

1 Problem

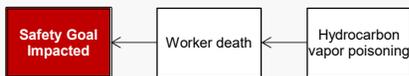
What	Problem(s)	Worker found dead
When	Date	January 1, 2012
	Different, unusual, unique	?
Where	Facility, site	Bakken oil field in North Dakota
	Unit, area, equipment	Oil storage facility
	Task being performed	Measuring level of oil in storage tank

Impact to the Goals	
Safety	Worker death
Economic	Wrongful death lawsuit
Labor/ Time	Emergency response/investigation

Frequency	NIOSH and OSHA have identified 9 fatalities associated with crude oil production tank gauging and fluid sample collection from 2010-2014
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2 Analysis

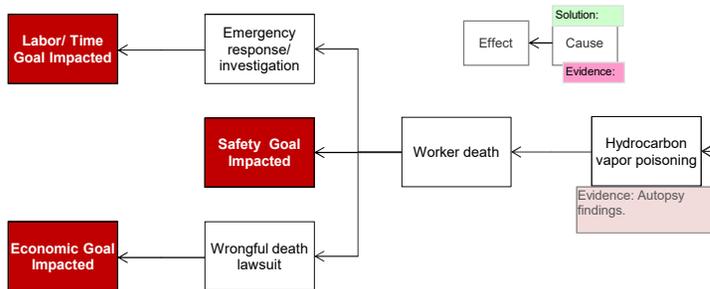
Basic Level Cause Map - Start with simple Why questions.



Basic Cause-and-Effect

An autopsy showed that the worker death occurred because he had hydrocarbons in his blood. He was exposed to hydrocarbon gases when he opened a hatch on a crude oil tank to measure the tank level.

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

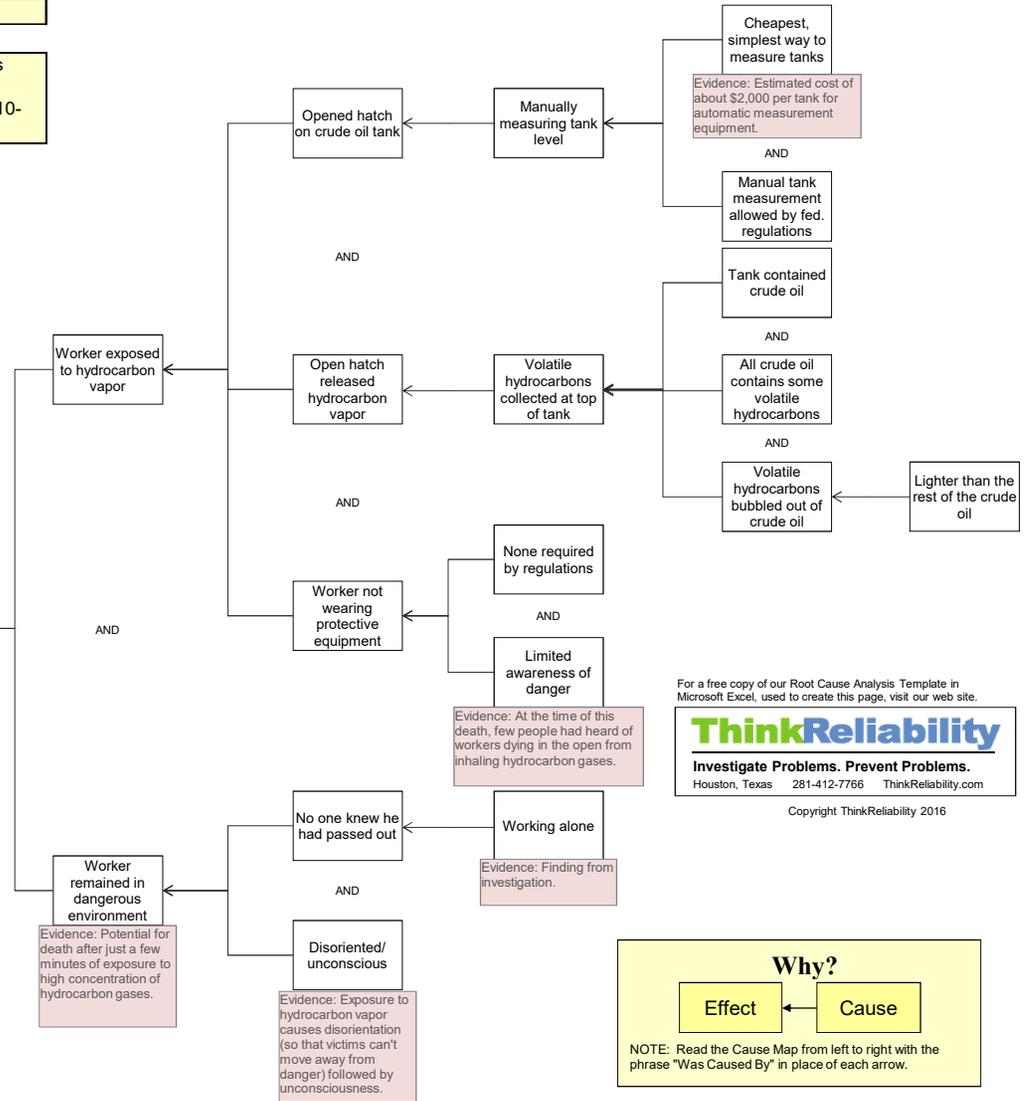
Step 1	Problem	What's the Problem?
Step 2	Analysis	Why did it happen?
Step 3	Solutions	What will be done?

OIL FIELD DEATH

Cause Map

Worker dies while manually measuring tank

The potential danger of confined spaces is well documented, but nine fatalities have shown that people working near open hydrocarbon storage hatches can also be exposed to dangerous levels of hydrocarbon gases and oxygen-deficient atmospheres. NPR recently highlighted this issue in an article entitled "Mysterious Death Reveals Risk In Federal Oil Field Rules" that discussed the death of Dustin Bergsing. His job duties included opening the hatch on a crude oil storage tank to measure the level of the oil and was found dead next to an open hatch. He was healthy and only 21 years old.



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

ThinkReliability

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Why?

Effect

←

Cause

NOTE: Read the Cause Map from left to right with the phrase "Was Caused By" in place of each arrow.