

CC: L. F. Getz
J. T. Curr
R. J. Burkholder
K. N. Burkhardt
W. J. Faassen
M. W. House
J. F. Hignite
R. E. Keith
A. H. Nickolaus
File 18.12-90

August 2, 1978

TO: B. S. SMITH

FROM: J. C. WARREN *JCW*

PROPOSED INDUSTRIAL HYGIENE PROGRAM FOR
SHOPS & SERVICES AREAS

Ref: Letter from L. T. Freeland to W. P. Ledet et al,
"Industrial Hygiene for Shops & Services", Nov. 7, 1977

In 1977 the "Alathon"® Industrial Hygiene area coordinator was assigned the responsibility of organizing and implementing an industrial hygiene program for both the "Alathon" and the Shops & Services areas. However, due to shortage of manpower it was agreed to establish the "Alathon" area program in 1977 and the Shops & Services program in 1978 except for "crisis items". In November 1977, a preliminary program was developed by A. H. Nickolaus (see reference letter) to obtain some data to answer questions posed in the S&F audit of October 1977 and to obtain monitoring data on the more obvious potential industrial hygiene hazards.

The data developed by the preliminary monitoring studies are summarized in Table I. Using these data and recent discussions with the S&S supervisory personnel we have developed a comprehensive industrial hygiene program for the Shops & Services areas. Table II outlines the major components of this program.

In developing this program we obtained data on chemical material lists, data sheet lists, trade chemical lists, trade chemical compositions and area tasks involving chemical exposures. These data are summarized in Tables III through VIII. Key information relating to these tables are given below:

DU 009935

DUP 0814653

- (1) Tables III & IV list the purchased chemicals and trade chemicals, respectively. The list in Table III will be incorporated in the plant computer listing. Material safety data sheets need to be developed for the industrial hygiene manual for some of these chemicals as noted. In Table IV we have asterisked those chemicals for which some information on their chemical composition is known.
- (2) Table V summarizes the trade chemical composition data. Obtaining data on the composition of these trade chemical and updating existing data will be an on-going part of the industrial hygiene program.
- (3) Table VI lists the types of potential industrial hygiene hazards which could exist in the S&S area.
- (4) Table VII presents a list of tasks involving potential chemical exposure in the S&S areas. The initial risk appraisal evaluations (IRA's) for these tasks have been rough drafted and are being circulated for comments. Twenty seven of the 52 IRA's recommend obtaining some monitoring data. Six of these IRA's have been selected as items for the high priority list shown in Table VIII. This list will be modified to reflect the recommendations of the approved IRA's.

Industrial hygiene hazards in the Outside Services Areas were intentionally excluded from this program by prior agreement. However, we recommend that the current program in this area be reviewed and reorganized into a supplemental centralized program similar to the balance of the S&S area.

To implement this program it will be necessary to establish priorities within the program and with the current "Alathon" Industrial Hygiene program and to establish areas of responsibility for the program. Once we have agreed on the above items a realistic time schedule can then be developed for the S&S Industrial Hygiene Program.

