# Simple Steps to Improve Incident Investigations

**1st Quarter Proactive Event Topic**

Richmond Refinery, January 2011

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# Why This Is Important

- Effective investigations are a vital part of preventing repeat losses or near losses
  - Need to learn from our incidents
    - Share lessons learned as appropriate (e.g. LPS Bulletins)
  - Need to implement effective solutions in a timely manner
- Refinery has several investigation tools:
  - TOP / TapRooT / 5-Why
  - Approximately 80-90% of our losses / near losses and all our LPO questionable items are investigated using 5-Why

Important to get our 5-Whys right
- if we are going to prevent repeat incidents

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# Non-Richmond 5-Why Example

## Problem:

- When changing out NH3 filters per routine duty, lost NH3 flow to furnace for approximately 30 seconds when switching to Standby filter

## 5-Why Answers:

- Why #1 - When switching NH3 filters per routine duty.
- Why #2 - Possibly air in filter being put in service.
- Why #3 - Prior switch not purged enough.
- Why #4 - Needed to purge to make sure no air before switching.
- Why #5 - To prevent loss of NH3 flow.

Does This Look Like a Good 5-Why?
Does the answer to Why #5 look like the root cause of the problem?
Could You Do Better Than This?

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# Non-Richmond 5-Why Example – Better Example

**Problem:**

- Contractor was unplugging ¾-inch bleeder using 150# steam. Contractor left the low point bleeder cracked open. When Contractor opened the vent, a furnace burner ignited gas flowing out of the vent, causing a fire.

**5-Why Answers:**

- Why did the Contractor think bleeder root valve was closed or plugged?
  - Thought it was plugged after opening it to atmosphere 3 times and getting no flow. Thought it was closed because turned the valve to closed position before opening to atmosphere - appears did not close valve completely.
- Why was Contractor operating plant valves?
  - Due to activity during Turnaround, Operations allowed Contractor to operate valves for clean up purposes.
- Why did Operations allow the Contractor to not follow Refinery Standards?
  - Standard does not clearly define when a Contractor is allowed to operate plant valves for chemical clean up.

Why Does This Look Like a Better Example?

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# Key Points

- Investigation is only as good as your information
  - Focus on Facts
  - Find out WHAT happened before analyzing WHY it happened
  - Root Cause should state WHY the incident happened, **not** say WHAT happened again
- Find effective Solutions
  - Address root cause, be sustainable, and cost- effective
- Investigations do NOT need to be created equal
  - Follow the investigation process, but be consider the size of the problem and the risk of future accidents
    - Small risk = smaller investigation (e.g. 5-Why)
    - Bigger risk = bigger investigation (TOP or TapRooT)

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# You Can Help Improve 5-Why Investigations

- Report Near Losses
  - It happened once, you can help prevent it from happening again
- Document what happened – Loss or Near Loss
  - Turnover, Written Statement, etc.
- Help ensure an investigation has complete and accurate information
  - Without this - Have to make assumptions
    - Garbage In – Garbage Out
- Use your knowledge to suggest appropriate Solutions
  - Help fix problems right the first time

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# Improving Loss and Near Loss Investigations
# Tips For Stewards

Here are four simple things that will help you be a more effective coach and steward:

- Ask for 5-Why reasoning to be written out in the LI/NLI
  - This will increase the likelihood that an investigation will identify the correct root cause(s)
- Reach understanding on the root cause(s) before identifying Solutions
  - Make sure you understand the problem and the root cause(s) before helping the team identify the right fixes
  - Verify that Root Cause(s), Factors, and Solutions align
- For any investigation that took more than a month to reach closure, ask the team WHY?
  - Our goal is thorough and timely investigations
- Every time Factor H (External Factors) appears – Challenge It
  - If the problem is with the work of another Chevron work group or one of our Contractors, Factor H should **not** apply

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