

Weaver Consulting LLC

Solving Local Problems Globally

Investigation Tips, Tools & Techniques **Quarter 2, 2012**

Investigation Tips, Tools & Techniques is a quarterly newsletter focused on conducting effective root cause investigations. Each newsletter presents one idea that you can quickly use to continue to develop your skills as an investigator.

The Topic: Finessing the Brainstorm

The Background

Brainstorming is often used when assembling a list of possible causes. This past week I was reminded of one way to make brainstorming more effective. The technique is quite simple: combining the brainstorm session with the use of the *5 Whys*.

The Details

This technique can probably work well with any brainstorming method you select, but I will illustrate it with the use of everybody's favorite, the fishbone diagram (also known as the Ishikawa diagram, herringbone diagram, or cause-and-effect diagram).

Perhaps you may recall my mythical friend, Charlie. Charlie is a supervisor on a production line where syringes are assembled. After the assembled syringe is placed in a pouch, the pouch opening is sealed. At final inspection samples of product are taken and these seals are challenged with a pull test. A significant number of seals are now failing the pull test as they are not strong enough!

After completing the first two steps of the investigation, *Define the Performance Problem* and *Collect the Data*, Charlie begins the task of assembling a list of possible causes. One of several tools that he selects to use to compile this list is the fishbone.

To use the fishbone Charlie first writes the problem statement, *Pouch Seals Fail Pull Test*, in the head of the fish. See Figure 1.

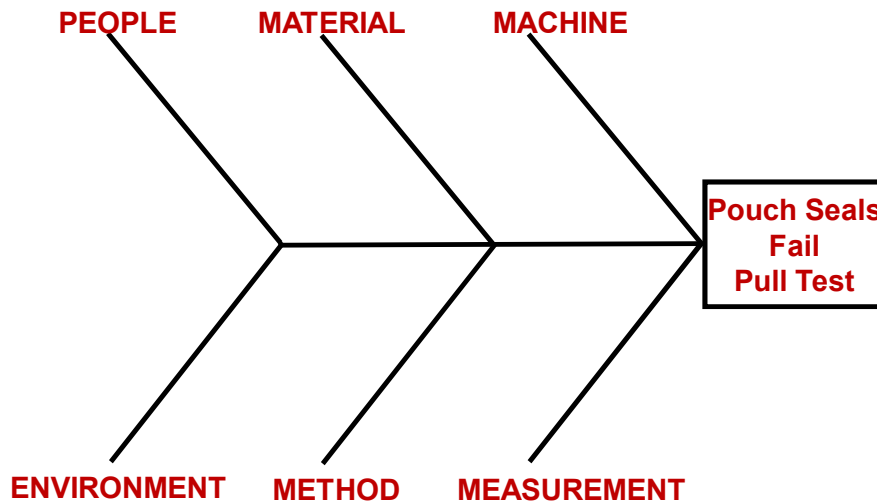


Figure 1

Now Charlie and his team focus on one of the bones, in our example, the team selects *material*. The team thinks about how material could cause this issue. Someone suggests the pouch material itself may be the cause, so "pouch material" is hung as a secondary bone off of the *material* bone (Figure 2).

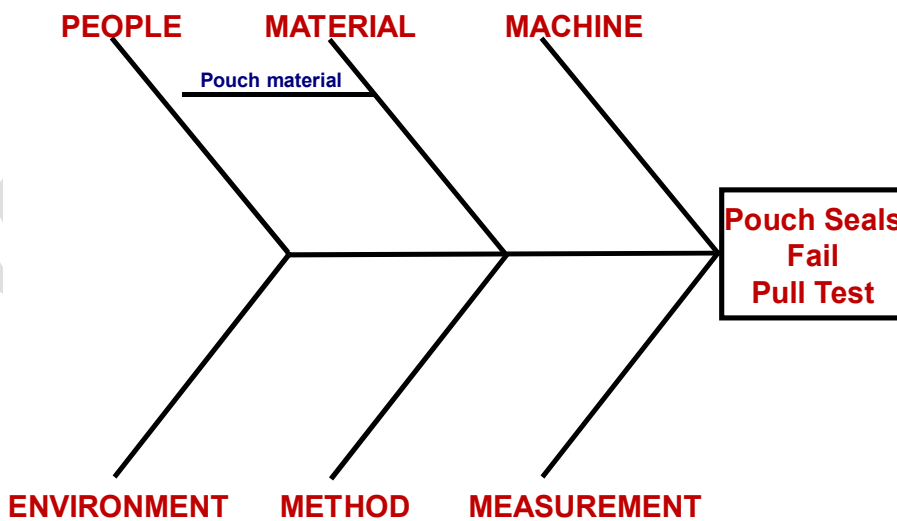


Figure 2

Here's where the twist comes in, as I was reminded by a colleague last week. To identify more specific possible causes of how the pouch material could cause the seals to fail, we apply the 5 Whys.

