

SHELL OIL COMPANY

DATE OCTOBER 23, 1970
TO GENERAL MANAGER REFINERIES FROM HOUSTON REFINERY MANAGER
SUBJECT HEALTH AND SAFETY

PLAINTIFF'S EXHIBIT

SH-1342

Further to the General Manager Refineries letter on Health and Safety dated October 6, 1970, and the subsequent reference letter dated October 8, 1970, Attachment No. 1 outlines the references used for threshold limit values and safeguards for hazardous materials, etc.

In addition to using explosion meters and oxygen analyzers, we utilize Mine Safety Appliance and Scott, Drager detector tubes for determining the concentrations of hazardous materials throughout our operations.

In the design of process equipment, health and safety is of primary consideration. Engineering designs include safeguards for the control of noise, dispersal and/or recovery of released toxic materials, personnel safety equipment, fire protection, etc. The Refinery Safety Department and the Engineering Services Department inspectors further enhance safety on the job by constantly inspecting operating equipment and assuring safe work procedures through our work permit system.

Formal safety training is carried out by first line supervisors under the direction of operating department managers and the Safety Department at weekly and monthly safety meetings. Operator training for emergency operating procedures is given special emphasis.

Hourly employees are examined every three years by our company physician. If known physical deficiencies exist, employees are examined on a three to six month cycle, depending on their medical history. Those employees working in radiation areas are given an annual medical check including blood test.

The Houston Refinery has a plant hospital staffed 24-hours per day by registered nurses for all first aid cases. When any injury occurs requiring the attention of a physician, an ambulance is maintained for such emergencies. In the event of a disaster, the Houston Ship Channel area has a mutual aid organization whereby additional medical personnel and emergency equipment is available upon request.

Breathing air from the plant air system is not used for respiratory protection due to the possibility of contamination. The Safety Department tests the breathing air cylinders used for respiratory protection in order to rule out the possibility of contamination by our suppliers. An air compressor provided with a remote air intake manifold is used for tank maintenance requiring respiratory protection.

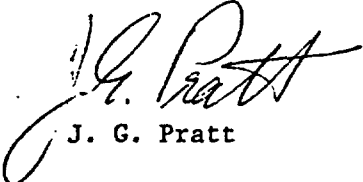
LAM 024234

ABS-007413

In those areas where nitrogen or other inerts are present, appropriate signs and guards are placed to prevent inadvertent entry. Further, a Fire and Safety Permit is required before entering tanks, vessels, columns, etc., as outlined in our Refinery Safety Manual.

In Attachment No. 2, hazardous materials shipped or used in operations are listed in the manner requested in your memorandum. No attempt has been made to list the numerous chemicals used by professional employees in our Refinery and Research Laboratories.

At this time, we do not know of any areas requiring outside research except possibly audiometric testing of employees' hearing and further research for particulate matter. Please let us know if additional information is required.



J. G. Pratt

Attachments

bc: Employee Relations
Technological Department
Safety Department (12) ✓
Central File
Mgr. Circ. File

RLB/jw

LAM 024235

ABS-007414

Reference Source of Data Used as a Guideline on
Exposure and on Handling the Hazards

1. Dangerous Properties of Industrial Materials,
Third Edition, N. Irving Sax
2. Safety and Health Standards for Federal Supply Contracts,
(Walsh-Healey), Federal Register, Vol. 34, No. 96, 5/20/69.
3. Guide on Hazardous Materials, Second Edition,
National Fire Protection Association
4. American Petroleum Institute Publications
5. Fire Protection Handbook, 13th Edition,
National Fire Protection Association
6. Gas Transmission and Distribution Piping Systems,
USAS B31.8-1968, ASME
7. National Safety Council Publications
8. Product Catalog - Shell Chemical - Industrial Chem. Div.
9. Texas State Dept. of Health - Occupational Safety Standards
10. USAS1 Standards
11. Houston Refinery Safety Manual
12. Shell Engineering Standards
13. Operations Permanent Orders and Management Directives
14. Chemical Data Guide for Bulk Shipment by Water - U. S. Coast Guard,
CG-388, 1966
15. Handbook of Industrial Toxicology,
E. R. Plunkett, M. D.

