WALK-THROUGH SURVEY REPORT

Contract #210-77-0096
Whitehead & Kales
58 Haltiner
River Rouge, Michigan 48218

DATE OF SURVEY
September 25 and 26, 1978

DATE OF REPORT
November 20, 1979

The Johns Hopkins University
Baltimore, Maryland

and

The National Institute for Occupational Safety and Health
Cincinnati, Ohio

WALK-THROUGH SURVEY REPORT
Contract #210-77-0096
Whitehead & Kales
58 Haltiner
River Rouge, Michigan 48218

PURPOSE

To determine whether this site would be suitable for inclusion in an in-depth epidemiological, industrial hygiene, and medical study of health hazards in the painting trades.

PERSONS CONDUCTING SURVEY

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Charles E. Billings, Ph.D., Industrial Hygienist, The Johns Hopkins University
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PERSONS PREPARING REPORT

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Dr. Charles E. Billings, Industrial Hygienist, The Johns Hopkins University
Mr. Donald Schott, Industrial Hygienist, The Johns Hopkins University

PLANT CONTACTS

Mr. Mark Larocque, Labor Relations Director
Mr. Jim Francis, Safety Director

UNION CONTACTS

Mr. Rod Hickey, Union Safety Chairman, Local 2341, United Steel Workers, AFL-CIO

DESCRIPTION OF PLANT

This plant consists of about ten process buildings, two administrative buildings, and two personnel buildings. The process buildings are laced with railroad tracks and include a spray booth, paint yard, grit blast building, and the rear wheel building which is 300 feet long. None of the administrative buildings were included in the walk-through survey.

This facility has been in operation since the early 1920's. Presently, flat cars are purchased and each outfitted with a steel superstructure for railroads to haul automobiles - 15 per railroad car. Because of theft and vandalism most railroad automobile cars now include sides and tops. The company has been railroad oriented for about 15 years, exclusively for the last 10. Prior to 1963, they built truck automobile carriers, building structural steel, frames, and tractor wheels. Little repair work is done; the majority of work is assembly of new railroad car automobile carriers. The plant operates five days per week on two shifts per day; both shifts are identical.

PROCESS DESCRIPTION

Metal stock up to 3/17" thick is shaped, punched, cut, and sheared according to specifications. The railroad automobile carrier is assembled by welding in two sections because of size and weight restrictions in various stages. The welded superstructure is grit blasted only to remove rust and spray painted with two coats of white undercoat. After the paint has dried, the superstructure is placed on prepurchased railroad flat cars, welded to the flat car and welded to another superstructure twin which completes the 90 foot car. Finish welding, touch-up of undercoat, and railroad colors are applied to each railroad car. The top is assembled, and aluminum sides and galvanized top are hooked onto the car. The doors are spray painted separately, then the door rails and doors are added to each end to finish the car. Lastly, stencils are used to paint on car specifications and proper railroad insignia.

PAINTING OPERATIONS

Enamel base paints are used for painted surfaces. The railroad car sides and top are not painted, but the railroad automobile car carrier is painted in various stages of assembly in one of three areas:

Paint Spray Booth

The steel superstructures are spray painted with two coats of a white primer before assembly onto the flat car. This primer contains titanium dioxide and less than 0.5% lead. Up to six painters use airless spray guns at one time to paint as many as four one-half superstructure sections at once.

Paint Yard

Three operations are performed here: a) miscellaneous small pieces of superstructure are coated with undercoat, b) the doors and door rails are painted with the proper color alkyd enamel finish coat, and c) stencils are used to paint on the railroad insignia and car specifications. As seventeen different railroad companies have purchased automobile carriers from Whitehead and Kales, the finish coat color varies according to color scheme and paint specifications of the railroad. For example, Chessie System blue contains iron, zinc, and less than 1.14% lead.

Building 59

The ordering railroad color is painted onto the superstructure and undercoat touch-up is completed once welded areas have cooled. After welding and touch-up are finished, a coat of non-skid is applied. About four welders burn on surfaces which have been painted with undercoat.

