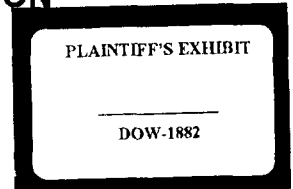


ST0219277
**SAFETY
REQUIREMENTS**

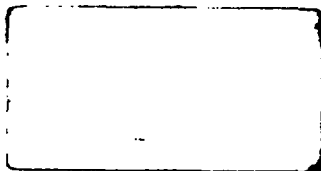
MICHIGAN
DIVISION



DOW CHEMICAL U.S.A.

November 3, 1987

FORM NO M-70990 R-8-87



ST0219278

MICHIGAN DIVISION
November 3, 1987

TO REPORT
AN
EMERGENCY

Dial

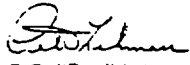
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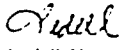
Michigan Division Employees:

A safe and healthy work place must be a primary objective for every company and its employees. The Michigan Division is no exception.

This booklet contains knowledge gained through years of experience. Please consult it before performing your job to assure you are proceeding safely.

No one should get hurt while performing their job at the Michigan Division. These requirements will help accomplish this.


F. R. "Pete" Lehman
General Manager


Ledell Alexander
Safety Manager

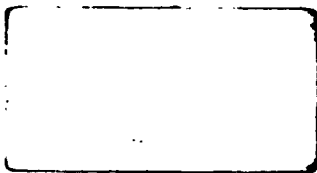


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A. EMERGENCY PROCEDURES

1. Emergency Alarm System (S-715)

An emergency alarm system has been installed to alert personnel whenever flammable or toxic material is released, an imminent possibility of release or for any other need to alert personnel or to evacuate an area. System tested Mondays at 10:55 a.m. The standard siren signals are as follows:

ALERT  one rise to maximum pitch.

Stop flame or spark producing activities, prepare for shutdown, note wind direction, assemble at pre-designated area for further instructions.

EVACUATE  continual rises and falls to maximum pitch. Leave affected area and reassemble at predetermined assembly area as per Department emergency plan.

ALL CLEAR  two rises to maximum pitch. Ok to return to work. All work permits or hot sheets shall be reissued prior to restarting work.

2. Chemical Exposures (S-122)

THE PERSONNEL INVOLVED IN A CHEMICAL EXPOSURE SHOULD ALWAYS CONSIDER USING THE AMBULANCE FOR ANY CHEMICAL EXPOSURE. IF IN DOUBT, USE THE AMBULANCE. ONE SHOULD ALWAYS CALL THE AMBULANCE FOR EXPOSURES INVOLVING THE EYE.

Chemical exposure of the skin calls for an immediate water wash for at least 15 minutes at

an emergency safety shower/eye wash station. Remove contaminated clothing and shoes.

Eye irrigation is required if any foreign material gets in the eye. Start the running water wash immediately and keep it going without a break for at least 15 minutes, or until the ambulance arrives and the Medical people take over.

Hold your eyes open, or let somebody hold them open for you, and make sure you get a thorough washing.

3. Communication

Supervision is responsible for communicating hazards, current conditions and changing situations to all personnel assigned to work in that area. This information must also be available for quick reference.

4. Emergency Equipment Checking (S-710)

Emergency siren and telephone alert systems shall be tested every Monday at 10:55 a.m.

Safety showers and eye baths shall be tested weekly for flow & temperature.

Emergency equipment such as respirators, S.C.B.A., fire extinguishers, emergency lighting units, escape doors and fire doors shall be examined monthly for proper operation and condition.

Tests and examinations must be properly documented.

5. Access To Emergency Equipment

Fire extinguishers, eyewashes, safety showers and other emergency equipment must be kept clear and readily available. Do not obstruct access to any emergency or safety equipment.

6. Visitor

Hosts are responsible for their visitors compliance with safety requirements and for proper action in the event of an emergency.

B. PROTECTIVE EQUIPMENT AND CLOTHING

1. Clothing

Recommended clothing within the Plant (fence-line) should cover the torso; cutoffs, sleeveless shirts or blouses, tanktops, or short pants should not be worn in production or lab areas. Each unit will address its specific hazards and develop a clothing policy.

