



DOW CHEMICAL U.S.A.

December 16, 1986

LOUISIANA DIVISION

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TO ALL BLOCK 55 - DOWANOL/ETHANOLAMINES PERSONNEL

The respiratory policy for Block 55 DOWANOL/Ethanolamines plant reviewed on 12-16-86 was found to be adequate for protection of all personnel.

Our area monitors for ethylene oxide and ammonia and the strategic locations of fresh air masks in the block, provide an adequate early warning and escape plan. Individually issued full face gas masks will continue to be available as outlined in the Block-55 Respiratory Protection Guide. There will be no changes to the Respiratory Program as outline in the Respiratory Protection Guide. The guide covers the use of the Organic Vapor Acid Gas escape respirator, the Emergency Life Support Apparatus, the Full Face Gas mask, and the supplied breathing air equipment in this block. This guide is intended to provide personnel with the information needed for their protection. Full implementation of this guide is expected to continue.

Gay Bourgoyne
Block 55 IH Rep.

/attachments

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BLOCK-55 RESPIRATORY PROTECTION GUIDE

SCOPE: To establish a program for the proper use of respiratory equipment in the DOWANOL/Ethanolamines Plant.

RESPONSIBILITY:

The plant superintendent will assign someone to monitor compliance with this program. It is each individual's responsibility to properly maintain and use personal respiratory protection equipment.

TRAINING:

Shift supervisors will train all personnel under their supervision and the safety supervisor will train all new personnel and all craftsmen. At least one plant technical person will assist each supervisor in this training.

Training will include:

1. Respirator Limitations
2. Proper Fit and Use (a proper fit must be demonstrated in testing.)
3. Proper Cleaning and Maintenance
4. Inspection Procedures and Record Keeping
5. Discussion of consequences of over-exposure
6. Wearing respirator for minimum of ten minutes, and
7. Location of gas masks/supplied air equipment.

SURVEILLANCE/EVALUATION:

An annual survey of exposure to personnel is performed to document levels on exposure in the various plant areas. This information is reviewed with the Medical Department, Industrial Hygiene Department, and with all plant personnel annually.

All plant personnel are given a physical before reporting to work and on an annual basis thereafter. This physical includes determination of ability to wear a respirator.

Performance of this respiratory protection guide will be reviewed annually with the Safety Department, and the Industrial Hygiene Department.

GENERAL:

There are no routine jobs in Block 55 which require the wearing of a respirator or supplied air equipment to prevent exposure to a chemical hazard. Some jobs will however require the wearing of respiratory equipment as a precautionary measure only.

Chemical respirators can remove only limited quantities of the chemical specified on the canister. THESE RESPIRATORS DO NOT SUPPLY OXYGEN AND MUST NOT BE USED IN ATMOSPHERES CONTAINING LESS THAN 19% OXYGEN.

GENERAL: (continued)

Chemical respirators provide only a limited amount of protection time. You must leave the area immediately upon the first signs of breakthrough. If you smell or taste the vapors, or if any sign of nausea, dizziness or distress develops, return to fresh air immediately.

Neither chemical respirators nor supplied air equipment provides any protection from skin irritation as would be possible in high concentrations of ammonia. A full gas suit should be worn to protect against skin irritation.

AVAILABLE RESPIRATOR PROTECTION EQUIPMENT:

1. OVAG escape respirator
2. Full face gas mask
3. ELSA, Emergency Life Support Apparatus
4. Scott Air Pak
5. Supplied breathing air (fixed and portable)

revised: 12/86
G. Bourgoyne
IH Rep.

I. OVAG (ORGANIC VAPOR ACID GAS) ESCAPE RESPIRATOR

MSA Respirator, mouth piece type,
Part No. 463078

- A. This respirator is designed to be used for ESCAPE ONLY.
This reusable respirator is used division wide.
- B. This respirator must be carried by every person when going to another area inside the division whether to a meeting, to pick up supplies, or to work.
- C. The issuing and marking of these respirators will be identical to that for the disposable respirators.
- D. After being used or at the end of three months the respirator cartridge must be replaced. At this time the respirator body must be cleaned and disinfected using the MSA Sanitizer Kit. Follow instructions with the kits which are located in the restrooms in the control building.
- E. These respirators will also be checked in the monthly shift safety meeting or prior to monthly safety meeting (See Attachment I). This check will be documented on the Respiratory Checklist for each shift.

