trucks, the engines should be kept tuned as finely as possible. This will serve to reduce exhaust emissions.

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Data Sheet
Asbestos Dust Concentration

<u>Location</u>	<u>Concentration in mppcf**</u>
Maximum Allowable Concentration	5
Balcony - Load Mixers	15*
Repeat Sample	13*
Repeat Sample	13*
Repeat Sample	10*
Dump Asbestos From Balcony To Downstairs Mixers	1
Brake Lining Grinding - Inspection - West Table - East Man	less than 1
Brake Lining Grinding - Inspection - East Table - West Man	1.7
Number 1 Saw (General Air Sample)	1.2
Number 3 Saw (General Air Sample)	1.1
Number 4 Saw (General Air Sample)	1.4

*Means the asbestos dust concentration was in excess of the maximum allowable concentration.

**Means millions of particles per cubic foot of air.

Samples were collected at breathing zone level with a Mine Safety Appliances Company Midget Impinger.

Data Sheet

Solvent Vapors

<u>Location</u>	<u>Concentration in Parts of Vapor Per Million Parts of Air</u>
Threshold Limit Value For Toluene	200
Threshold Limit Value For Monochlorobenzene	75 (a)
Threshold Limit Value For Methyl Ethyl Ketone	200 (b)
Threshold Limit Value For Xylene	100 (c)
Transfer Brake Lining Material From Mixer To Carts	1400-1600
Shovel Brake Lining Material From Box Into Hopper	1000-17000
Transfer Linings From Extruder Into Drying Racks	150-600
Guide Brake Linings Into Adhesive Applicator	75-80 (b) 40-50 (a)
Unload Brake Lining From Adhesive Applicator	100-300(b) 75-100(a)
Between Adhesive Rack Being Loaded And Ovens	50-500(b)
Drum-off At Paint Tanks In Process Building	100-400(c)

Solvent vapors were measured with a Johnson-Williams Aromatic Hydrocarbon Indicator, Model SS-P.

Data Sheet
Exhaust Ventilation

<u>Location</u>	<u>Air Movement In Feet Per Minute</u>
Brake Lining Building:	
Balcony -	
North Day Mixer #103019	
Hycar Hopper	50-75
Asbestos Hopper	0
South Day Mixer	
Hycar Hopper	50-75
Asbestos Hopper	30-50
New System - South Wall	
3 Sided Hood Enclosure	500-700*
Scales For Large Barrels	100
Scales For Weighing Pails	100
Hazardous Room -	
Extruders - Wooden Boxes	0
Extruders - Drying Racks	50
Adhesive Application - West Unit	100-125
- East Unit	75-100
Adhesive Drying Racks	0
Baker & Perkins - Mix Asbestos & Solvent	0
Cutting Room -	
Hoods Over Presses	0
Cut Linings Into Two Pieces	200-300
Cut Ends To Length	250-350
Grinding Area	
Packing Tables	175-300
Grinding Hoods	300-800*
Old Building:	
Mill Room - (North West Room)	
Mill	0
Middle Mixer	0
End Mixer (#3)	0
Balcony -	
Over Baker-Perkins #2 - Chute	0
- Hood For Small Containers	0

Data Sheet

Exhaust Ventilation

(Page 2)

<u>Location</u>	<u>Air Movement in Feet Per Minute</u>
Over Baker Perkins #3 - Chute	30-50
Chute For Zinc Rich Primer	0
Ball Mill Room - (Middle Room)	
Chute In Middle Of Floor	0
Chute At Side-Zinc Chromate Chute	0-30
Middle Room - North Wall -	
Large Mixing Container	0
Small Mixing Hood	100
Diethylenetriamine Hood	50-75
Bay D2 - Pouring and Weighing	100-150
Bay C2 - H ₂ S Coating Placed In Chute	0
Bay B5 - Mills	
Adamson United	0
Farrel	0
Albert	0
Bay C4 - 2 Hoods For Containers #CW251 & CW524	0
Bay D3 - On Platform - Sidedraft Hood	0

Exhaust ventilation readings are in the form of capture velocities except for the readings with an * which indicates that the reading is a face velocity.

Air movement was measured with an Alnor Velometer, type 3002.

Data Sheet

Carbon Monoxide Concentration

<u>Location</u>	<u>Concentration in Parts of Carbon Monoxide Per Million Parts of Air</u>
Threshold limit value	50
Brake Lining Building:	
General Area of Shipping And Receiving(12-4-67)	50-75
Repeat Sample (12-4-67)	100
Repeat Sample (12-5-67)	100
Repeat Sample (12-6-67)	125
Repeat Sample (12-6-67)	75-100
Power House	less than 15

Carbon monoxide was determined with a Mine Safety Appliances Company
Carbon Monoxide Indicator.



