PLAINTIFF'S
EXHIBIT
CEL-659

HOECHST CELANESE CORPORATION
TECHNICAL CENTER
Corpus Christi, Texas

To: All Lab Personnel February 15, 1988

From: O. S. Fruchey OSF-212-88

# Information Required for Lab Safety Committee Unit Review


## ABSTRACT

This report contains a list of information required for Lab Safety Committee (LSC) unit review. This information (14 copies) must be given to the Lab Safety Committee Chairman at least three working days prior to any scheduled unit review meeting.



Keywords
Lab Safety Committee
Unit Review


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DISCUSSION

Certain minimum safety-related information is required by the LSC to enable the committee to properly evaluate the unit's potential hazard. Any individual who requests LSC review of a new or existing unit must provide 14 copies of this unit information (shown below) to the LSC Chairman at least three working days prior to the scheduled review meeting. The purpose of this request is two-fold. First, it guarantees that the individual in charge of the unit has addressed these various safety points. Second, it should shorten the length of the review meeting since the LSC members can examine the information before the meeting.

LSC review of a lab unit is required whenever the unit involves:

- Pressure operation
- Carcenogenic, corrosive, or hazardous material
- Large quantities of chemicals

The review information format is shown below:

General Information

- Unit Supervisor's Name

- Unit Operator's Name

- Unit Location
  Identify the lab where the unit will be located and also indicate if the unit will be in a hood.

- Attended or Unattended
  Indicate whether the unit will be fully attended or automated to run unattended.

Chemical Considerations

- Chemical Reactions
  Provide equations for all chemical reactions involved in the unit. The heats of reaction should also be provided.

- Chemical Quantities
  Identify all the chemicals and their amounts used in your runs.

- Physical Properties of Chemicals
  Include boiling points, melting points, critical temperatures, critical pressures, flammable limits, and any other physical property that may be of importance.

- Chemical Hazards
  Attach either an MSDS or Celmis forms for all chemicals involved in your runs (both reactants and products).

- Personal Protective Equipment
  Include items such as gloves, respirators, face shields, etc.

- Protection of Maintenance Personnel
  Identify procedures to decontaminate equipment before repair, which have been in contact with hazardous chemicals.

- Spill Procedures
  Identify spill clean-up procedures and address any possible conditions which might require building evacuation.

- Disposal Procedures
  Indicate how you plan to dispose of all chemicals involved in your runs (both reactants and products). These procedures should be consistent with those identified in the Celmis system. Also include venting procedures (i.e. type of scrubber or diluent used).

Mechanical Considerations

- Unit Drawing
  Include a detailed diagram of the unit showing valves, vessels, gauges, etc ( see Figure 1).

- Equipment Rating
  Include pressure and temperature ratings for all parts of the unit. This can be incorporated in the unit drawing (see Figure 1). Indicate date and pressure of hydrostatic test.

- Pressure check
  Indicate $N_2$ pressure value that will be used to pressure test system prior to operation.

- Safety Systems
  Include all safety shutdown systems, alarms, rupture disc, pressure relief valves, etc.

- Operating Conditions
  Include operating temperatures, pressures, etc.

- Operating Procedure
  Include start-up, shutdown and run procedures. Also emergency shutdown procedures should be included.

- Worst Case Pressure Rise Calculation
  This is a thermodynamic calculation assuming an adiabatic instantaneous pressure rise (see Attachment I). This calculation assumes an instantaneous release of the heat reaction.

- Materials of Construction
  Metallurgy of all components of the unit must be identified. Evaluate compatibility of metallurgy with planned unit operations prior to the LSC meeting.

## CONCLUSIONS

The LSC request that the information identified above be provided to the LSC members at least three working days prior to LSC review meetings.