NOTE: A separate type of OVAG respirator has been purchased and is now being used in the Division. Below are the specifics on this respirator.

MSHA (MINE SAFETY AND HEALTH ADMINISTRATION) & NIOSH (NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH)
approval number is TC-23C-111

- A. This respirator is designed to be used for ESCAPE ONLY. This respirator is disposable.
- B. This respirator must be carried by every person when going to another area inside the division whether to a meeting, to pick up supplies, or to work.
- C. The issuing and marking of these respirators will be identical to that for the disposable respirators.
- D. After being used or at the end of 3 months, these respirators will be discarded and a new one issued.
- E. These respirators will also be checked in the monthly shift safety meeting or prior to the monthly safety meeting. (See Attachment I). This check will be documented on the Respirator Checklist for each shift.

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II. FULL FACE GAS MASK

- A. Scott Full Vision with Scott Chin Style 282-QAMM-L canister. This is the only canister available for the combination of the hazards which are possible in the DOWANOL/Ethanolamines plant.
- B. These full face gas masks with the specified canister will provide limited protection for organic vapors, acid gases (e.g. HCl and chlorine), ammonia, and light dusts, smokes, and mists. The gas masks will be used in lieu of the dual cartridge respirator to provide more protection from the organic vapors in one mask.
- C. These masks may be used for working in any situation where light concentrations of ammonia, alcohol, EO or PO, or any DOWANOL/Ethanolamines product could be encountered. There are no routine jobs at present which involve over-exposure to any chemical vapor hazard. Jobs where gas masks are required as a precaution will be discussed later.
- D. Each person assigned to Block 55 will have a personal gas mask issued. This mask will be stored in a plastic box marked with the owner's full name. All these masks will be stored in the control room. Technical and office personnel may keep their gas masks in their office.
- E. The canister on the gas mask must be changed one year after the seal is broken or before the expiration date, whichever is first. The canister must also be changed before storing the mask after each use.
- F. Each person is responsible for inspecting his gas mask after each use. Each shift will also inspect gas masks at that shift's monthly safety meeting. Inspection will include; but not be limited to:
 - 1. Canister expiration date,
 - 2. Integrity of rubber face piece/straps,
 - 3. Fit check,
 - 4. Cleanliness, and
 - 5. Proper operation.

Defective gas masks must be repaired or replaced. This check will be documented on the Respirator Checklist for each shift. (Attachment I)

II. FULL FACE GAS MASK (continued)

- G. Personal gas masks will be fitted with prescription eye-glasses for those personnel requiring them. Eye-glasses with sidearms will not be worn when wearing the gas mask.
- H. Gas masks must be cleaned and disinfected using the MSA Sanitizer Kit. Follow instructions with kit. Kits will be located in restrooms in control building. Kits may be ordered as MSA 34337 Sanitizer Kit from Louisiana Welding Supply.

III. ELSA, EMERGENCY LIFE SUPPORT APPARATUS

- A. International Safety Instruments, Inc.
ELSA (Emergency Life Support Apparatus),
5 minutes duration - For ESCAPE USE ONLY
- B. The ELSA unit will be used to replace the Robert Shaw Air Capsules as a source of 5 minutes of breathing air for ESCAPE PURPOSES ONLY.
- C. ELSA units are located in pairs in areas of possible ammonia exposure. (See Attachment II)
 - 1. D-218 Structure, Top Deck,
 - 2. D-205, Top Deck,
 - 3. Near C-205,
 - 4. North of Ammonia Tank Car Spot on Rack, and
 - 5. South of Ammonia Tank Car Spot on Rack.
- D. Pressure and condition of each unit is inspected on the weekly Safety Shower and Eye Wash Checksheet. (See Attachment II)
Minimum pressure must be maintained in full range of pressure gauge (1800 to 2216 psig).
- E. OPERATION:
 - 1. Use only hand pressure to open or close cylinder valve.
Use no tools.
 - 2. Lift flap to remove hood
 - 3. Open valve fully
 - 4. Don hood
 - 5. Head for safe area.
- F. Two spare units are located in the shop. As expended unit must be replaced.
- G. Expended units should be returned to the Shop so that the Material Controller may have them refilled at Stock.

