SECTION: SAFETY DATE: 3-21-89

SUBJECT: HOT WORK PAGE: 1 OF 7

PLAINTIFF'S EXHIBIT CEL-650

PURPOSE:

To define work that requires a Hot Work Permit and procedures for issuing such permits.

1. POLICY:

This permit procedure applies to work which is capable of producing a source of ignition. Work requiring a hot work permit should be done only if no alternate, safer means of accomplishing the same end result is available. Each request for a permit should be examined thoroughly to determine if the same work can be done without the use of spark producing methods. Only if no other method exists, or the alternate method is impractical, should a permit to employ these more hazardous procedures be issued. A copy of the hot work permit form is attached.

2. RESPONSIBILITY:

2.1 - Owning Supervisor:

The "owning supervisor" is defined as the individual who supervises the personnel performing the operating functions in the various areas. The owning supervisor is directly responsible for the area involved, for the safe conditions of work in that area, and for arranging the preparation of the equipment for hot work.

The owning supervisor must sign the permit before hot work begins. He/She should inspect the work when completed.

2.2 - Shift Supervisor/Leader/Qualified Permit Writer

The shift supervisor/leader/qualified permit writer actually issues the hot work permit. He/she lists on the permit any special precautions that must be taken in order to make the job safe. He/she makes a detailed check of the preparation for work. The person issuing the permit must sign the permit before work begins. (Note:The shift supervisor/leader is the "owning supervisor" in the pilot plant. Also, other designated personnel who have received appropriate training through the Safety Department are considered "qualified permit writers")

2.3 - Pilot Plant Operator/Lab Technician

The pilot plant operator/lab technician responsible for preparing an area or piece of equipment for hot work is responsible for the execution of the permit precautions and may stop any hot work job when in the operator's/technician's opinion it is unsafe.

The responsible operator/lab technician must initial all hot work permits issued in his/her operating area to signify that he/she is aware of the work being done.

2.4 - Maintenance Foreman

When Maintenance personnel are involved in hot work, the maintenance foreman is responsible for instructing the maintenance mechanic responsible for carrying out the hot work. If during the period of the permit it is necessary to change personnel doing the work, the maintenance foreman is responsible for instructing the new personnel and for obtaining a new permit.

2.5 - Person(s) Performing Hot Work (e.g. Maintenance Mechanic)

The person performing the hot work is responsible for carrying out all precautions specified on a hot work permit accepted by him/her. He/she should report any unusual conditions encountered to the owning personnel of the area involved. At least one of the people actually performing the hot work must sign the permit.

On any hot work permit, the person or persons who will actually be doing the hot work (i.e. striking the arc, lighting the torch, etc.) will perform the following steps before the hot work actually begins:

-Sign the permit.

-Insure that a copy of the permit is posted in the area of the work.

2.6 - Safety Supervisor

When requested, the safety supervisor will assist the owning supervisor in making a hazard evaluation of the equipment to be worked on, including the area in which the work is to be done.

2.7 - General Responsibilities:

After a permit is issued, control of conditions and precautions listed on the permit becomes the responsibility of the owning supervisor and the craft foreman.

2.8 - Contractor Work

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Whenever contract maintenance personnel are working on a job requiring a hot work permit, the permit must also be signed by their

foreman. Outside contractors will comply with the same rules and follow the same procedures as required of Celanese personnel. Contractors must receive a safety orientation as specified by CCTC policy, prior to beginning work. The Celanese employee responsible for the contractor work must insure that the rules are communicated and followed.

3. GENERAL RULES:

The following rules will apply to all hot work permits issued:

3.1 - Process lines and vessels will be checked for flammables and oxygen content before hot work begins. The person issuing the permit will perform atmospheric tests where applicable.

To maintain a valid permit, a second vapor check is required if the job is not begun within two hours of the time of the first vapor check or if the job is abandoned for more than two hours. In certain situations the owning supervisor or maintenance foreman may want to request another vapor test immediately prior to the work beginning even though the two hour limit may not be up. (Because conditions are less likely to change during a shutdown situation, the owning supervisor can waive the two hour rule during shutdowns if he/she feels confident the initial conditions have not changed).

3.2 - Hot work permits will be valid for the duration of the time specified on the permit. The permit time will not exceed 24 hours. If the permit lasts across shift change, the oncoming owning supervisor and responsible operator/ lab technician must RECHECK the work in progress and SIGN the existing permit. A new permit must be obtained if the craftsperson on the job changes.

It is the responsibility of the owning supervisor and operator/lab technician to transmit and obtain pertinent information about jobs that continue across shift change.

3.3 - During plant emergencies, all permits are automatically cancelled. Work will not be resumed until all areas have been pronounced clear by the emergency director, and the permit is re-evaluated by the owning supervisor.

3.4 - If cutting or welding is involved, a standby person with suitable fire extinguishing equipment shall be present at the work location. The minimum extinguishing equipment available will be a portable fire extinguisher. A water hose may also be required to cool sparks.

3.5 - The hot work permit will clearly describe the work location, and the permit will not be construed to include any location other than that designated.

3.6 - The original hot work permit must be posted at the site where hot work is being performed. A copy of the permit will be kept in the owning supervisors office. When the work is complete, the original permit will be removed by the owning supervisor and discarded. The copy of the hot work permit will be forwarded to the Safety Department for filing.

3.7 - Nitrogen purges may be used as an added precaution in clearing or allowing cutting/welding on a piece of equipment. If a nitrogen purge is present during the maintenance work, the owning department will be responsible for alerting the person performing the hot work by indicating a nitrogen purge on the hot work permit.