Special clothing (NOMEX) or uniforms are required and furnished in some areas.

Safety toed shoes are recommended everywhere and are required in certain designated areas.

Sandals, open shoes, canvas sneakers or tennis shoes are not permitted in many areas as specified.

2. Eye Protection (S-725)

Approved safety glasses are required as a minimum inside the plant (gate to gate, including

inside vehicles, at brine wells and at other work locations outside the fence). They are not required in separated offices, lunch rooms, control rooms, locker rooms or posted areas. Additional eye protection such as chemical goggles and face shields are required where solids, liquids or flying particles may cause eye injury.

Department management approval is required for contact lenses to be worn. This must also be documented in your medical record at the Medical Department in case of emergency.

Soft contact lenses are not to be worn in production or lab areas because they absorb chemicals.

3. Head Protection

An approved hard hat is required headgear for working in many areas of the plant. Metal hats and bump caps are prohibited.

4. Life Jackets

Working over or near a water hazard such as a pond, river or open tank requires wearing an approved life jacket or safety belt.

5. Beards and Sideburns

If your job either routinely or in an emergency reentry, regardless of frequency, requires you to use respiratory protective equipment, no evidence of facial hair shall extend through the seal formed by the respirator.

6. Safety Equipment Modification

Company issued safety equipment must not be misused or altered in such a way that its protective features are rendered less effective. This includes cutting sleeves off Nomex uniforms.

C. PERSONAL CONDUCT

1. Loose Articles, Jewelry, and Rings

Neckties, unrestrained long hair or beards, loose clothing, rings, loose necklaces, bracelets or other jewelry are not permitted in work areas where they may present a hazard. Each department will address its specific hazards associated with these items in key point cards, written operating procedures or specific area rules. Employees in plant operating areas, shops and service areas shall not wear rings.

2. Drugs & Alcohol

Illegal drugs, and alcohol are not permitted on company property or in company vehicles at any time.

3. Smoking

Smoking is permitted only in designated areas. Smoking is NOT permitted in any motor vehicle.

4. Lifting

Use proper lifting technique by holding the load close to you, keep your back erect. Use your legs. Get help for heavy or awkward loads.

5. Housekeeping

It is the responsibility of each employee to keep the plant clean and orderly. Walkways and stairs must be kept free of obstructions or tripping hazards.

6. Dropping Tools or Equipment

Tools, equipment or material to be moved to a lower level must be carried or moved with a hoist, rope and bucket, etc. **DO NOT DROP, THROW or TOSS** anything from one level to another.

7. Walking

Walk, don't run except in emergencies. Be alert for changing surface conditions due to water, ice, snow or spills.

8. Shortcuts

Use roadways, walkways, pathways or other safe routes. Do not climb through, under, over or between railcars, low pipeways or other equipment or barriers.

9. Stairways

Use handrails on stairways. When carrying a load take one step at a time, be sure of your footing.

10. Horseplay

Pushing, shoving, goosing, tripping, wrestling, practical jokes, traps, snares or other forms of "horseplay" are not permitted.

11. Weapons

Bows, arrows, guns, ammunition or other weapons are not allowed on Dow property or in a Dow vehicle.

12. Medication

If you are taking medication that may possibly hinder your performance, awareness or affect your sense, inform your supervisor.

D. VEHICLES**1. Motorized Vehicles (S-755)**

Seat belts must be worn by the driver and front seat passengers. Back seat passengers shall wear seat belts, if provided.

Maximum speed limit in the Plant is 30 mph unless otherwise posted.

Unattended vehicles must not be left running. Industrial diesel and emergency vehicles may be left running provided the brakes are set and the transmission disengaged.

Keys should be left in the ignition of vehicles parked in process areas or under pipeline trusses.

The driver is responsible for the safe operation of his vehicle. All accidents must be promptly reported to Security.

2. Passengers In Vehicle

Passengers riding in pick-up trucks are limited to

three people in the front seat, including the driver.