JCW/mrp

Attachments

DUP 0814654

DU 009936

TABLE I

SUMMARY OF INDUSTRIAL HYGIENE DATA FROM PRELIMINARY STUDIES

Potential Hazard	Job Description	Monitoring Data*	Conclusions
Asbestos Fiber Inhalation	Installing & removing asbestos covering and asbestos covered heating wire for heat treatment at Central Shop. Removing old insulation from abandoned piping at hold yard area.	4.2 Asbestos Fibers/cc 14.5 Asbestos Fibers/cc (Ref. 8)	Exceeds the 2 fibers/cc TLV (EPA) Respiratory Protection Req'd.
Methylene Chloride Vapor Inhalation	Cleaning a chlorine regulator part by squirting M.C. from a squeeze bottle onto the part and wiping the surface with a clean rag. (for dye check) at Central Shop	200 ppm Methylene Chloride 100 ppm M.C. (with fan installed) (Ref. 6)	The exposure was less than the OSHA ceiling of 2000 ppm for 5 minutes or the ACGIH STEL of 250 ppm so no respiratory protection is required. The use of a fan was recommended. Further data are needed to verify compliance under all conditions.
Methylene Chloride Vapor Inhalation	Cleaning a weld surface in a welding booth at Central Shop.	50 ppm M.C. (Ref. 6)	No respiratory protection required. No further sampling required.
Perclene® Vapor Inhalation	Mechanic cleaning equipment in hood at Central Shop by spraying Solvent No. 49 on the piece.	<5 ppm at mechanics breathing zone. (Ref. 3)	The exposure is well below the OSHA ceiling of 300 ppm for 5 minutes or the ACGIH STEL of 150 ppm for 15 minutes. No corrective action required. Additional data under various conditions needs to be obtained. Investigation into the feasibility of replacing Solvent No. 49 with a non-Perclene® solvent should be investigated.

DUP 0814656

<u>Potential Hazard</u>	<u>Job Description</u>	<u>Monitoring Data*</u>	<u>Conclusions</u>
ZnO	Welding of Galvanized Materials	2.4 & 3.0 mg/m ³ welders breathing zone for 8 hr. day (Ref. 2)	Rumelin & portable fan ventilation systems are adequate (5 mg/m ³ std). Natural ventilation can be satisfactory if welder stands upwind. Recommended standby man for outside natural ventilation.
Kerosene Vapor Inhalation	Kerosene is discharged from the high pressure line on disconnecting from test system in High Pressure Test Booth.	5 ppm (Ref. 4)	A threshold limit for kerosene has not been established. However, NIOSH has recommended 100 mg/m ³ or 14 ppm as TLV. Initial results indicate no I/H problem. Additional tests recommended to establish typical exposure and range.
Heat Stress	All jobs in Central Shops requiring above average exertion	Monitored temp. (wet & dry bulb) & humidity in (1) SW corner welding booth and (2) NW corner welding booth for 2 weeks (Ref. 1)	For the worst conditions (93° DB, 81°F, 60% RH) the Heat Strain Index of 78 indicates severe to very severe strain. It was recommended to provide additional ventilation and/or cooling facilities.

<u>Potential Hazard</u>	<u>Job Description</u>	<u>Monitoring Data</u>	<u>Conclusions</u>	<u>Action</u>
Varsol Vapor Inhalation	Cleaning equipment parts in VAT located in Garage	Estimated 600-700 ppm by A.H.N.	Although no TLV has been established, NIOSH has recommended 55 ppm TLV & 283 ppm ceiling for 15 min.	Central Engr. is looking at the feasibility of providing side draft hood
Heat Stress	Paint Shop Work	Monitored temp. and humidity in building.	HSI shows need for more ventilation.	Proposal to move paint shop
Noise Stress	Operation of Rolling Stock Equipment	25 equipment pieces monitored. 14 had noise levels > 90 dB(A). (Ref. 7)	Ear plugs and/or ear muffs recommended for high noise level equipment.	Recommended examination of use of engine mufflers and/or repairs to existing mufflers.

*References are given in Appendix A.

TABLE II
PROPOSED INDUSTRIAL HYGIENE PROGRAM
FOR SHOPS & SERVICES

- I. Prepare I/H maps to identify area sampling locations
- II. Conduct a series of preliminary surveys of each shop for organic vapor. .
- III. Conduct task monitoring by priority listing.
- IV. Conduct a study of existing ventilation facilities in each shop.
- V. Issue "letters of recommendation" to correct I/H deficiencies.
- VI. Determine need for personal monitoring for work monitoring exposure data bank.
- VII. Conduct personal monitoring as indicated in VI.
- VIII. Develop a noise compliance program.
- IX. Identify type of respirators required for shop jobs and assist in developing compliance program to meet respirator fit test procedure requirements.
- X. Obtain vendor data sheets on trade chemicals used in shops.
- XI. Develop material data sheets for purchased chemicals in Table II.

