

Ethanolamines/Glycol Ethers In Plant Training (IPT)

Section Number :6A

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Author: Ron Pepitone

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Section Test :6

Glycol Ethers Reactor System Area Hazards

Answers:

1. Explain the hazards of mixing ethylene oxide or propylene oxide with methanol or butanol.

Oxide and alcohol react releasing heat. If they are mixed somewhere other than the reactor where the heat or temperature can be removed, the reaction could proceed to the vapor stage and become uncontrollable. An explosion could occur.

2. State what needs to be done before hot work can be done on a line which last contained oxide.

The line needs to be purged to the sump with nitrogen, then flushed with condensate, then blown dry with air. An oxygen and combustible LEL reading needs to be taken on the line just prior to how work. A safe work permit also needs to be filled out.

3. State the TLV's of propylene oxide and ethylene oxide are and how they affect us.

The TLV of propylene oxide (PO) is 3 ppm, established by Dow Industrial Hygiene guide. Contact with the eyes may cause severe irritation with corneal injury which may result in permanent impairment of vision and even blindness. Contact with the skin is not likely to cause irritation unless confined by clothing, belts, etc. Consequences of skin contact worsen with PO in aqueous solution. Repeated excessive exposures may cause eye and respiratory irritation. It is listed as a potential carcinogen.

The TLV of ethylene oxide (EO) is .5 ppm. If you can smell EO, you are being over-exposed. EO is suspected to be cancer causing. EO will cause burns and will stay in leather. If you get EO on your leather boots or belt, you will need to get rid of them because you cannot get the EO out. Contact with the eyes may cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. EO may cause skin irritation, especially if damp or in aqueous solutions. EO may cause serious injury, even death. Excessive vapor concentrations may cause severe irritation, even death, due to complications of the upper respiratory tract and lungs.

OSHA says we should not breath oxide at all. That is why we are instructed to wear supplied air around possible oxide exposure.

4. Explain what effect loss of alcohol flow to R-101 will have on oxide flow.

The oxide flow will shut down. Line of logic will trip on low alcohol flow, low ratio, or loss of hard wire trip on no P-104 running.

5. Explain what effect loss of oxide flow to R-101 will have on the reactor.

Usually some other problem causes the oxide to trip, so losing the oxide is the solution to some other problem. The reactor will cool down because the reaction will slow down, then stop.

6. Locate all safety showers and fire extinguishers within the reactor area.

Outside

7. Locate the reactor sprinkler system trip handle and explain how this system is activated, both manually and automatically

Manually by pulling the trip handle in the field or turning the switch on the control board.
Automatically by heat sensors in the reactor area.

Revisions:

Revision No. 1	06-07-93	YEARLY REVIEW
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Revision No. 2	12-12-94	YEARLY REVIEW
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