Passengers riding in the bed of a pick-up truck must have seats, or be seated on the floor of the bed. They should keep all body parts confined within the vehicle.

3. Battery Jumping

When jumping a dead battery, wear chemical goggles. Do not let vehicles touch. Fill both batteries with water to reduce gas space which could explode if ignited by a spark. Connect positive to positive with jumper cable at battery terminals. Connect ground or negative cable between vehicles, motor blocks or somewhere other than at battery terminal. The last connection will produce a spark. Do not make this spark happen near the battery. Do not jiggle clips on battery. This could produce a spark that could ignite an explosion of the hydrogen gas and shower you with sulfuric acid. **Stand clear.**

4. Fuel Storage For Off-Road Equipment (S-620)

Containers for gasoline, fuel alcohol and diesel fuel shall be a minimum of 25' from a combustible wall, pipeline, electrical line or conduit. It shall be located no closer than 10' from a non combustible wall. Gasoline and alcohol containers shall be painted red. Diesel shall be green. Storage tanks shall be properly labeled, vented with flame arrestors, fusible link discharge valves, conductive hose, grounded, and protected by a self closing nozzle. A fire extinguisher shall be

located between 25 to 50 feet away. Fueling must be done with the engine shut off.

5. Fork Lift & Winch Trucks (S-627 & 628)

Operators must be trained and certified. The vehicle must be operated, inspected and maintained in such a manner as to minimize the possibility of personal injury or property damage. This will include daily inspection, periodic maintenance and testing with documentation.

6. Van Trailer Entry (S-627)

- a. If a trailer is still attached to its tractor, make sure the trailer wheels are chocked and warning signs are in place before entering the trailer with any type of material-handling equipment. You must also establish direct communication with the tractor driver, if available.
- b. If the trailer has been detached from the tractor, wheel chocks and warning signs must be put in place. A jack must be placed securely under the front of the trailer; do not enter until everything is set.
- c. If the rear of an unattached trailer extends 6 feet or more beyond the rear wheels, a jack must be placed to support that rear overhang — before anyone enters the trailer.

E. OFFICE

1. File Cabinets

File cabinets should be secured to prevent tip-

ping, and left closed when not attended. Handles should be used for opening and closing drawers. Keep weight low in file cabinets.

2. Sharp Objects

Sharp objects such as tacks, razor blades, pencils, scissors, knives, and paper cutters should be stored in such a manner as to prevent anyone from being cut. Broken glass should be swept up into a dust pan, not picked up by hand.

F. MACHINERY & TOOLS

1. Hand Knives

Knives should be kept in a sheath, or left in a safe position when not in use. Always maintain a sharp blade. Never use a knife as a substitute for another tool. When using your knife, always cut away from the body. Use the appropriate protective equipment.

2. Tool Design Capacity

Do not modify or change any tool in any way that alters the capacity or the original design of the tool.

3. Defective Tools

Don't use them. Take any defective tool or equipment out of service immediately — and be sure it is not used again before it is repaired.

4. Guards on Mechanical Equipment (S-430)

Gears, belts, power transmission couplings, and similar hazardous components of machinery, tools

(including portable grinders and buffers), and equipment are fitted with guards for your protection. Do not operate any machine, tool, or item of equipment without the guard in place.

5. Deadman Controls

Hand held power tools must have deadman controls. This means the control cannot be locked, or will not stay in the "On" position.

6. Grinders, Wire Brushes and Buffers

Peripheral guards are required on grinders, wire brush wheels and buffing wheels. Tool rests on brushes and grinders must be adjusted to within $\frac{1}{8}$ inch of the wheel. Buffers must not have a tool rest. The proper grinding wheel for the job must be properly installed and correctly used. Do not grind on the side of a grinding wheel. If damaged or used improperly it can disintegrate with explosive force. Stand to one side. Gloves should not be worn when using rotary tools. A face shield must be worn over safety glasses or chemical goggles.

7. Welding, Cutting

Only personnel trained and certified should use this equipment. Cylinders must be secured in an upright position. Oxygen and fuel must be shut off, hoses bled down and regulators backed off to "0" before leaving. Cylinders not in service should be secured upright with protective cap in place.