First question: "Why could the pouch material cause the failures?" Responses:

- Perhaps the supplier made a change to the material.
- The material may be old and degraded.
- Maybe the pouch material was contaminated.

These are added as tertiary bones off of the *pouch material* bone (Figure 3).

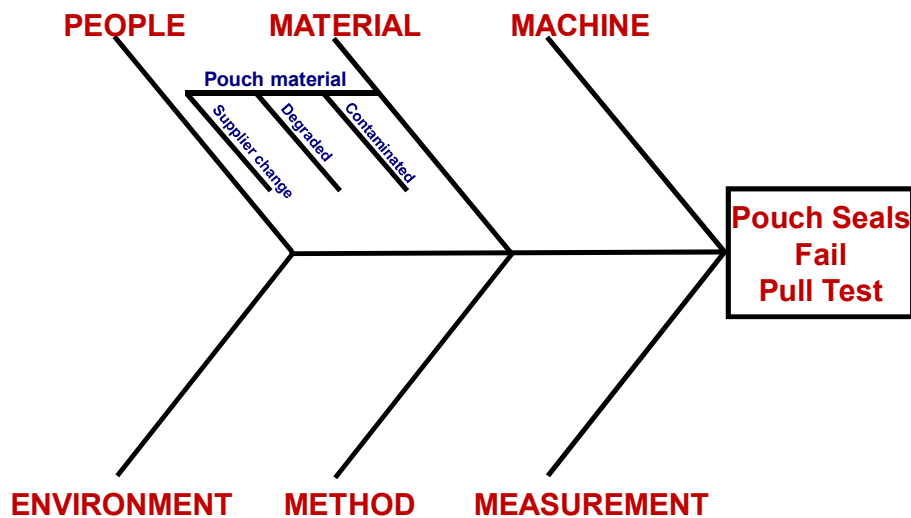


Figure 3

Now the questioning continues by selecting one of the tertiary bones, *contamination*, and asking, "Why could the pouch material be contaminated?" A response might be:

- Perhaps there was migration of silicone from elsewhere in the production process.

This and any other fourth level possible causes would be appended to the *contaminated bone* (Figure 4).

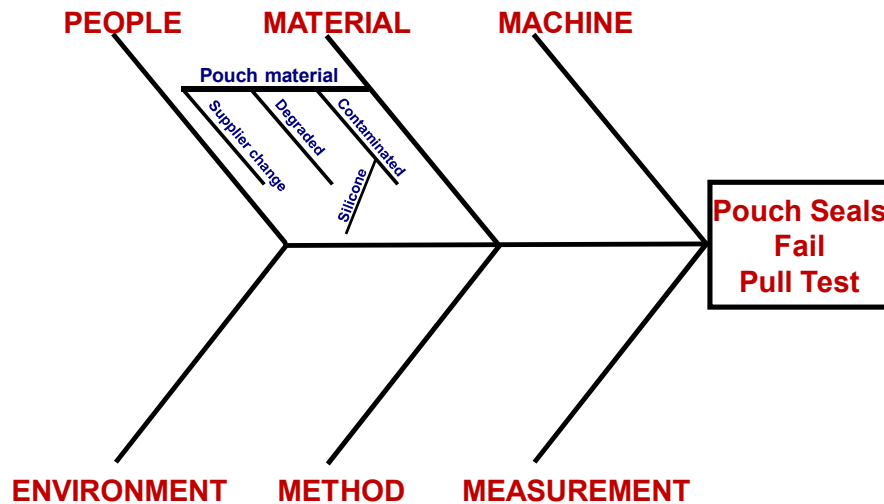


Figure 4

Next the team asks, “Why could silicone have migrated?” The process continues in a likewise fashion until no new ideas are offered. This will typically happen by the time the *why* question has been asked the fifth time.

The Conclusion

Using the 5 *Why*'s in conjunction with your brainstorming methodology should force you to more intensely engage the brain, dig beneath the surface, and identify a larger quantity, and more specific, possible causes.

Tom Weaver

President

Weaver Consulting LLC