NAME		DEPT	DIVISION	PLANT OFFICE
J. L. Eschelbach		Industrial Hygiene	Personnel	Highland Park
E. R. Lombard		Safety	Chemical	Trenton

SUBJECT PERIODIC INDUSTRIAL HYGIENE SURVEY

The recommendations listed in the survey report have been reviewed. The action taken or planned is given below:

1. Air-borne Dust

A project 7605-68-29 for a revised mixing for brake linings has been approved. The installation of Littleford mixers, blenders, and related equipment bring under control the airborne asbestos dust problem.

- (a) Until the installation is completed employees on the balcony are wearing an approved type of respiratory protection, and the exhaust hoods at the day mixers will be cleaned to improve the existing ventilation and restore the system to design capacity.

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the equipment
...
... (b)

- (b) An enclosed type exhaust ventilated hood at the location of transferring and weighing of reclaimed asbestos will be designed to meet the minimum exhaust volume of 75 cubic feet per minute per square foot of hood opening. The drawings will be referred to your office for comment and if satisfactory after approval is received for the expenditure the hood will be installed.

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- (c) The balcony floor and mixers will be cleaned daily. An industrial type vacuum cleaner is available and can be used as soon as an air supply is installed.

2. Solvent Vapor

- (a) An exhaust ventilated drying hood will be designed, then *from architect*
reviewed with your office and installed when approved. *report*
- (b) The doors on the brake lining drying hoods are kept in *from S. S. S. S. S.*
a closed position. This will require continuous policing
for enforcement. If we are not successful your recommen-
dation to install metal sheets on the sides of the racks
will be followed.

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- (c) A canopy hood which provides a capture velocity of 100 feet per minute has been installed at the paint drum off station.

3. Exhaust Ventilation

- you have put this before now 11-64*
- (a) The brake lining adhesive drying hoods will be increased in number to provide effective capture of the solvent vapor.
- you have put this before now 11-64*
- (b) As indicated in 1. (a) the ventilation at the mixing operations on the balcony of the Brake Lining Building will be improved by cleaning and revision to restore the system to design capacity.
- you have put this before now 11-64*
- (c) The exhaust hoods or exhaust volume will be altered to provide a capture velocity of 100 feet per minute at the locations you list as indicated below:
- you have put this before now 11-64*
- (1.) Canopy hoods for containers CW 251 and CW 524 - a project request will be prepared for approval to obtain a new fan. The existing equipment is not adequate and must be replaced.
- you have put this before now 11-64*
- (2.) Canopy hoods for containers CW 301 and CW 302 - these hoods will be connected into existing exhaust ventilation to provide the capture velocity required.
- you have put this before now 11-64*
- (3.) Side draft hoods for the two Baker Perkins mixers in the northwest mill room present a real problem - a new Pangborn dust collector system has been ordered and these hoods will be connected to it. However, work will have to be done to determine if it is economically feasible and possible to engineer an exhaust hood to meet the capture velocity of 100 feet per minute.
- you have put this before now 11-64*
- (4.) Hockmeyer mixer in the middle room; hoppers on the balcony, which empty into the Baker Perkins mixers; and ball mill room - a new Pangborn dust collector system is on order for this area. The expected completion of this installation is August, 1968.
- (5.) Hopper on the platform at Bay D4 - the Pangborn dust collector at this unit will be cleaned which should restore the capture velocity as required.

- Completed 2-10-64*
- (6.) Zinc rich primer mixer - the hood has been connected to the Pangborn dust collector system. A test will be made to determine capture velocity when the Velometer equipment is received.

4. Carbon Monoxide Gas Concentration

The existing gasoline powered lift trucks will be maintained to reduce exhaust emissions. A new battery powered truck is on order and all future truck replacement for use inside buildings will be battery operated units.

E. R. Lombard
Safety Administrator

ERL/ph

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INTRA COMPANY CORRESPONDENCE

NAME	DEPT	DIVISION	FILE CODE	DATE	PLANT OFFICE
D. L. Eschelbach	Industrial Hygiene	Personnel		July 22, 1968	Highland Park
E. R. Lombard	Safety Admin.	Chemical			Trenton

SUBJECT: Reply on Follow-Up of Periodic Industrial Hygiene Survey Dec. 1967

Corrective action has been taken to improve the control of dust created by the brake lining mixing operations.

1. As I explained to you by phone there will be no additional hoods installed at the location of the transferring and weighing of reclaimed asbestos. There is another scale with existing exhaust ventilation in this same area where the transferring and weighing of reclaimed asbestos can be done with adequate ventilation. This will be satisfactory until the new system is installed.
2. The brake lining mixing area is being cleaned daily with an industrial type vacuum cleaner.

E. R. Lombard
Safety Administrator

ERL/jh

cc: S. C. Enders
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