8. Compressed Air

Air under 30 psi from a vented jet reducing nozzle may be used to clean certain work areas but may not be used to clean off clothing or skin. Hoses at the base of the nozzle must be open. Plant air must not be used as a breathing air source (S-745).

9. Pressuring Drums

Do not apply inside pressure or excessive padding to remove material from sheet metal drums. If you heat material in a drum, loosen or remove the bung to avoid overpressuring that could rupture the drum.

10. Adjusting Machinery

Machinery and process equipment in-service must be shut down, locked out, and red-tagged before repairs are made. If these steps are not feasible, the Owner-Superintendent must review the proposed work and provide a written procedure for the workmen to follow.

11. Overhead Hoists (S-870)

Overhead hoists must have the capacity of the beam clearly painted on the supporting beam and the capacity of the hoist painted clearly on the hoist. A complete inspection and operational check must be done annually. This inspection must be documented.

All hoists including chain falls and ratchet units shall be visually and operationally inspected

before the work is begun by the person using the tool.

Load lines must not be used as a sling, wrapped around load, knotted or kinked. Hooks must have safety latches.

G. ELECTRICITY**1. Power Line Clearance (S-335)**

Any work that could bring people, machines, scaffolds, condors, manbaskets or anything else, near power lines must be done at a safe working distance.

— 10 ft. away from power lines rated up to 50,000 volts

— 20 ft. away from power lines rated over 50,000 volts

— 50 ft. away from power lines if a crane supported manbasket is used.

Any work inside these limits must be approved and documented by Electrical Distribution Maintenance.

2. Electrical Grounding (S-315)

All portable and stationary electrical equipment shall be properly grounded, tested, inspected and documented. All electric hand tools should be inspected, properly maintained and documented.

3. Temporary Wiring (S-385)

Temporary wiring (not including extension cords, properly used) must be covered by a "Temporary

Electrical Wiring Permit" which is accompanied by a work order for the permanent installation. This is to prevent temporary wiring from being used indefinitely.

4. **Portable Lights in Classified Areas (S-325)**

Portable lights in areas that may develop an explosive atmosphere must be of the proper type and in good condition so as to not become a source of ignition. This would include a UL approved Flash Light and an explosion proof Extension Work Light. (Do not use Extension Light in Bromate Areas.)

5. **Cable Trays**

Do not walk in, on, cable trays. A cable tray is not designed to be a safe walking surface. (See S-340)

H. CHEMICALS

1. **Labeling and Hazard Identification (S-129, S-624)**

All containers holding chemicals — whether the container be a drum, bottle, can, box, or whatever — must be labeled to show the current contents.

Vessels over 120 gal. shall be marked with the appropriate NFPA symbol to identify the type and degree of hazard.

example:

HAZARD IDENTIFICATION SYMBOLS



2. **Refrigerated Storage (S-497)**

Food must not be stored in the same refrigerator with chemicals or biological materials. Refrigerated storage cabinets used for storage of chemicals or biological materials shall be labeled as such with a current list of contents posted outside. These cabinets shall not contain an ignition source and only compatible chemicals shall be stored in them.

3. **Product Contamination**

Individuals performing any loading, unloading, or transfer operations are responsible for checking the container identification — and also the piping and valve lineup for the transfer — before starting the operation and after completing it.

4. **Glass Containers**

All glass containers used for shipment of chemicals must have an outer protective container or shipping carton.

5. Dumping Hazardous Material

Flammable, corrosive, or toxic materials are not to be vented or drained or dumped into the sewers. The only two exceptions are:

- a. If there is a serious emergency.
- b. If you have specific approval of the Plant Superintendent and of Environmental Services.

If hazardous materials get into the sewer, Environmental Services must be called.

6. Waste Chemical Disposal

When containers of waste chemicals are to be disposed of, call Environmental Services for instructions.

7. Equipment Transfer (S-720)

Equipment to be transferred should be drained, decontaminated, cleaned, inspected, sealed or wrapped, prior to shipment. Communicate with receiving organization. Consult as needed with Fire, Safety, Environmental Service or Industrial Hygiene.