LAM 024236

ABS-007415

LEGEND

<u>Detection</u>	<u>Control and/or Safeguard</u>
A - Detector tubes or analyzer	1 - Eye protection and gloves
B - Explosion meter	2 - Self-contained breathing apparatus
C - Oxygen analyzer	3 - Dust or chemical mask
	4 - Chemical suit, hood, boots and gloves
	5 - Safety shower and eye wash bath
	6 - Welders mask with ears plugged
	7 - White clothing, boots and gloves
	8 - Warning signs
	9 - Exhaust hoods or eductors
	10 - Water wash
	11 - Equipment inspection and maintenance
	12 - Fire protection equipment
	13 - Radiological team

INDEX OF HAZARDSA. Gases

<u>1. Systemic Poisons</u>	<u>Detection</u>	<u>Control</u>	<u>Safeguards</u>
Ammonia	Odor	8, 9	2,4,5
Benzene	A	-	2,4,5
Carbon Monoxide	B	-	2,8
Chlorinated Hydrocarbons	A	8	2,4,8
TEL/TML	A	8	2,4,8
Carbon Disulfide	A	8	2,4
Phenol	A	8	2,4
Welding Fumes	-	9	2 (if required)
<u>2. Asphyxiants (simple)</u>			
Hydrogen	B	8	2
Methane	B	8	2
Carbon Dioxide	C	8	2
Nitrogen	C	8	2
Helium	C	-	2

	<u>Detection</u>	<u>Control</u>	<u>Safeguards</u>
3. <u>Asphyxiants</u> (chemical)			
Carbon Monoxide	B	8	2
Hydrogen Sulfide	A	8	2
4. <u>Irritants</u>			
Bromine	Odor	8	2
HCl	Odor	8	2,4,5
Chlorine	Odor	8	2,4,5
5. <u>Aerosols</u>			
Heavy Aromatics	-	9	1,2
Spray Painting	-	9	1,3
Weed Killer	-	-	1,3
6. <u>Flammables</u> (mixture with air)			
Ammonia	B	10	2,4
Hydrogen	B	9	2
Carbon Monoxide	B	9	2
Iron Sulfide	-	KeepWet	Land Disposal Area
7. <u>Explosives</u> (mixture with air)			
Ammonia	B	8,9	2,4
Hydrogen	B	9	2
Carbon Monoxide	B	9	2
Hydrocarbons	B	9	2
B. <u>Liquids</u>			
1. <u>Systemic Poisons</u>			
Benzene	-	11	1,5
Toluene	-	11	1,5
Ethyl Chloride	-	-	2 (for spills)
Xylenes	-	11	1,5
Phenol	A	8,11	1,2,5
Carbon Disulfide	-	8,11	2,4,5
Acetone	-	-	2 (for spills)
Tricresyl Phosphate	-	-	1,5
Epichlorohydrin	-	8,11	2,4,5
TEL/TML	-	8,11	2,7
Diethylamine	-	-	1
Difluoroethane	-	8	2
Trichloroethylene	-	8	2
Mercury	-	1	5

LAM 024238

ABS-007417

	<u>Detection</u>	<u>Control</u>	<u>Safeguards</u>
2. <u>Corrosive Mineral Acids and Bases</u>			
HCl	Ammonia/pH paper	8,9	2,4,5
H ₂ SO ₄	pH paper	8,9	2,4,5
NaOH/KOH	pH paper	8	4,5
H ₃ PO ₄	pH paper	8	4,5
Oakite	-	8	1
3. <u>Carcinogenic Agents</u>			
Heavy Aromatics	-	-	1,5
Free Sulfur	-	-	1,3,5
4. <u>Electrostatic Agents</u>			
SR Distillates, etc.	-	Gas blanket, grounding, low velocity, drop tubes	12
Two-phase Systems	-	Nitrogen purging and test for O ₂ Contents before putting into service	-
C. <u>Dusts</u>			
Asbestos	-	-	1,3
Coke	-	-	1,3
Silica	-	-	1,3
Welding Particulates	-	-	6,9
Catalyst	-	-	2 or 1,3
Lime	-	-	1,3
Sulfur	-	-	1,3
Soda Ash	-	-	1,3
Sodium Nitrate	-	-	1,3
Calcium Chloride	-	-	1,3
D. <u>Solids</u>			
Additives	-	-	1,3
Catalysts	-	-	2 or 1,3
Sulfur	-	-	2 or 1,3
Asbestos	-	-	1,3
Coke	-	-	1,3
Lead	-	-	9

LAM 024239

ABS-007418

	<u>Detection</u>	<u>Control</u>	<u>Safeguards</u>
E. <u>Radiation</u>			
1. <u>Electronic</u>			
Laboratory X-rays	Film badges, pocket docimeter, Geiger counter, scintillation detectors	8	13
2. <u>Nuclear</u>			
Measuring and Control Devices	Wipe test tissue and Geiger counter	8	13
F. <u>Noise</u>			
High Noise Levels	Sound Surveys	Plot plans in control rooms show- ing ear protection areas	Ear guards or ear plugs

LAM 024240

ABS-007419