

# Finding Facts, Not Faults: How to Improve Safety After an Injury

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# Causal Factors

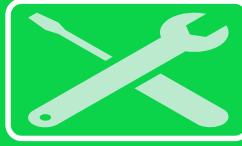
Unplanned, unintended contributor to an incident, that if eliminated would have either **prevented** the occurrence of the incident or **reduced** its severity or frequency

# 5 Causal Factor “Buckets”



## Human

- Level of Experience, Level of Training, Physical Capabilities, Health, Fatigue, Stress



## Task

- Ergonomics, Process, Procedures, Tools, Safety Devices



## Materials

- Equipment failure, Machine Design, Hazardous Substances, Substandard Materials



## Environment

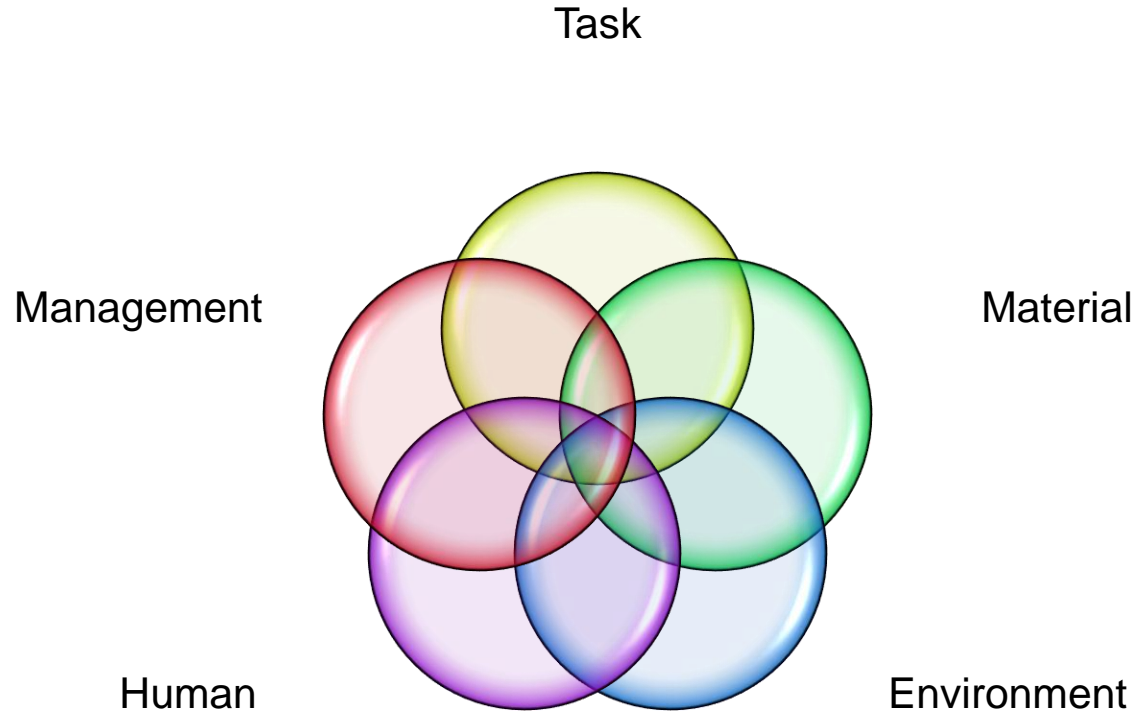
- Weather conditions, Lighting, Housekeeping, Temperature, Air Contaminants