8. Storage & Handling of Flammable Liquids in Small Quantities (S-130)

Storage containers must be suitable for the liquids volatility, flammability and quantity stored.

Proper storage shall include grounding, spill protection, protection from ignition sources, ventilation and proper labeling.

Flammable liquids no longer required must be promptly and properly disposed of and not allowed to accumulate

1. MAINTENANCE & CONSTRUCTION

1. Asbestos (S-140)

Before working on any equipment involving asbestos containing materials, contact Industrial Hygiene for detailed instructions regarding proper respiratory protective equipment and safe handling methods. An example is removal of asbestos containing insulation from piping and vessels. This work should be approached as though asbestos were involved until it is definitely established otherwise.

Contact Environmental Services for proper disposal instructions.

PLEASE NOTE Asbestos handling by contractor falls under separate governmental regulations, and these procedures are not reflected in this standard. For contract jobs consult with your DOW OWNER REPRESENTATIVE.

2. High-Level Work

Work more than ten feet above ground requires either guard rails, safety belt or harness and lanyard or safety nets.

3. Safety Devices

Devices such as guards, shields, governors, limit switches, rupture discs and relief devices must

not be bypassed, made inoperable or otherwise defeated.

4. Drinking Water (S-765)

Additions or alterations to any drinking water outlet or city water system shall be permitted only with the approval of an authorized State Licensed Plumber. Do not connect drinking water to any other system.

5. Process Piping

Process piping is not to be used as support to hoist material or equipment without permission of the owner of the piping.

6. Hand-Turning Rotating Equipment

Using a wrench to rotate, or hand turning a pump shaft or other rotating parts must not be done until the drive power has been locked out and red-tagged.

7. Digging (S-800)

Use of tools such as hand shovel, backhoe, jack hammer, pile driver, auger and drills in digging requires a current underground reference drawing for that job from Engineering.

The supervisor on the job is responsible to avoid harm to people or property such as pipelines, powerlines, clay tiles or other fragile material. Excavations over 4 feet must be laid back to a stable slope or shored up.

8. Barricades (S-700)

Barricades shall be placed around open trenches, excavations, floors and grating by the individuals who create the opening. If the reason for a barricade is not obvious it also should be identified with tag M-48240.

Street blockage requires a permit #48010.

9. Vehicle Supported Work Platforms (S-630)

Aerial devices such as a Condor, Giraffe, bucket trucks, Versa Lift, forklift platforms and crane suspended platforms may be operated only by trained and certified employees. They shall be operated within specified limits of capacity and safe distance from power lines (S-335) with all safeguards engaged and in the manner for which the equipment was designed.

10. Roofs (S-735)

Roofs must be inspected annually. Access roof only with permission of the Building owner. Job planning must be employed. Transite roofs must not be walked on without planking spread over at least two supporting members.

11. Portable Ladders (S-750)

Portable ladders used in the Division must be wood or fiberglass, non-conducting, Class I, heavy duty, industrial grade.

Step ladders must be extra heavy duty and may not exceed 12 feet. Extension ladders may not

exceed 40 feet in length and must be equipped with ladder feet.

Ladders must not be painted but may be protected with a transparent preservative finish. The top and next step including the side rails of step-ladders shall be stained red to indicate "No Step" area. The stain is a transparent coating which allows the wood to be inspected for cracks. Ladders must have a documented inspection annually.

The person using a straight or extension ladder must be sure it is in good condition, on firm support at the proper angle (base out $\frac{1}{4}$ of height), properly supported, tied off and use the ladder in a safe manner.

When working from a ladder requiring the use of both hands, job planning is to be considered.

Faulty ladders must be tagged out of service until repaired or replaced.

J. CONTRACTORS

1. Requirements

Contractors are required to comply with Michigan Division Safety requirements as described in **Rules And Procedures For Contractors**. Any questions regarding intent and interpretation of these requirements should be directed through the Division Contractor Safety Engineer to the Contractors Safety Committee.