The paint is applied using airless spray in the booth and yard and by roller and brush in Building 59 near the paint booth. Only in the rear wheel building does exposure to paint vapors take place where personnel do not wear respirators. Each shift generally has six workers in the paint spray booth, seven in the paint yard, fourteen in the rear wheel building, and two mixers.

DESCRIPTION OF WORKFORCE AND PERSONNEL RECORDS SYSTEM

The current plant population in the bargaining unit is 950. Of this number, nine are grit blasters and at least 60 are painters. The current painters fall into the following categories: dipper roller - 4, spray painters second class - 7, spray and/or hand painter first class - 37, paint stenciler and painter first class - 11, and paint mixers - 4.

In addition, a review of the union classifications indicated that there may be some other individuals who could be exposed. These would be category AM-paint yard helper, CX-sand blaster, FH-sand blaster and painter. The numbers in these categories were not determined at the time of the plant visit. In addition, by observing operations, it was noted that some individuals who were repairing and welding various parts of the railroad car might be exposed to fumes from burning-off paint. Most of the grit blasters are using steel shot and do it at a time when the painting operation is not going on.

About 25% of the population are minority groups. There are a total of about 25 to 30 women in the plant and about 4 to 5 of these may be in the painting operation. Minority groups in general include women and black populations. The estimated turn-over for the plant is about 10% per year. The workforce is unionized under the United Steel Workers Union local number 2341.

The personnel records are kept for 25 years in separate folders for each individual. These files include name, address, social security number and age, race and sex, at least on the files viewed. For the past 15 years the payroll files have been computerized and these files include a name, address, and a social security number. Payroll records which could be used to identify painters are on microfilm for the past 15 or more years. From a review of these records it was apparent that in the past more painters had been included in the railroad car operation. However, the exact numbers of painters depended upon the types of railroad cars and industry that were going on in this particular plant at the time.

The employee is entitled to a life insurance policy which begins 30 days after his entry into the plant. However, this insurance terminates at the time of his departure and very few individuals convert the insurance. The retirement and life insurance are non-contributory. At the present time 140 employees are retired. Retirement benefit is allowed after 30 years of employment. However, an employee is vested at 10 years and can claim his first retirement benefits at age 60 with a reduction in the benefit or at age 65. Medical insurance is covered by Travelers and records are kept in the plant for only about three years. In addition to the personnel files this plant has a set of handwritten index cards on the individuals. These cards indicate the same type of information as the personnel files as well as the change of jobs category.

Workmen's Compensation is covered by a self insurance plan. These records are kept for more than three years and are part of the medical file. It was suggested that lost time injury records may go back to 1920.

This plant keeps a separate file of death claims and medical disability claims by year of claim. In 1978 death claims included two to three arterio-sclerotic heart disease causes, two cerebral vascular disease causes, and 14 cancers of which two are cancers of the bladder. There was no indication that the painters were included with any excess among any of the causes of death.

OCCUPATIONAL MEDICINE

The company employs two nurses, one for each shift. The day nurse was interviewed about activities of the medical department. Employees are given a pre-employment physical which is reviewed by the nurse and which consists of a complete past history of diseases, injuries, hospitalization, medications and drugs. Blood pressure is taken and urine is checked with a dip stick for sugar, protein, and specific gravity. Vision

examinations are done and the rest of the physical exam is performed by a contract physician who comes to the plant several times per week as required. Sick calls records are kept on cards and a short note is recorded for each visit to the dispensary. These records are kept for an extended period of time and have never been purged. Patients absent for more than three days with illness are seen by the nurse prior to return to work. A daily log of visits is kept and preserved for five years. Accident reports are preserved for 10 years. The nurse sees approximately 40 work related accidents per month.

The only routine medical monitoring which is performed is the examination of blood leads which have been drawn at the plant and analyzed variously by the state and private laboratories. Records of these blood leads are available as far back as 1965. Male workers who demonstrate an elevated blood lead above the level of 60 are removed from painting. Females with a level of 30 are removed from painting until their blood lead level falls.