TABLE III

LIST OF PURCHASED CHEMICALS* USED BY SHOPS & SERVICES**

1. Acetylene***
2. Betz "Slime Trol®" (Acrolein)
3. Brake Fluid (2-Ethoxyethanol)***
4. Cesco 2000***
5. Diesel Fuel
6. Ethylene Glycol***
7. Freon® 22***
8. Freon® 113
9. Gasoline***
10. Kerosene***
11. Methanol
12. Methylene Chloride
13. Oxygen***
14. Sodium Bicarbonate***
15. Solvent No. 49 (Mixture of Perclene®, Stoddard Solvent and Mineral Spirits)***
16. Sulfuric Acid
17. Varsol (Petroleum Solvent)***

* Exclusive of Trade Chemicals

** Includes Building #4 - Central Shops (I&E, Machine Valve, and Fabrication Areas), Building #31 - Carpenter/Sheet-Metal/Paint Shop, Building #8 - Garage, Building #11 - Hold Yard and Storage Area and Sandblast Yard. The outside services areas (Waste Disposal, Dock and Dumpster Pickup, etc) were excluded.

*** No Material Data Sheet in Manual

DUP 0814659

TABLE IV
LIST OF TRADE CHEMICALS USED IN SHOPS*

I. Paints, Solvents & Cleaners

1. Centari Acrylic Enamel
2. Cesco 2000
3. Corlar Activators (VF-519 & VG-8339)**
4. Corlar Enamel
5. Corlar Zinc Chromate
6. Devoe Universal Colors
7. Duco Enamel
8. Dulux Enamel
9. Dykem Steel Blue
10. Exxon Rust Ban
11. Fast Dry Aisle Paint
12. Ganicim Primer
13. Glyptal Insulating Enamel
14. Imlar Vinyl (802-401)
15. Imron Activator (VG-511)**
16. Imron Enamel (Various Colors)**
17. Krylon Spray Paint (Various Colors)**
18. Lacquer Primer Surfacer
19. Lacquer Seal 1999-S
20. Lucite House Paint
21. Lucite Spray Paint
22. Lucite Wall Paint
23. Magnaflux Cleaner
24. Marsh Stencil Ink Spray**
25. Metal Conditioner 5717-S
26. Petisol Degreaser
27. Primer Sealer 1858-S
28. Reducers (3812-S, 8522-S)
29. Rust Ban
30. Rust Inhibitor
31. Rust Preventor #13
32. Silicone Aluminum Paint**
33. Solvent #49**

DUP 0814660

DU 009942

Table IV (Cont'd)

34. Spot Check Cleaner
35. Spot Check Developer
36. Spot Check Dye Penetrant
37. Super Seal 100
38. Thinners (Dulux, 3871, 3994, 8805, 31004, 32035, 3661-S, Y-3979-S, G.E., 3919-S)**
39. Varsol**
40. Wisk Hand Cleaner
41. Windshield Washer Solvent
42. Zyglo Developer

II. Insecticides & Fertilizers

1. Eptam Granules**
2. Fertilome Lawn Food
3. Fire Cracker Ant Poison
4. Fly Jinx Spray**
5. Hot Shot Insect Spray**
6. Hunter's Wasp Spray**
7. Malathon
8. Off Mosquito Spray (Insect Repellant)
9. Pill Bug Bait
10. Plantation Nematode & Root Cure
11. Spectracide**

III. Janitorial

1. Ajax Cleaner
2. Amphyl Spray
3. Floor Wax
4. Johnson's Wax Polish**
5. Lemon Disinfectant
6. Lemon Pledge
7. Pine-O-Pine
8. Swipe Floor Cleaner
9. URNO Cake

DUP 0814661

Table IV (Cont'd)

10. Vani-Bloc Deodorant
11. Vani-Sol Cleaner**
12. Wax Base Sweeping Compound
13. Wax Remover
14. West Bowl Toilet Cleaner
15. Windex**

