

APPENDIX H PROTECTION CLOTHING - ALKYLATION UNIT

**MURPHY OIL SUPERIOR REFINERY
HF ALKYLATION UNIT**

USE OF PROTECTIVE CLOTHING

ALL PERSONNEL

Three classes of protective clothing are provided for people who enter and work in the HF Alkylation Unit. The three classes "A" through "C" are set up using OSHA guidelines, with "A" providing the most protection and "C" the least. A description of each clothing class and examples of the types of jobs for which that clothing class is to be used follows. Disciplinary action may be taken for failure to wear proper protective clothing.

Class "C" clothing gives the minimum protection and must be worn by anyone entering the unit. The old class in which protective overall pants need not be worn is no longer acceptable.

Gloves should be leak checked before they are used.

All class "A" suits will be pressure tested initially and after each use.

OPERATING PERSONNEL

Class "C" Clothing

Type of Work

Face Shield

Routine operating work where no physical contact with acid containing equipment is expected. Examples:

14" Neoprene Gauntlets

- Reading meters and pressure gauges.

Neoprene Boots or Rubbers

- Visual inspection of areas by operators and supervisors.

Acid-resistant Jacket

- Assembly of equipment that has been isolated, neutralized, washed, and dried.

Acid-resistant Overall pants

- Loading or dumping walnut KOH treaters. Note: A dust mask should be used while performing this task.

- Routine operating work during normal operation, except those noted under Class "B" clothing. Examples:

- Washing down.

- Routine switching of pumps.

- Opening and closing valves in closed systems (NOT BLEEDERS OR VENTS OR SAMPLE POINTS ON EQUIPMENT WHICH NORMALLY CONTAIN ACID).

- Taking samples which do not contain acid under normal conditions such as: NC4, NC3, Splitter Bottoms, Alkylate.

Class "B" Clothing

Type of Work

Air Supplied Hood

In all operations where it is possible to have HF acid leaks to the Atmosphere. Examples:

14" Neoprene Gauntlets

- Greasing valves.

Neoprene Boots or Rubbers

- Adjusting packing.

Acid-resistant Jacket

- Taking HF samples.

Acid-resistant Overall Pants with Integral Booties

- Changing pressure gauges.

- Removing plugs from open ended valves.

- Opening or closing bleeder or vent valves.

- Flushing equipment in preparation for maintenance.

- When instructed by supervisor.

Note: When performing work that requires "B" clothing, at least two operators must be present, dressed in "B" clothing, to take care of emergencies.

Class "A" Clothing

Type of Work

Dupont CPE Acid Resisting "ZOOT" Suit with air supplied via hose, or via SCBA air pack.

Extreme emergencies where it is necessary to enter areas having a high concentration of acid vapor or where there is an acid spray. Examples:

- Pump seal or valve failure.

- Large leaks where it is necessary to isolate equipment.

Note: When performing work that requires "A" clothing, at least two operators must be present, dressed in class "A" clothing.

MAINTENANCE

All maintenance personnel who are to work in the acid area must wear the protective clothing as specified on the safety permit issued for the job. The following represents the required type of safety clothing classes for the type of work to be done. You will note that the maintenance clothing classifications parallel those of the unit operator.

MECHANICS CLOTHING CLASSIFICATIONS

Class "C" Clothing

Type of Work

14" Neoprene Gauntlets

- Repair of equipment which has been isolated, opened, disassembled and cannot have acid trapped in it.

Neoprene Boots or Rubbers

- Work on non-acid containing equipment in area.

Acid-resistant Jacket

- Visual inspection of equipment by supervisors and visitors.

Acid-resistant Overall Pants

- Welding on lines that have been properly prepared for welding.

Face Shield

- Reassembling thoroughly cleaned acid equipment.
- Painting.
- Working on equipment that has been blinded and opened to the atmosphere. The equipment should be neutralized or non-fuming. Examples:
 - Exchangers and condensers after they have been blinded and opened.
 - Work on columns or vessels after they have been blinded and opened.
- Disassembly of acid equipment which has been opened and neutralized, and cannot have acid trapped in it, whether or not it has been removed from the acid area. Examples:
 - Dismantling safety valves.
 - Hot bolting equipment that has been purged and blinded.

Class "B" Clothing

Type of Work

Air Supplied Hood

- All blinding and opening of lines and other equipment.

14" Neoprene Gauntlets

- All work on any piece of equipment which is not blinded at the first flange. This includes work on exchangers, etc., not individually blinded even though a section of the plant including them is blinded off.

Neoprene Boots or Rubbers

Acid-resistant Jacket

- Making equipment openings after blinding. Includes channel heads on cooling water exchangers that have suspected tube leaks, and all flanges and first opened manways.

Acid-resistant Overall Pants with Integral Booties

- Opening all bottom manways on columns.
- Working on equipment that is fuming although open and blinded.
- Work on small piping manifolds even though isolated from system. Includes work involving opening of meters and meter manifolds until certain no acid is trapped.
- Disassembly of equipment, whether or not it has been removed from the operating area, which may contain pockets of trapped acid. All pocketed items (pumps, etc.) must be thoroughly cleaned up. Includes exchangers which have plugged tubes, until the tubes are unplugged.

Class "A" Clothing

Dupont Acid Resisting "ZOOT" Suit with air supplied via hose, or SCBA air pack.

As directed by the Operations Shift Foreman or Operations Superintendent for work in potentially hazardous situations.

Note: When performing work in AB@ or AA@ clothing, at least two workers must be present, dressed in similar clothing, to take care of emergencies.

MISCELLANEOUS NOTES

- Protective clothing is acid-resisting not acid proof. Suits currently in use have break though times of approximately 480 minutes.
- If HF comes into contact with the protective clothing it should be washed off at once and then the clothing should be neutralized.
- Gloves should be frequently dipped into neutralizing solution without being removed from the hands.
- If a large quantity of HF is spilled or splashing onto protective clothing, wash it off carefully in a safety shower, then go to the Change House, remove the protective clothing, neutralize it, and put on fresh protective clothing.
- The following procedure is suggested for the removal of protective clothing:
 - Neutralize boots and gloves
 - Remove face shield and hard hat.
 - Remove rubbers (rubbers are not to be worn outside the alky unit.)
 - Remove outer clothing.
 - If any of above clothing is suspected of contacting acid, neutralize it.
- Regular work clothes on the Alkylation Plant will be the same as on any other operating unit. Work pants should not be so long as to drag on the ground or hang below the protective overall pants.
- If HF contacts a piece of regular work clothing, immediately remove that piece of clothing and put it in the neutralizing solution in the change house. Do not put this clothing on until it has been thoroughly neutralized, washed-out and dried. If regular work clothing becomes contaminated, it should be removed in a safe manner, e.g., gloves should be worn. The operator whose regular work clothing has been contaminated should consider that he has been exposed to acid and should act accordingly.

- Any clothing, regardless of its class, suspected of contacting acid must be neutralized properly by its wearer immediately upon removing it. If an unusual situation prevents a person from properly neutralizing a piece of contaminated clothing, he must leave the clothing in the neutralizing solution in the change house and notify one of the Alkylation Plant operating personnel of this action. No exceptions to this procedure can be tolerated.
- Protective clothing should also be washed periodically to maintain its cleanliness.

Manager of Operations and Oil Movements