INDUSTRIAL HYGIENE PROGRAM

There is no formal industrial hygiene program in effect at this plant. Although the insurance company is Travelers Insurance Company, no safety or industrial hygiene surveys have been made by their people. There was one industrial hygiene survey done by a state agency and a safety compliance inspection performed by MiOsha about two years ago. The safety and industrial hygiene program is directed by one person. The state industrial hygiene survey report showed no over-exposure to paint vapors and inconclusive data on airborne lead fume concentrations. It seems that fume concentration may be significant in the initial superstructure assembly areas, however. The spray booth seems to be well designed and the paint yard is adequate.

The medical department knows what the potential health hazards are at the facility and tailors its physical examinations accordingly. Twice yearly blood leads are performed on painters and have been performed at least annually since 1952, although the company only has records back to 1965. The rescue squad and first aid procedures are excellent; about 30 employees on each shift know first-aid. Safety measures seem sufficient for the most part; use of personal protective equipment was always observed on spray painters in the booth and yard.

DESCRIPTION OF ENGINEERING CONTROLS

One paint spray booth, measuring 22 x 22 x 200 feet (estimate), is used to do most of the spray painting. The booth has about 150 lfm of air pulled in by six fans which are evenly spaced three on each side of the booth. The air is pulled downward through water and then up the exhaust; more than 100,000 cfm of air is pulled through the booth every minute (estimate). The walls of the booth are cleaned every two weeks as are the metal grates on a rotational basis in order to insure proper air flow and filtration.

All painters in the booth wear personal protective equipment which includes coveralls, head protection, gloves, and respirator. The respirator is a MSA Comfo II (number 459422)(NIOSH approved) model complete with organic cartridges and appropriate pre-filters. The pre-filters are changed at least twice daily and the cartridges every day. A respirator maintenance program is in force; each man gets a new facepiece when his becomes dirty. This occurs about once per week. Each soiled respirator is cleaned and stored until needed.

The only other engineering control in the shop used to limit employee exposure to paint vapors is the paint yard. The paint yard is not a spray booth at all, but is an area set aside for small, intermittent painting operations. It is under roof with the east 40 feet of two sides and the east end completely open. Natural ventilation of 100-124 lfm was measured. The area is so large (at least 80 x 300 feet) that parts to be painted can be spread out so far that paint vapor can be dispersed very quickly without exposure to other painters.

When doing big jobs, all painters in the paint yard wear personal protective equipment as described for those in the spray booth. For smaller jobs requiring only a few minutes, respirators are not needed.

No engineering controls are needed in Building 59, where touch-up operations take place. Some ceiling fans are present in an attempt to remove fumes. No other air moving equipment is present.

REPRESENTATIVE COATING COMPONENTS

In the absence of Material Safety Data Sheets, the following information considered to be representative was supplied by Whitehead and Kales:

Blue (DuPont)		White Primer (Dutch Boy)	
Iron Blue	4%	TiO_2	10%
Zinc, Yellow	1%	Silicates	2%
Silicates	2%	Barium Met. Br.	1%
Resin	38%	Additives	1%
Driers	2%	Driers	2%
Aromatics/Aliphatics	53%	Aromatics/Aliphatics	48%
Lead	<1.14%	Alcohols	1%
		Lead	<.5%

Use: 22,000 gal/yr. finish - various colors
17,000 gal/yr. primer
6,000 gal/yr. non-skid
1,200 gal/yr. mineral spirits

Other Chemicals: 1. Degreaser - Shalco Co., Lexington Avenue, Toledo, Ohio - Stoddard Solv. - mineral spirits
2. Door Stripper - Summer use - Oakite M3. Oakite, 58 Valley Road, Berkeley Heights, New Jersey 07922 NaOH and surfectant
3. Winter use - Oakite 33. same address Phosphoric acid

CONCLUSIONS

Industrial Hygiene

It will be difficult to find enough painters exposed exclusively to paint vapor because of the fume present from welding operations. The paint spray booth and paint yard keep employee exposure to paint vapor concentrations relatively low. Painters doing touch-up and finish painting also perform other tasks; this means time actually painting is reduced by one-third. For these reasons, it is recommended that Whitehead and Kales not be studied in-depth if higher exposures to paint vapor and a larger paint workforce can be found in other companies. We will reevaluate this conclusion after all five railroad car plants have been completed.