2. Exemptions

Specific exemptions may be granted by the Contractor Safety Committee based on the work to be done. For example: erecting structural steel, elevated brick work and scaffold building, require different fall protection than other high level work.

3. Responsibility For

It is the responsibility of Departmental supervision to see that contractors in their facility doing work for them are informed of conditions in their area, changes in these conditions and see that they comply with plant safety requirements and any special requirements that may be applicable.

K. LOCATIONS OUTSIDE MIDLAND

Michigan Division Locations outside Midland such as Bay City, Ludington and Traverse City have variations on some requirements to fit local situations. Consult the safety representative at these locations for specific details.

SAFETY STANDARD INDEX

- S-001 General Administrative Safety Standard
- *S-002 Michigan Division Safety Requirements
- S-122 Plant Treatment of Chemical Exposures
- S-129 Hazard Identification Symbol
- S-130 Storage & Handling of Flammable Liquids in Small Quantities
- *S-135 Reactive Chemicals
- *S-140 Asbestos Containing Material
- S-315 Electrical Grounding
- *S-320 Lockout of Power Driven Equipment
- S-325 Portable Lights For Classified Areas
- S-335 Power Line Clearance
- *S-340 Working On Electrical Equipment
- S-385 Temporary Wiring
- *S-400 Flexible Joints Used In Hazardous Service
- *S-410 Critical Instruments
- S-430 Guarding of Mechanical Equipment
- *S-440 Sight Glass Devices In Hazardous Service
- *S-450 Hand Rigging Equipment for Material Handling
- *S-466 Roll Type Equipment
- *S-468 Vessels and Relief Devices
- *S-477 Control of Ionizing Radiation Hazards
- S-497 Storage of Chemicals in Refrigerated Storage Cabinets
- S-500 Plant Shutdown or Demolition
- S-620 Storage and Location of Tanks For Refueling Off Road Equipment
- *S-623 Compressed Gas Cylinders and Regulators
- S-624 Proper Labeling of Containers for Storage & Transfer
- *S-625 Portable Bulk Fluid Handling Tanks and Stations
- *S-626 Semitrailer Units
- S-627 Powered Industrial Trucks
- S-628 Winch Trucks
- S-630 Vehicle-Mounted or Supported Work Platforms
- *S-640 Loading & Unloading Tank Trucks
- *S-641 Loading & Unloading Tank Cars
- *S-642 Loading & Unloading Boxcars
- *S-645 Pipeline Identification & Emergency Plans
- S-700 Temporary Barricades
- S-710 Emergency Equipment
- S-715 Emergency Procedures
- S-720 Equipment Transfer
- S-725 Eye Protection
- *S-730 Steam, Air, Nitrogen, Hot Water Hoses And Hot Water Sources
- S-735 Roots
- *S-740 Danger Red Tag
- *S-745 Respiratory Protection
- S-750 Ladders
- S-755 Motorized Vehicles
- *S-760 Railroad Warning Signs & Work Permits
- S-765 Safe Drinking Water
- *S-770 Hearing Conservation & Control of Hazardous Noise
- *S-775 Line and Equipment Opening
- S-780 Welding and Cutting
- S-800 Safe Practices For Digging and Earth Penetration

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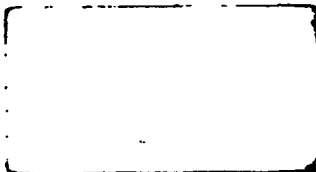
*S-810 Erected Elevated Work Platforms
*S-850 Vessel Entry
S-870 Overhead Hoists
*S-900 Hot Work Permit

Michigan Division
Safety Department

*Indicates those standards that require annual review

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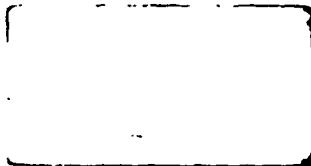
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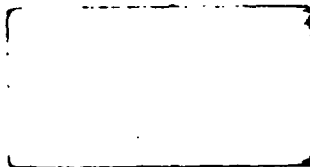
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This tag means
just what it says,

“DO NOT OPERATE”

See
Operational Safety Standard-740
for details.

