Toxic Red Sludge Spill

Kilontar, Hungary

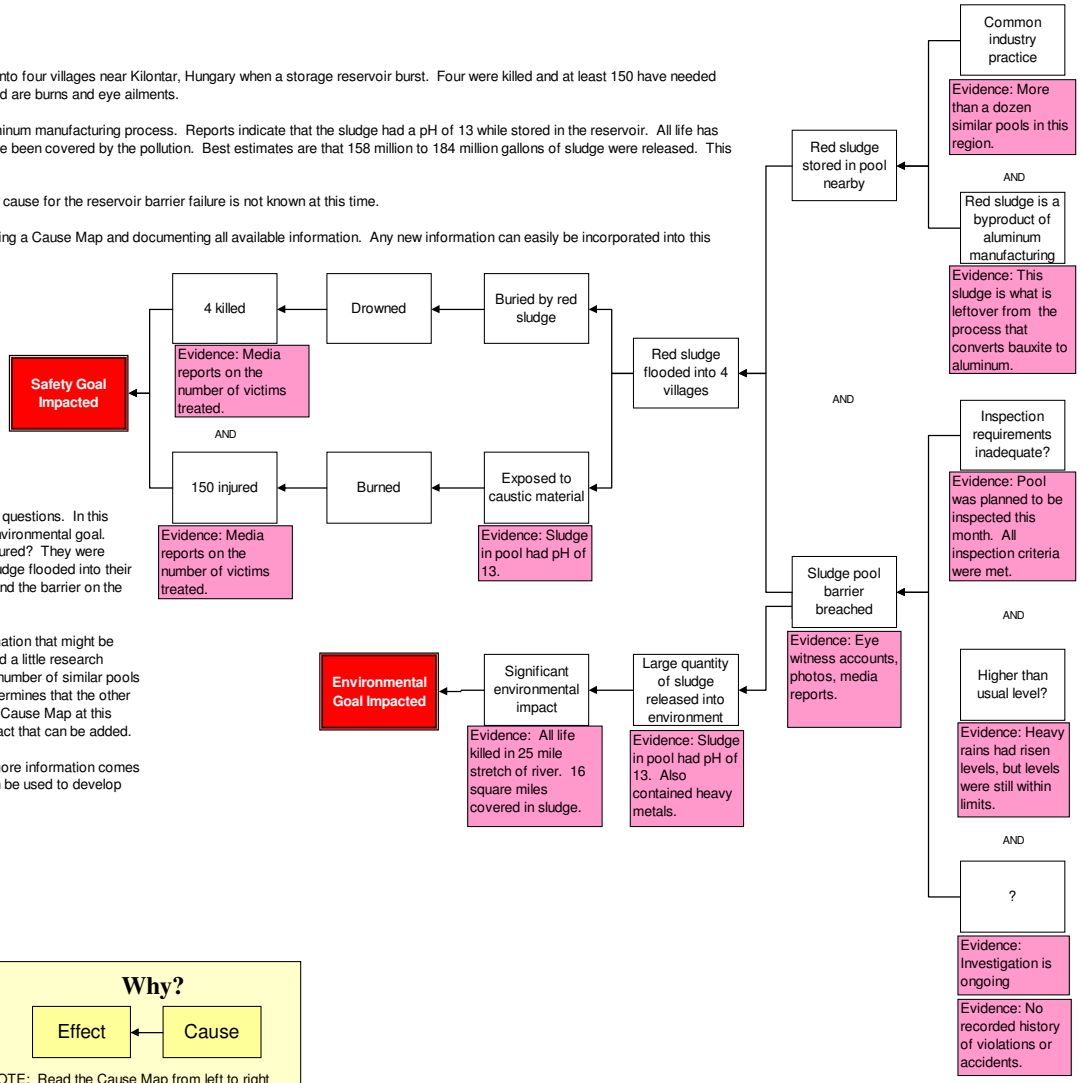
August 4, 2010

On Monday, October 4, 2010, a massive wave of red sludge flooded into four villages near Kilontar, Hungary when a storage reservoir burst. Four were killed and at least 150 have needed medical treatment for their injuries. The most common injuries reported are burns and eye ailments.

Red sludge is a highly caustic material that is produced during the aluminum manufacturing process. Reports indicate that the sludge had a pH of 13 while stored in the reservoir. All life has been killed in a 25 mile stretch of river and 16 square miles of land have been covered by the pollution. Best estimates are that 158 million to 184 million gallons of sludge were released. This first large scale release of red sludge in history.

Hungary's top investigative agency is looking into the accident, but the cause for the reservoir barrier failure is not known at this time.

Even with the unknowns, a root cause analysis can be started by creating a Cause Map and documenting all available information. Any new information can easily be incorporated into this Cause Map.



To build a Cause Map, we start with the impacted goals and ask "why" questions. In this example, the two goals we will consider are the Safety goal and the Environmental goal. Starting with the Safety goal we begin by asking - Why were people injured? They were injured because they were exposed to caustic material because red sludge flooded into their villages. Why? Because red sludge was stored in a nearly reservoir and the barrier on the reservoir was breached.

Why the barrier failed isn't known, but we can still add additional information that might be useful. We know that the red sludge reservoir was near the villages and a little research reveals that this is common practice in the region and that there are a number of similar pools nearby. This information may become relevant if the investigation determines that the other reservoirs are at risk for a similar failure so it's worth recording on our Cause Map at this point. There is also information available about the environmental impact that can be added.

The investigation is still incomplete, but the Cause Map can grow as more information comes available. Once the relevant information is added, the Cause Map can be used to develop solutions to help prevent similar accidents from occurring in the future.

Cause Map

Intermediate Level

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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