

1 Problem

Step 1. Define the Problem

What	Problem(s)	16 employees injured, vapor cloud explosion, 5 month downtime
When	Date	October 6, 2005
	Time	15:05
Where	Different, unusual, unique	NA
	Facility, site	Point Comfort, TX Formosa Facility
	Unit, area, equipment	Olefins II Unit
	Task being performed	Moving compressed gas bottles
Impact to the Goals	Safety	16 employees injured (2 serious burns)
	Environmental	7 million gallons water used to cool vessels and contain fire
	Community Impact	Community shelter in place, shutdown I-35
	Production-Schedule	5 month outage of Olefins II Unit
	Property, Equip, MtIs	Extensive damage to Olefins II Unit
	Labor, Time	Extensive labor (repair, investigation, clean-up)

FORMOSA POINT COMFORT EXPLOSION CAUSE MAP

16 employees were injured, a local elementary school was evacuated and significant damage occurred when a propylene vapor cloud ignited at the Formosa Point Comfort plant.

The propylene leak started when a fork truck, moving compressed gas cylinders struck a live bleed valve and nipple containing liquified propylene. The unit was down for 5 months for repair.



More Detailed Cause Map
Add detail as information becomes available.

Cause Mapping is a Root Cause Analysis method that captures basic cause-and-effect relationships supported with evidence.

CAUSE MAPPING

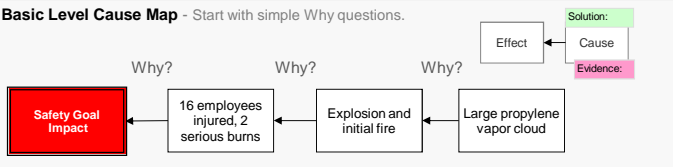
Problem Solving • Incident Investigation • Root Cause Analysis

- Step 1 Problem** - What's the Problem?
- Step 2 Analysis** - Why did it happen?
- Step 3 Solutions** - What will be done?



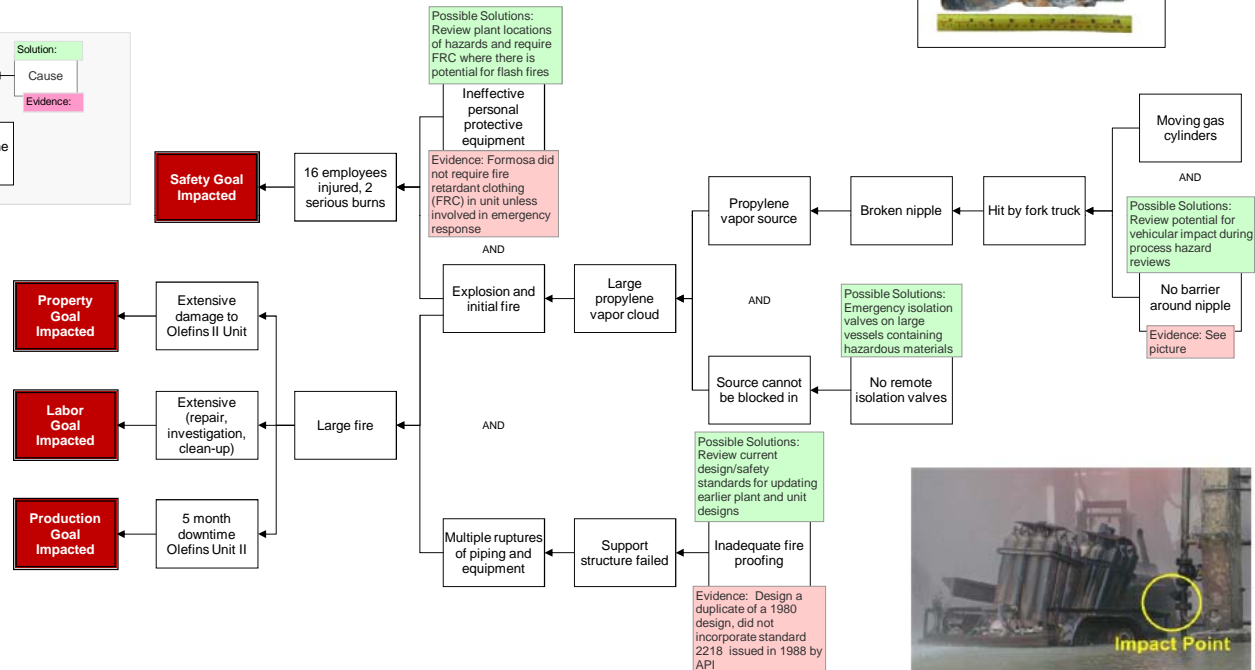
2 Analysis

Basic Level Cause Map - Start with simple Why questions.



3 Solutions

No.	Action Item	Cause
1	Review plant locations of hazards and require fire retardant clothing where there is potential for flash fires	Ineffective personal protective equipment
2	Emergency isolation valves on large vessels containing hazardous materials	No remote isolation valves
3	Review potential for vehicular impact during process hazard reviews	No barrier around nipple
4	Review current design/safety standards for updating earlier plant and unit designs	Design was not updated to include new fireproofing standard



For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.



Investigate Problems. Prevent Problems.
Houston, Texas 281-412-7766 ThinkReliability.com

Copyright ThinkReliability 2013