O. S. Fruchey

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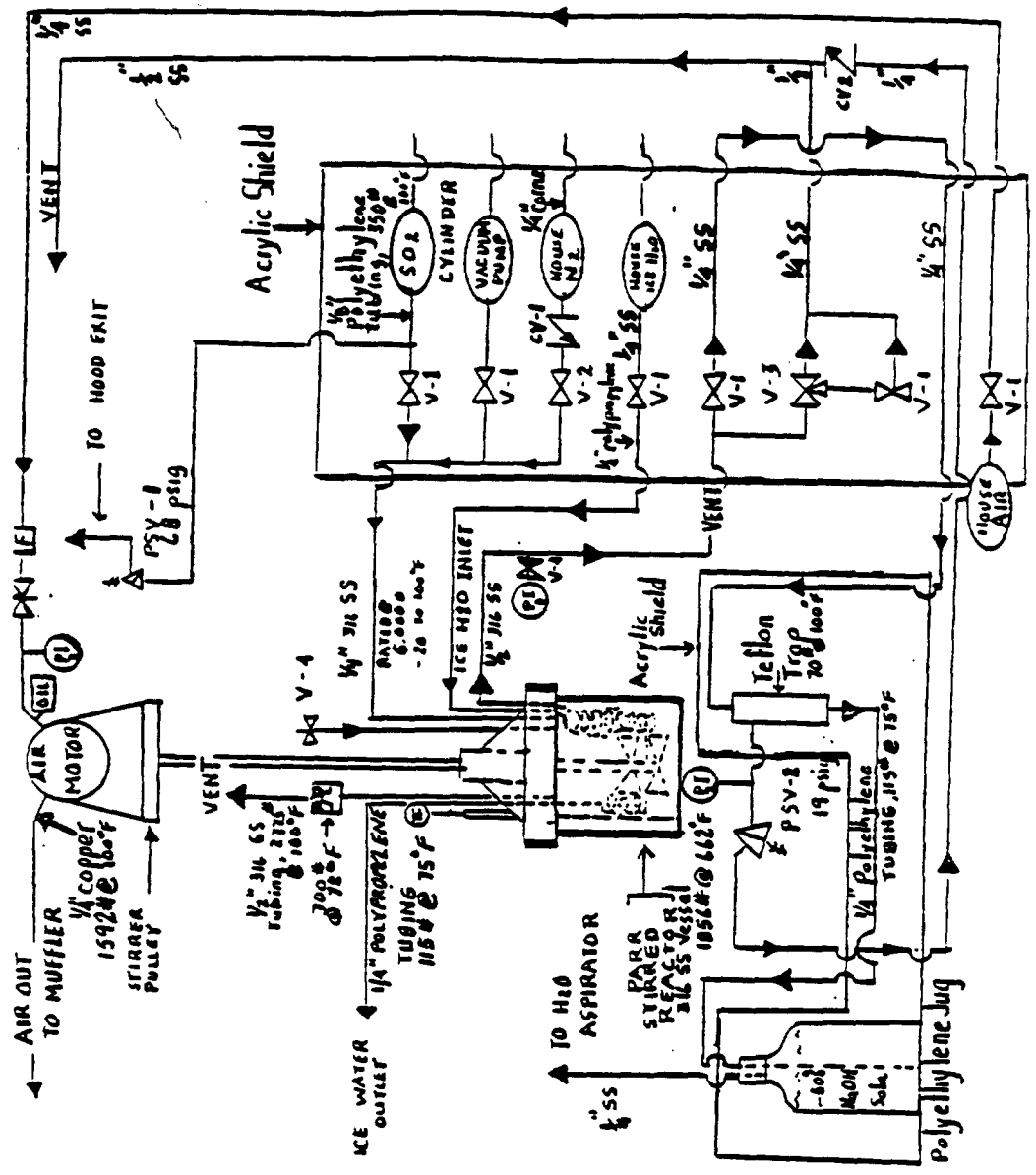
Figure 1




Beckmann Reaction Unit

V1 Whitey, SS-2RS4
V2 Whitey, SS-1RS4
V3 Whitey, SS-42RS4
V4 Whitey, 3RS4
PI1 Ashcroft Gauge
PI2 US Gauge, SS 316, 3-0
PI3 US Gauge, 0-100 psig
CV-1 Nupro Brass B-4C1-1
CV-2 Nupro Stainless Steel SS-4C1-1
PSV-1 Sokel Relief Valve - Nupro SS-6A-HK-SP
PSV-2 Mission Relief Valve Site #4

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Attachment I

# Thermodynamic Considerations

## Worst Case Pressure Risk

Heat release if instantaneous reaction

$$Q = (90\text{g oxime})\left(\frac{1\text{ mol oxime}}{151\text{ g oxime}}\right)\left(\frac{42\text{ Kcal}}{1\text{ mol oxime}}\right) = 25\text{ Kcal}$$

# cal req to raise 420g $SO_2$ to critical Temp

$Q = C_v m \Delta T$

$Q = (.125\text{ cal/°-g})(420\text{g } SO_2)(127°) = 6668\text{ cal}$

# cal left for vaporization

$25{,}000 - 6668 = 18332\text{ cal}$

# mole $SO_2$ that can be vaporized at 157°C

$m = Q/\Delta H_{vap}$

$m = 18332\text{ cal}/(85\text{ cal/g}) = 215\text{g } SO_2$

$\text{mol} = 215/64 = 3.36\text{ mol } SO_2$

Pressure of 3.36 mol $SO_2$ at 157°C

$PV = nRT$

$P = (3.36\text{ mol})(0.0821\text{ l-atm/K-mol})(430\text{K})/(1\text{l}) = 118\text{ atm}$

$P_{gage} = 1720\text{ psig}$