3.8 - Signatures required to validate a hot work permit are:

-Owning Supervisor

-Shift Supervisor/Leader/Qualified Permit Writer - (for hot work outside building 130 and for welding/torch cutting in building 130).

-Person(s) performing hot work.

-Responsible operator/lab technician.

-Contract foreman (where applicable).

-Others (i.e. Owning Manager, Engineering and Maintenance Manager, and Safety Supervisor for deviations).

SPECIFIC RULES:

4.1 - Examples Of Procedures That Require A Hot Work Permit

-Welding.

-Flame cutting.

-Heating with open flame. (Exception: A permit is not required in lab areas such as the glass blowers shop and electronics shop where flammables are not present. In lab areas where flammables are present, the owning supervisor will issue a permit).

-Chipping or drilling concrete with air powered tools in the development area.

-Sand blasting on iron work in development area.

-Driving vehicles into units or flammables storage areas.

-Use of non-explosion proof electrical tools in areas normally classified as explosion proof areas (eg. pilot plant Units).

-Spark producing activities where flammables may be present.

4.2 Equipment Sent To Shop

The owning supervisor who sends equipment to the shop for repairs will be responsible for cleaning said equipment before it leaves his/her unit or lab. The maintenance foreman will be responsible for all equipment once it is accepted into the maintenance area. He/she will obtain a hot work permit and will sign the permit. He/she will obtain the signature of any additional shop personnel performing hot work on said piece of equipment while inside the shop area.

For items with no spaces for trapped contaminants (i.e. shafts) brought to the shop for hot work, no permit is required unless the person doing the hot work or the maintenance foreman requests a hot work permit.

Hot work permits in the maintenance areas are required only if the equipment being worked on has (or could have) contained flammables. After a piece of equipment is permitted for hot work in a shop area, the permit will be valid until the equipment is removed from the shop.

4.3 - Welding Within Tanks and Torch Cutting Into Lines Or Vessels

All piping connected to tanks, vessels, or lines to be cut into or welding performed within, should be isolated by disconnecting or blinding to prevent the entry of contaminants or flammable materials. Lines and equipment should be drained, cleaned and purged as applicable. DEVIATION from this practice requires approval from the owning manager, the Engineering and Maintenance Manager, and the Safety Supervisor.

NOTE: An entry permit must be obtained in accordance with the CCTC "Confined Space Entry" procedure before any person enters a confined space.

4.4 - Welding on the Surface of Tanks, Lines, Valves, or Vessels Under Pressure.

This will be considered a DEVIATION from normal hot work activities.

A hot work permit signed by the Owning Manager, the Engineering and Maintenance Manager, the Corrosion Manager, and the Safety Supervisor is required prior to welding on the surface of tanks, lines, valves, or vessels under pressure.

No tank, line, valve, or vessel under pressure exerted by the following shall be welded on:

-Air	-Caustic	-Flammable Gases
-Oxygen	-Acids	-Steam
-Chlorine	-Acetylene	-Hydrogen Sulfide

OR ANY CHEMICAL considered immediately hazardous.

No welding shall be permitted in the vapor space of a tank, line, or vessel whose contents are flammable.

Consideration will be given to the thickness of the material being welded and also to maintaining a flow across the area of the weld to prevent overheating.

PROCEDURE:

5.1 - The person needing to perform hot work should alert the owning supervisor in advance of a job requiring a hot work permit.

5.2 - The owning supervisor should request that the shift supervisor/ leader/qualified permit writer issue a hot work permit for the work.

5.3 - The person writing the permit and owning supervisor should specify all precautions on the hot work permit and review the permit with the person performing the work and the responsible pilot plant operator/research technician. The permit can then be issued to the person performing the work.

5.4 - The person performing the hot work should notify the owning supervisor when the job is completed. The owning supervisor

should then check the completed work and remove the permit within 30 minutes of the job completion.

5.5 - **ANYONE** can stop hot work if an unsafe condition is noted. The person stopping the work should explain the unsafe condition on the permit and sign the permit.

ADDITIONAL PRECAUTIONS:

6.1 - Flammables storage containers should be removed from an area where hot work is to be performed. If the containers cannot be removed they should be protected from the hot work.

6.2 - Drainage trenches and sumps can be a fire hazard even though the source of ignition is well removed. Methods of protecting drains and sumps from ignition include sealing with wet burlap or wet tarps.

6.3 - The permit writer may require that sparks from welding or hot work be contained from scattering over a large area with the use of fire blankets or wet tarps/burlap. Situations where containment may be needed include:

A. When hot work is fifteen feet or greater above grade.
B. When wind velocity is great enough to disperse sparks over ten feet from a direct fall line.
C. When falling sparks will strike objects and bounce over ten feet from a direct fall line.

6.4 - Piping and vessels that have contained flammables (or which may have been contaminated by flammables) should be cleaned and isolated before a permit is issued. The preferred method of isolation is to either disconnect and blind the equipment or blind the equipment and place a gasket on the contaminated side of the line. If isolation is not possible, the owning Manager, Engineering and Maintenance Manager, and the Safety Supervisor must approve alternate methods of protecting against fire hazards prior to a permit being issued.

One alternate method to disconnecting or blinding is to use double block valves with a bleeder in between. The block valves must be padlocked closed and the bleeder determined to be clear and open. Again, this is considered A DEVIATION and must be approved by the owning Manager, Engineering and Maintenance Manager and the Safety Supervisor.

6.5 - All blinds should have a one foot ribbon attached to them for positive identification. Care should be taken when checking isolation that the insert is a blind and NOT an orifice plate.