IV. SCOTT AIR-PAK

A. SCOTT AIR-PAK, 30 MINUTES

1. Scott Air-Pak II, Pressure Demand self-contained breathing apparatus.
2. This Air-Pak provides personnel with maximum respiratory protection while performing work in toxic atmospheres regardless of concentration of oxygen deficiency.
3. The regulator is equipped with a low pressure alarm to warn the user in sufficient time for escape from the contaminated area.
4. This Air-Pak is rated at 30 minutes under moderate working conditions. Where work is more strenuous, the duration may be shorter, possibly as short as 15 minutes.
5. Air-Pak cylinder pressure is checked on a weekly basis and maintained above 1800 psig. Air-paks must be checked in use weekly and the low-air alarm must also be tested weekly. (Weekly Safety Shower and Eye Wash Checksheet - Attachment II)
6. Scott Air-Paks are located in strategic areas throughout the plant.

- NO. 1 -- CONTROL ROOM
- NO. 2 -- CONTROL ROOM
- NO. 3 -- CONTROL ROOM
- NO. 4 -- CONTROL ROOM
- NO. 5 -- CONTROL ROOM
- NO. 6 -- NORTH EAST AT T/C RACK BETWEEN SPOT 8 & 10
- NO. 7 -- SOUTH DS-205 ON RETAINER WALL
- NO. 8 -- S. EAST OF DV-146 ON RETAINER WALL
- NO. 9 -- EAST E-244
- NO. 10 -- WEST AREA I SUMP ON HANDRAIL

7. NORMAL OPERATION

- A. Check cylinder gauge for "FULL" indication
- B. Don the Air-Pak by backing up the cabinet, placing your arm through the shoulder straps, and connecting the chest buckle. Pull down on the side straps to adjust the harness.
- C. Connect and adjust the waist belt.
- D. Check that the control lever is in the "OFF" position.
- E. Open the cylinder valve 1-1/2 turns and don the facepiece, adjusting it properly for a good seal.
- F. Check the seal by closing off the breathing tube with you hand and inhaling slowly.

7. NORMAL OPERATION

- G. Connect the breathing tube on the regulator at the quick connect coupling when ready to enter the contaminated area; tighten finger tight.
- H. Place regulator control lever in the "ON" position.
- I. After use and in a safe area, place control lever in the "OFF" position, uncouple the breathing tube, and close the cylinder valve. Bleed the residual pressure down by momentarily opening the by-pass valve (red knob). Replace cylinder and return Air-Pak to its cabinet.

8. EMERGENCY OPERATION

- A. This method should be used only if the regulator malfunctions during use. Operation of the Air-Pak in this manner is for ESCAPE ONLY.
 - B. Open and adjust the by-pass valve (red knob).
 - C. Depress the locking tab under the regulator shut-off valve (yellow knob) and turn the valve off (full clockwise).
 - D. Red tag and remove the Air-Pak for repair.
9. The face piece must be cleaned and disinfected after each use. This is the responsibility of the person who used the Air-Pak.
- A. Carefully wash the face piece using the MSA Sanitizer Kit.
 - B. Rinse the facepiece thoroughly by flushing water through the breathing tube and letting it flow out through the the opening onto the lens.
 - C. After rinsing, the facepiece and breathing tube must air dry completely. Be sure all components are thoroughly dry before replacing in cabinet.
10. Annual inspection of Air-Pak by the vendor is coordinated by the Safety Department.

B. SCOTT AIR-PAK, 5 MINUTE

1. Scott Ska-Pak Emergency Escape Unit, Pressure Demand self-contained breathing apparatus.
2. These Air-Paks are designed for ESCAPE ONLY and are used in vessel entry and as supplemental air on air lines.
3. Pressure and condition of each unit should be checked weekly and before each use.

C. SUPPLIES - AIR SUIT

1. This suit should be used in circumstances where a high concentration of ammonia vapors are present.
2. The Air-Pak must be donned after the suit and connected to the suit's breathing tube.
3. Operational procedures and cleaning requirements are the same as for the 30 minute Air-Paks.

