

## Confined Space Asphyxiation

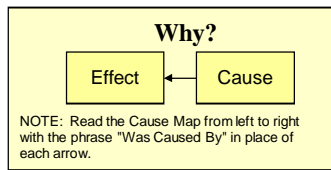
The first step in our analysis is to define the problem by filling out the outline. The outline contains the what, when, where and impact to the goals. The "what" is the problem; in this case two workers were asphyxiated. The when is the overnight shift of November 5, 2005, and the where is the hydrocracker reactor of a Delaware City refinery. The workers were apparently attempting to retrieve dropped tape.

Because two workers were killed, there was an impact to the safety goal. There may have been impacts to other goals as well, but the loss of life makes other impacts less significant.

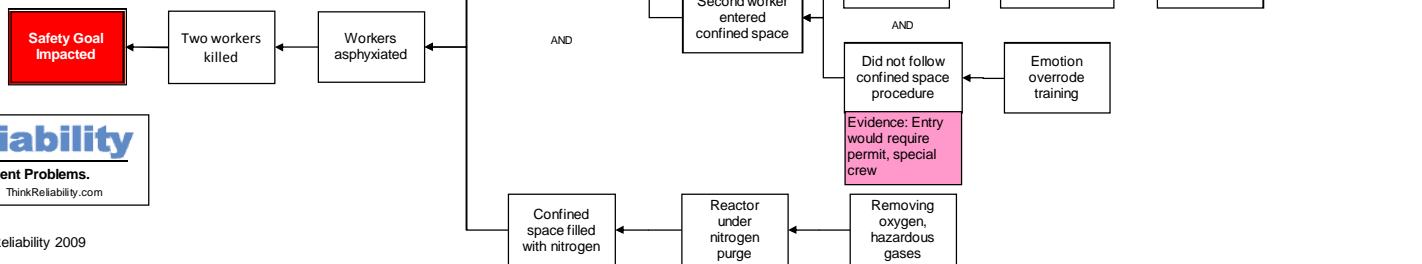
### Step 1. Outline the Problem

<b>What</b>	Problem(s)	Workers asphyxiated
<b>When</b>	Date	November 5, 2005
	Time	Overnight shift
	Differences	Nitrogen-filled confined space
<b>Where</b>	Physical Location	Delaware City Refinery
	Unit/Process/Equipment	Hydrocracker reactor
	Work Being Done	Retrieving dropped tape
<b>Impact to the Goals</b>	<b>Safety</b>	2 workers killed

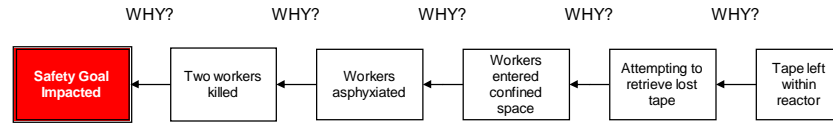
From the "5-why" Cause Map we can add more detail to the root cause analysis. Additional causes can be added before, after and between the causes on the 5-why map.



### Step 2. Cause Map - Detailed



### Step 2. Cause Map - 5 Whys



Once the outline is completed, we use the impacted goal to begin the Cause Map. We begin with the impacted goal and ask 'why' questions. A good way to begin is using the "5-why" technique. Begin with the impacted goal and ask "why" 5 times.