Epidemiology

This company has appropriate records for study. It should be possible to go back at least 15 to 20 years to examine the risk among painters in this population. The numbers are sufficient to provide an adequate population.

Medical

The presence of data on blood lead plus the medical record cards which have been maintained by the medical department would make an ideal study of the relationship between painting and lead exposure in this population.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1367

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

07/27/79

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
E. I. DU PONT DE NEMOURS & CO., INC	(302) 774 2421

ADDRESS (Number, Street, City, State, and Zip Code)
DUPONT, F&F WILMINGTON, DELAWARE 19898

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
N.A.	

CHEMICAL FAMILY	FORMULA
WHITE INDUSTRIAL PRIMER	081Y 8089 (32979)

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS	APPROX	PP	BASE METAL		
CARRIER TOLUENE	1	100	ALLOYS		
VEHICLE ETHER ALCOHOL	4	200	METALLIC COATINGS		
SOLVENT ALIPHATIC PET DIST	30	100	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES			%	TLV (UNITS)
METAL	SOURCE	APPROX TOTAL WEIGHT OF SOLIDS		MG/M3
CADMIUM	PIGMENT		.01	0.05
COBALT	ADDITIVE		.02	0.10
LEAD	DRIER		.20	0.15
ZINC	PIGMENT		4.10	5.0

SECTION III - PHYSICAL DATA

BOILING POINT (°F) APPROX RANGE	212 -401	SPECIFIC GRAVITY (H_2O=1)	1.271
VAPOR PRESSURE (mm Hg) PRINCIPAL SOLVENT	10.0	PERCENT VOLATILE BY VOLUME (%)	56.76
VAPOR DENSITY (Air=1) PRINCIPAL SOLVENT	3.9	EVAPORATION RATE (ETHER =1)	SLOWER THAN ETHER
SOLUBILITY IN WATER	MODERATE		

APPEARANCE AND ODOR LIQUID PRIMER WITH CHARACTERISTIC ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
BETWEEN 20 - 73 F (CC)	APPROXIMATE	1.0	15.7

EXTINGUISHING MEDIA
FOAM, CARBON DIOXIDE, DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES
WATER FROM FOG NOZZLES MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP.

UNUSUAL FIRE AND EXPLOSION HAZARDS
N.A.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE SEE SECTION II

EFFECTS OF OVEREXPOSURE
HEADACHE, NAUSEA, IMPAIRMENT OF REACTION TIME AND COORDINATION

EMERGENCY AND FIRST AID PROCEDURES
INHALATION - MOVE TO FRESH AIR TO IMPROVE BREATHING

SKIN CONTACT - WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING.

EYE CONTACT- FLUSH WITH WATER FOR AT LEAST 15 MIN; CALL A PHYSICIAN

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N.A.

INCOMPATABILITY *(Materials to avoid)*
NONE REASONABLY FORESEEABLE

HAZARDOUS DECOMPOSITION PRODUCTS CO, CO2, SMOKE
OXIDES OF CADMIUM COBALT LEAD ZINC

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N.A.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
AVOID PROLONGED CONTACT WITH SKIN AND BREATHING OF VAPOR.

REMOVE SOURCES OF IGNITION. REMOVE WITH INERT ABSORBENT.

VENTILATE AREA.

WASTE DISPOSAL METHOD
DISPOSAL METHOD MUST COMPLY WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* IF AIR CONTAMINANTS CONTROL IS NOT FEASIBLE
USE NIOSH/MESA RESPIRATOR TC-23C

VENTILATION	LOCAL EXHAUST: PROVIDE SUFFICIENT VENTILATION TO	SPECIAL: REMOVE IGNITION SOURCES
	MECHANICAL *(General)*: KEEP BELOW TLV & LEL	OTHER: N.A.

PROTECTIVE GLOVES: PROLONGED OR REPEATED CONTACT	EYE PROTECTION: USE SAFETY EYEWEAR

OTHER PROTECTIVE EQUIPMENT
USE APPROPRIATE INDUSTRIAL HYGIENE PRACTICES

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. CLOSE CONTAINER AFTER EACH USE. DO NOT STORE ABOVE 120 F.