V. SUPPLIED BREATHING AIR

A. FIXED SOURCE - CONTROL ROOM

1. The face pieces in the Control Room are pressure demand type.
2. Cylinder pressure will be checked weekly and must be maintained above 1800 psig.
3. A low pressure alarm is set at 400 psig cylinder pressure to provide the user time to prepare to evacuate when he is out of air.
4. Supplement 5-minute Air-Paks are provided on these air lines for ESCAPE ONLY.
5. The facepiece must be thoroughly cleaned using the MSA Sanitizer Kit after each use. This is the responsibility of the person who used the equipment.
6. This equipment will be tested in used including checking the low pressure alarm on a monthly basis.

B. PORTABLE SOURCE - BREATHING AIR CART

1. The cart consists of two breathing air cylinders, regulator, hoses, and three face pieces.
2. A low pressure alarm is included as a part of the regulator.

B. PORTABLE SOURCE - BREATHING AIR CART (continued)

3. Cylinder pressure and operation of all apparatus will be checked on a monthly basis.
4. The facepiece must be thoroughly cleaned using the MSA Sanitizer Kit after each use. This is the responsibility of the person who used the equipment.

CONSEQUENCES OF OVER-EXPOSURE

AMMONIA ——— TLV 25 ppm, Odor threshold 50 ppm

Redness and dryness of skin and eyes, severe irritation of respiratory system.

METHANOL ——— TLV 200 ppm, Odor threshold 1500+ ppm

Redness and dryness of skin, eye irritation, inhalation may cause nervousness or dizziness.

BUTANOL ——— TLV 50 ppm, Odor threshold 10 ppm

Irritation to skin and eyes, inhalation may cause irritation, dizziness, or crying (lachrymator effect).

EO ——— TLV 1 PPM (Dow), Odor threshold 100-800 ppm

Frostbite or burn to skin, possible permanent eye damage, inhalation may cause drowsiness and dizziness, suspected carcinogen.

FO ——— TLV 20 ppm, Odor threshold 35-200 ppm

May cause burns to skin and eyes, irritation to respiratory system.

ETHANOLAMINE — TLV 3 ppm (MEA)

May cause burn to skin or eyes, inhalation may cause irritation.

DOWANOL ——— TLV 25 ppm (EB), 100 ppm (PM)

Moderate irritation to skin and eyes, inhalation may cause drowsiness or nausea.

revised: 12/86
G. Bourgoyne

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JOBS WHICH REQUIRE FULLFACE GAS MASK

The following jobs are those in the DOWANOL-Ethanolamines plant which require the wearing of a gas mask. The masks are worn for these jobs only as a precautionary measure since exposure monitoring has shown no problems. No list can cover every situation which might arise. The individual and his supervisor must be on the lookout for situations which could involve exposure to a chemical hazard and be sure that the proper protective equipment is provided and used.

1. Pulling ammonia pump - mask must be worn to prevent exposure to ammonia in the event of a leaking valve or residual ammonia.
2. Breaking into any line/equipment which last contained ammonia or alcohols.
3. Disconnecting ammonia or butanol tank car - wearing mask to prevent exposure to ammonia or butanol remaining in connections after off-loading is complete.

JOBS WHICH REQUIRE SUPPLIED AIR LINES

The following jobs are those in the DOWANOL-Ethanolamines plant which require the use of a supplied air line. Supplied air is used on these jobs because of the low TLV and in order to prevent any possibility of exposure.

1. Pulling of any oxide pump.
2. Breaking into any line/equipment which last contained EO or PO.

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CONSEQUENCES OF OVER-EXPOSURE

AMMONIA ——— TLV 25 ppm, Odor threshold 50 ppm

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METHANOL ——— TLV 200 ppm, Odor threshold 1500+ ppm

Redness and dryness of skin, eye irritation, inhalation may cause nervousness or dizziness.

BUTANOL ——— TLV 50 ppm, Odor threshold 10 ppm

Irritation to skin and eyes, inhalation may cause irritation, dizziness, or crying (lachrymator effect).

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Frostbite or burn to skin, possible permanent eye damage, inhalation may cause drowsiness and dizziness, suspected carcinogen.

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May cause burns to skin and eyes, irritation to respiratory system.

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