IV. Lubricants, Coatings & Cements

1. A-522 Oil
2. Amspro Roof Coating
3. Battery Terminal Protector
4. Blue Ribbon Neatsfoot Compound**
5. Bondo Body Putty**
6. Boot Cement
7. Brake Fluid**
8. Clover Grinding Compound
9. Coconut Oil
10. Contact Cement**
11. Cool Tool
12. Dap Glazing Compound**
13. Dap Spackling Compound**
14. Dermatex Liquid 3D
15. Dexron Transmission Fluids
16. Dow Corning Grease
17. D-Splat Weld Splatter
18. Duco Cement
19. Flozene Oil
20. Hot Shot Starting Fluid
21. Hydraulic Jack Oil
22. Lapping Vehicle (John Crane 3M)
23. Liquid Wrench**
24. Loctite
25. Lubriplate
26. Maltby Lubricant & Penetrant
27. Master Oil Mx 237
28. Metallic Sealer

DUP 0814662

DU 009944

29. Mobil Met S122 Lubricant
30. Molycote Z Powder
31. Never-Seez
32. Permatex Gasket Cement No. 1
33. Plastic Wood
34. Ridgid Cutting Oil
35. Rubber Lube-Ruglyde
36. Slick Stuff No. 4
37. Silicone Compound BK-K2
38. Slip Span
39. Sila-Glide
40. Spray Belt Dressing
41. Snoop
42. Spray Adhesive No. 77
43. Sulflo Cutting Oil
44. Super Adhesive 8001
45. Tap Magic Cutting Fluid
46. Thermo-Solve
47. Texaco Lube Oil
48. Tufcoat Block Filler
49. Universal Cement
50. Vista Gloss Wax
51. Way Oil
52. WD-40**
53. Weather Strip Adhesive
54. Weldwood White Glue
55. Westcoat Amber 100
56. Whitmore Liquid Gear
57. Whitmore Wire Rope
58. Wimbro Aluminum Tap

* Includes Central Shop, Carpenter/Sheet Metal Shop,
"Alathon" Maintenance Shop, Garage & Hold Yard/Storage Area

** See Table IV for Chemical Composition

DUP 0814663

DU 009945

TABLE V
CHEMICAL COMPONENTS OF SOME TRADE CHEMICALS

<u>Trade Chemical</u>	<u>Chemical Components</u>
I. <u>Paints, Solvents & Cleaners</u>	
Corlar (Epoxy Enamel) Activator (VG-8339)	Ethyl Ester 6% Xylene 54%
Corlar Activator (VF-519)	Aliphatic Alcohol 3% Ether Ester 4% Methanol 2% Xylene 39%
Imron Activator (VG-Y-511(B))	Toluene 6% Ether Ester 28% Aliphatic Ester 15% Xylene 7%
Imron Enamel (Composition varies with different colors)	Aliphatic Ketone 1-4% Toluene 0-1% Ethyl Ester 26-43% Aliphatic and/or Dibasic Esters 5-8% Aliphatic Petroleum Distillate 5-12%
Marsh Stencil Ink Spray	Xylene-Thinner Acrylic Resin - Vehicle Methylene Chloride-Solvent (Not used for Silver Ink)
Aluminum Paint (612-706)	Aliphatic Pet Distillate-20% Aromatic Pet Distillate -26% Toluene 5% Xylene 12%
Solvent No. 49	Perclene® 5% Mineral Spirits 25% Stoddard Solvent 70%
Thinner No. 200 (T-3819)	Aliphatic Pet Distillate 29% Aromatic Pet Distillate 71%

DUP 0814664

DU 009946

Table V (Cont'd)