OTHER PRECAUTIONS
WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING OR SMOKING

OBSERVE LABEL PRECAUTIONS. CONTAINERS SHOULD BE GROUNDED WHEN POURING.

NOTICE FROM DUPONT

THESE DATA RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL

FORM OSHA-20
Rev. May 72

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
E. I. du Pont de Nemours & Co., Inc.	(302) 774-7500

ADDRESS (Number, Street, City, State, and ZIP Code)
DuPont, E&F Wilmington, Delaware 19898

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
N.A.	N.A.

CHEMICAL FAMILY	FORMULA
D. T. M. Hi Gloss, Freight Car Enamel, White	1657-Y-9067 (11/7/74)

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
~~PIGMENTS~~ Solvents Approx.		PPM	BASE METAL		
~~CATALYST~~ Aliphatic Alcohol	2	50	ALLOYS		
~~VEHICLE~~ Aliphatic Pet Dist.*	42	100	METALLIC COATINGS		
~~SOLVENTS~~ Methanol	1	200	FILLER METAL PLUS COATING OR CORE FLUX		
~~ADDITIVES~~ Toluene	2	100	OTHERS		
OTHERS			Approximate		

*HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
		Mg/M^3
Barium as metal from pigment on total weight of solids	1.4	0.5
Lead as metal from drier on total weight of solids	.51	0.15

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) Approx. Range	149-419	SPECIFIC GRAVITY (H_2O=1)	1.009
VAPOR PRESSURE (mm Hg.) Principal Solvent	10.0	PERCENT, VOLATILE BY VOLUME (%)	62.0
VAPOR DENSITY (AIR=1) Principal Solvent	3.9	EVAPORATION RATE (__Ether__ =1) Slower than	Ether
SOLUBILITY IN WATER	Moderate		

APPEARANCE AND ODOR white, semi-viscous liquid; moderate solvent odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
Between 20° & 73°F (T.C.C.)	Approximate	1.0	36.5

EXTINGUISHING MEDIA
Foam, Carbon Dioxide, Dry Chemical

SPECIAL FIRE FIGHTING PROCEDURES
Water from fog nozzles may be used to cool closed containers to prevent pressure build-up when exposed to extreme heat.

UNUSUAL FIRE AND EXPLOSION HAZARDS
N.A.

PAGE (1)

(Continued on reverse side)

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cc Fire Francis

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: See Section II *Aliphatic by analogy to heptane and octane

EFFECTS OF OVEREXPOSURE:
Headache, nausea, impairment of reaction time and coordination

EMERGENCY AND FIRST AID PROCEDURES:
Inhalation - Move to fresh air to restore breathing.
Skin contact - Wash with soap and water. Remove contaminated clothing.
Eye contact - Flush with water for at least 15 minutes; call a physician

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N.A.

INCOMPATABILITY (Materials to avoid): None reasonably foreseeable

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2, Smoke and oxides of barium and lead

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N.A.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Avoid prolonged contact with skin and breathing of vapor.
Remove sources of ignition. Remove with inert absorbent and non-sparking tools.
Ventilate area.

WASTE DISPOSAL METHOD:
Disposal method must comply with Local, State, and Federal Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): Use adequate ventilation. A cartridge-type respirator, used in accordance with the manufacturer directions is recommended if engineering and administrative controls of air contaminants is not feasible.

VENTILATION	LOCAL EXHAUST: Provide sufficient ventilation to keep below given TLV &LEL	SPECIAL: Remove sources of ignition
	MECHANICAL (General)	OTHER: N.A.

PROTECTIVE GLOVES: Use for prolonged or repeated contact	EYE PROTECTION: Use safety eyewear to prevent splashes

OTHER PROTECTIVE EQUIPMENT: Use appropriate industrial hygiene practices

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
Keep away from heat, sparks, and open flame. Close container after each use.
Do not store above 120°F.

OTHER PRECAUTIONS:
Wash thoroughly after handling and before eating or smoking.
Observe Label Precautions. Containers should be grounded when pouring.