

Collapse of Pedestrian Bridge Merrillville, Indiana July 4, 2009

Step 1. Outline the Problem

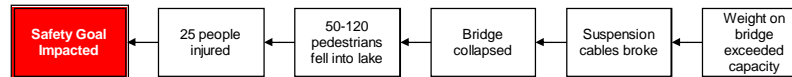
What	Problem(s)	Bridge collapse
	When	July 4, 2009
	Time	10:00 p.m.
Where	Differences	Large numbers of people on bridge
	Physical Location	Merrillville, IN
	Unit/Process/Equipment	Pedestrian bridge
	Work Being Done	Crossing bridge
Impact to the Goals	Safety	25 people injured
		Potential for drowning
	Cust. Service	Pedestrians fell into lake
	Material, Labor Cost	Loss of bridge

First we complete the outline. The problem is a bridge collapse. It happened at 10:00 p.m. on the 4th of July, while there were large numbers of people on the bridge. It was a pedestrian bridge in Merrillville, IN, and people were crossing it to return home after a party.

Once we have defined the problem we list the impacts to the goals. People being injured is an impact to the safety goal, as is the potential for drowning. People fell into the lake, which was an impact to the customer service goal. Additionally, the loss of the bridge is an impact to the material and labor goal.

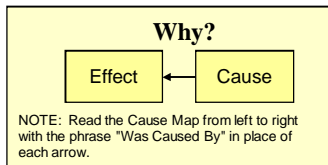
We begin our Cause Map by listing the impacted goals and asking "why" questions to fill out the Cause Map to the right. Begin with 5 "why" questions to start the Cause Map. This is known as the "5-whys" technique. For example, the safety goal was impacted. Why? The safety goal was impacted because people were injured. Why? People were injured because they fell into the lake. Why? They fell into the lake because the bridge collapsed. Why? The bridge collapsed because the suspension cables broke. Why? The cables broke because the weight on the bridge exceeded the bridge

Step 2. Cause Map - "5 Whys"



Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals. For this investigation, we can add some more detail to the "5-why" Cause Map to help our investigation. For example, pedestrians fell into the lake because the bridge collapsed AND because pedestrians were on the bridge, returning to their cars after the 4th of July party. There may have been additional stress on the bridge due to pedestrians jumping up and down, as reported by witnesses. Additionally, we can add more detail after the "weight exceeded capacity" on the bridge. The bridge was built to hold 40 people, but "at least twice that" were on the bridge when it collapsed. So many people were on the bridge because they were returning to their cars (as discussed above), and because of ineffective crowd control. There were too many people on the bridge despite officers stationed on either side. Why was the crowd control ineffective? It's not known at this point, but we'll put a question mark here. The next step of the investigation will be to replace that question mark with reasons for the ineffective crowd control. Once we've done that, we can come up with solutions that will keep an event like this one from occurring in the future.

Step 2. Cause Map - More Detail



Cause Map Detail Level



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