Thinner 31004	Aliphatic Alcohols 14%
	Aliphatic Ketones 16%
	Toluene 65%
	Xylene 4%
Thinner 32035	Aliphatic Ketone 100%
Varsol No. 1	Refined Petroleum Solvent Mixture
II. <u>Insecticides & Fertilizers</u>	
Eptam Granules (Herbicide)	S-ethyl Dipropylthiocarbamate
Fly Jinx Spray	Petroleum Distillate
	Methoxychor
Hot Shot Fly & Mosquito Insect Killer Spray	Pyrethins 0.25%
	Piperonyl Butoxide 0.80%
	N-Octyl Bicycloheptene 0.40%
	Dicarboximide
	Petroleum Distillates 8.25%
Hunter's Wasp Spray (Hunter's Magic Mist Flying Insect Killer)	Pyrethins 0.9%
	Piperonyl Butoxide 9%
	Petroleum H/C 10.1%
	Freon 80%
Spectracide (Garden Insect Aerosol Insecticide)	Diazinon [(0,0-Diethyl 0-(2-Isopropyl-4-Methyl-6-Pyrimidinyl)Phosphorathioate)] 0.5%
Spectracide Lawn & Garden Insect Control Spray	Diazinon 25%
	Aromatic Petroleum Solvent 57%
III. <u>Janitorial</u>	
Johnson's Wax Polish	Petroleum Naphtha Waxes
	Dyes
Vani-sol Cleaner	HCL 23%
Windex	Isopropanol
	Glycol Ether Solvent
	Anionic Surfactant
	NH ₄ OH
	<10%

DUP 0814665

DU 009947

Table V (Cont'd)

IV. Lubricants, Coatings & Cements

Blue Ribbon Neatsfoot Compound

Petroleum Oil
Neatsfoot Animal Oil

Bondo Body Putty

Polyester Resin
Metallic Naphthenate
Aniline Derivatives
Benzoyl Peroxide 50%
Talc

Brake Fluid

Methyl, Ethyl & Butyl Ethers
of Ethylene Glycol and/or
Related Glycols (2-Ethoxy-
Ethanol)

Contact Cement
(Rubber Cement Type)

Hexane 90%
Rubber 10%

May contain some toluene,
acetone and chloroethene
in place of hexane.

Contact Cement
(Solvent Type)

Solvent Blend 75%
(Toluene, Hexane and Methyl
Ethyl Ketone)
Neoprene Rubber 16%
MgO & ZnO 1.5%
Phenolic Resin 8%

DAP Glazing Compound

Calcium Carbonate
Magnesium Silicate
Titanium Dioxide
Mineral, Linseed & Soybean Oil
Mineral Spirits <1%

DAP Spackling

Calcium Carbonate
Plasticized Polyvinyl-
Acetate Resin

Liquid Wrench

Aromatic Solvents
Petroleum Oils
Colloidal Graphite

WD-40

Aliphatic Petroleum Spirits-70
Petroleum Base Oil 20%
Additives 10%

DUP 0814666

DU 009948

TABLE VI

LIST OF POTENTIAL I/H HAZARDS IN SHOPS AREAS

- I. Exposure to Organic Liquids and/or Vapors
1. Gasoline
 2. Kerosene
 3. Methanol
 4. Methylene Chloride
 5. Perclene®
 6. Mineral Spirits
 7. Stoddard Solvent
 8. Aliphatic C₆-C₁₀ Petroleum Distillates
 9. Xylene
 10. Petroleum Naphtha
 11. Hexane
 12. Toluene
 13. Acetone
 14. Aromatic Petroleum Solvents
 15. Methyl, Ethyl & Butyl Ethers of Ethylene Glycol (Brake Fluid)
 16. Aliphatic Ketones
 17. Ethyl Esters
 18. Aliphatic Alcohols
 19. Dibasic Esters
 20. Freon® 22
- } Solvents in Spray
Can Products
- } Paint & Spray Can
Components
- II. Exposure to Asbestos Fibers
1. Installing and Removing Asbestos Covering from Heater
 2. Cutting of Transite
- III. Exposure to Metal Fumes from Welding, Brazing & Cutting Metals
1. Zinc from Welding Galvanized Materials
 2. Cadmium from Welding Galvanized Material or Silver Soldering
 3. Nickel from (TIG) Welding Nickel and Nickel Alloys
 4. Silver from Silver Soldering
 5. Copper from Brazing Copper Alloys
 6. Beryllium from Brazing Beryllium Alloys

DUP 0814667

Table VI (Cont'd)

IV. Exposure to Dusts

1. Silica from Sandblasting
2. Cellulose from Cutting and Sanding Wood
3. Metals from Grinding, Shot Blasting, and Polishing Metal Pieces

V. Exposure to High Temperature Decomposition Products

1. Carbon Monoxide from Welding Machine Engine, Oil and/or Paint on Weld Pipe and Truck Exhaust
2. Ozone from Plazma Arc Cutting (Ruemelin Exhaust System Tie-In to Plazma Arc Area has been recommended) and Welding
3. Phosgene from Methylene Chloride vapors present while Welding
4. Nitrogen Oxides from Welding
5. Fluorine and/or Fluorides from Welding Fluxes and Electrodes

VI. Exposure to Oil Liquid and Vapor

1. Use of cutting oils.
2. Use of lubricants.

VII. Noise

1. Portable Impact Tools
2. Moving Machinery (Portable Grinder & Cut-Off Wheel)
3. Testing Relief Valves
4. Sandblasting
5. Plazma Arc

VIII. Heat Stress

1. Jobs Requiring Acid Suits
2. Jobs Near High Temperature Areas

IX. Light Stress

1. Infra-Red & Ultra-Violet Light from Electric Arc Welding
2. Adequate Light for Detailed Work

DUP 0814668

TABLE VII
LIST OF IRA'S FOR SHOPS & SERVICES

<u>IRA No.</u>	<u>Chemical</u>	<u>Location</u>	<u>Job</u>	<u>Rec</u>
1	Asbestos	CS	Install & remove asbestos tape & heaters	Continue to wear mask
2	Asbestos	All	Cutting Transite	Continue to wear mask
3	CO	All	Operation of portable welding machine	Monitor
4	CO	CS	Welding/Cutting oil coated piping	N.A.R.
5	Cutting Oil	CS	Welding/Cutting oil coated piping	N.A.R.
6	CO	CS	Welding/Cutting M.C. cleaned piping	N.A.R.
7	Methylene Chloride	CS	Cleaning Weld Surface	N.A.R.
8	CO	CS	Operating Truck	Monitor
9	ZnO	CS	Welding Galvanized	N.A.R.
10	Cadmium	CS	Welding Galvanized	Monitor
11	Cadmium	CS	Silver Soldering	Monitor
12	Fluoride	CS	Silver Soldering	List of Fluxes Monitor
13	Freon®22	CS	Rechg Refrig. Units	Omit Women fro Area (Tetragen
14	Kerosene	CS	Filling Hood Reservoir	N.A.R.
15	Kerosene	CS	Filling H/P Test Reservoir	N.A.R.
16	Kerosene	CS	Depressurizing H/P Hose	N.A.R.
17	Kerosene	CS	Cleaning in Hood	Check Hood Ventilation

DUP 0814669

Table VII (Cont'd)

<u>IRA No.</u>	<u>Chemical</u>	<u>Location</u>	<u>Job</u>	<u>Rec</u>
18	Methylene Chloride	CS	Cleaning Valve Parts	N.A.R.
19	Phosgene	CS	Welding M/C Wet Pipe	Monitor
20	Methylene Chloride	CS	Filling Plastic Bottles	Conduct in Hood
21	Methanol	CS	Cleaning TIG Weld Pc.	Monitor
22	Nickel	CS	Welding Nickel Alloys	Monitor
23	Nickel	CS	Grinding Nickel Alloys	Monitor
24	Lube Oil	CS	Threading Pipe with Oil	N.A.R.
25	Cooling Oil	CS	Machining Pipe with Oil	N.A.R.
26	Lube Oil	CS	Drilling/Tapping with Oil	N.A.R.
27	Ozone	CS	Operation of Plasma Arc	Monitor
28	Ozone	CS	Arc Welding	Monitor
29	NO _x	CS	Arc Welding	Monitor
30	Beryllium	CS	Brazing	Check Materials Monitor if Be
31	Lead	CS	Cutting/Welding Lead Alloys	Monitor
32	Perclene® (5% of Solvent 49)	CS	Cleaning Electric Motors	Monitor
33	Stoddard Solvent (70% of Solvent 49)	CS	Cleaning Electric Motors	N.A.R. Unless item 32 is high.
34	Mineral Spirits (25% of Solvent 49)	CS	Cleaning Electric Motors	N.A.R. Unless item 32 is high

DUP 0814670

Table VII (Cont'd)

<u>IRA No.</u>	<u>Chemical</u>	<u>Location</u>	<u>Job</u>	<u>Rec</u>
35	Weld Parti- culates	CS	Arc Welding	Monitor
36	Petroleum Solvents	CS	Painting in Booth	Monitor
37	Petroleum Solvents	CS	Use of Spray Cans	Monitor Select Items
38	Mineral Spirits	Garage	Varsol Cleaning	Monitor
39	Ethers of Ethylene Glycol	Garage	Handling Brake Fluid	Monitor
40	CO	Garage	Operating Vehicles	Monitor
41	Petroleum Solvents	Garage	Use of Spray Cans	Monitor Select Items
42	Lube Oils	Garage	Use of Oils	N.A.R.
43	Ethylene Glycol	Garage	Loading Anti- Freeze	Monitor
44	Betz "Slima- Trol"®	Hold Yard	Changing Cylinders	Obtain Vendor Data
45	Kerosene	Hold Yard	Transfer from Drums	Monitor
46	Asbestos	Hold Yard	Remove Asbestos Covering	Continue to Wear Masks
47	Petroleum Solvents	Carp/SM	Painting	Monitor H/C
48	Petroleum Solvents	Carp/SM	Use of Spray Cans	Monitor Select Items
49	Wood	Carp/SM	Cutting & Sanding	Monitor
50	Silica	Sand Blast Yard	Sand Blasting	Continue to Wear BA Masks
51	Petroleum Solvents	Sand Blast Yard	Painting	Continue to Wear Masks
52	Zinc Chromate	Sand Blast Yard	Imron Painting	Continue to Wear Masks

N.A.R. - No Action Required

DU 009953

DUP 0814671

TABLE VIII

HIGH PRIORITY I/H LIST FOR SHOPS & SERVICES

1. Monitor in Central Shops for presence of cadmium in fumes generated by welding galvanized materials and/or by silver soldering. (IRA's #10 & #11)
2. Monitor Central Shops for presence of phosgene from welding pipe cleaned with methylene chloride. (IRA #19)
3. Monitor Central Shops for presence of ozone and NO_x while arc welding. (IRA's #28 & #29)
4. Check materials used for brazing to determine whether any beryllium materials are being used. (IRA #30)
5. Monitor in Central Shops for weld particulate exposure. (IRA #35)
6. Monitor in garage for hydrocarbon concentration in air while handling brake fluids. (IRA #39)

DU 009954

DUP 0814672

APPENDIX A
MONITORING DATA
REFERENCES

1. Heat Stress Effective Temperature Report for Central Shops by J. O. Jefferson, February 13, 1978
2. Letter from J. C. Warren to R. E. Keith, I/H Program - Monitoring of Zinc Oxide Fume Exposure Levels While Welding Galvanized Pipe, July 20, 1977
3. Letter from L. T. Freeland to A. H. Nickolaus, et al, Perclene® Survey Cleaning Equipment in Hood Central Shops, April 15, 1978
4. Memo from L. T. Freeland to L. G. Getz, et al, Preliminary Survey for Kerosene in Shops High Pressure Test Booth, February 27, 1978.
5. Letter from L. T. Freeland to A. H. Nickolaus, et al, Methylene Chloride Determination of Odor Detection Threshold & Status of Future Surveys, February 10, 1978
6. Letter from L. T. Freeland to A. H. Nickolaus, et al, Central Shops - Methylene Chloride Survey, March 20, 1978
7. Letter from J. H. Hook to L. F. Getz, Noise Measurements - Rolling Stock, November 30, 1977
8. Letter from L. T. Freeland to A. H. Nickolaus, et al, Summary of Asbestos Sampling Victoria Plant, March 29, 1978

DU 009955

DUP 0814673