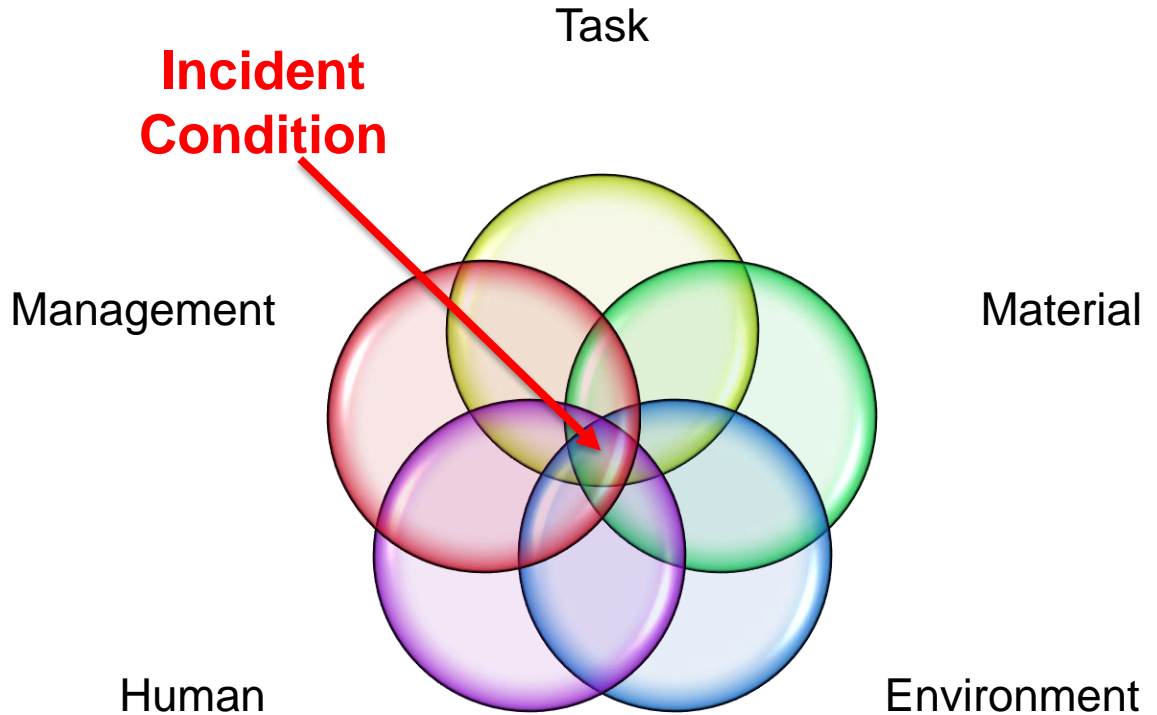
## Management

- Top Mgmt. Support, Enforcement of Safety Policies, Supervision, Knowledge of Hazards, Preventive Maintenance, Audits

# 5 Causal Factor “Buckets”

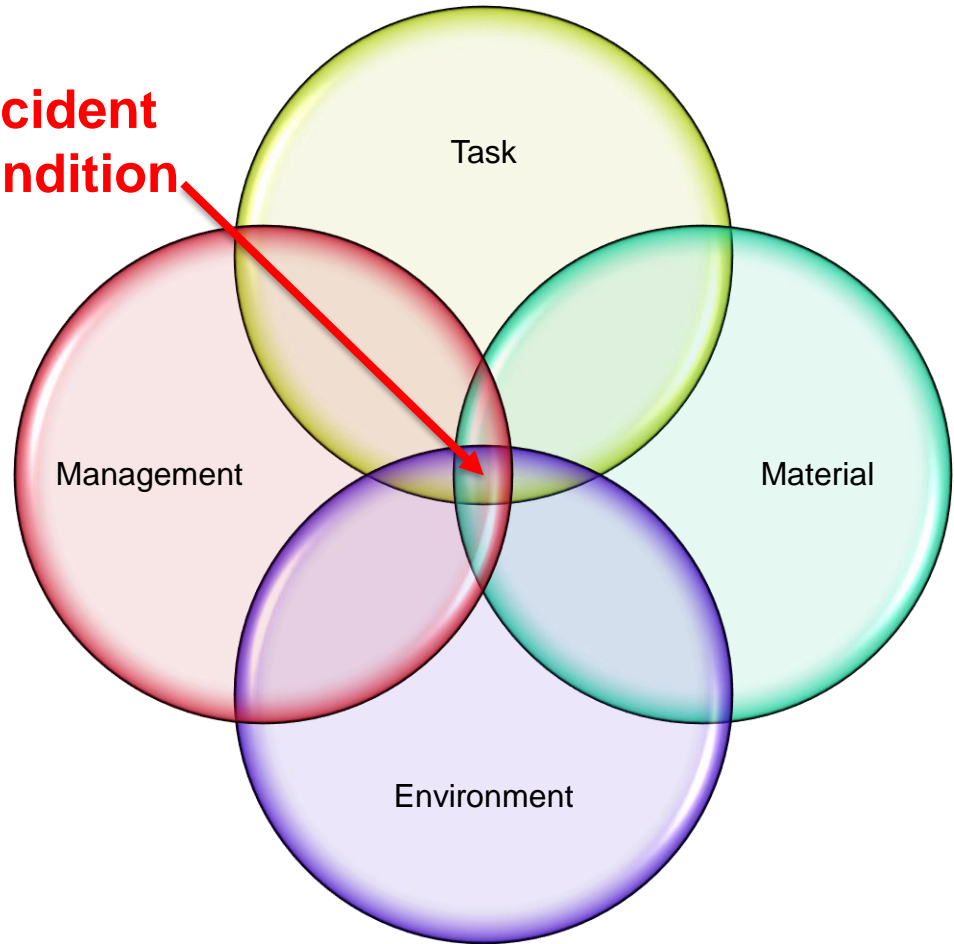


# Contribution to Incident Conditions



# Typical Response to Incidents

**Incident  
Condition**



# **Root Cause “Incident Condition”**

A fundamental reason for the occurrence of a problem or event

# Difference

The root cause is the primary driver of the event and causal factors are secondary or tertiary drivers



# History of 5 Why's

Originally developed by Sakichi Toyoda and later used at Toyota during the evolution of its manufacturing methodologies.

The technique is now used within Kaizen, lean manufacturing, and Six Sigma

# Key Concept

In theory it takes five “whys” to get to the root cause, but in practice there will be cases where you may use more or fewer than five “whys”.

# 5 Why's Example

**The Problem:** The car will not start.

- 1st Why: The battery is dead.
- 2nd Why: The alternator is not working.
- 3rd Why: The alternator belt has broken.
- 4th Why: The alternator belt was well beyond its useful service life and was never replaced.
- 5th Why and the Root Cause: The car was not maintained according to the recommended service schedule.

# Process: Assemble a Team

## Facilitator

- Understanding of 5 Why's & Casual Factors
- Ability to lead group and illicit conversation & ideas

## Safety Committee

- Representation from various divisions within the company
- Have formal training in evaluation of the accidents

## Familiar with the process

- Can provide insight into “how things are really done”
- Can identify issues within the current process

# Process: Define the Problem

Employee twisted their  
knee exiting a truck

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# Process: Ask the First “Why”

Employee twisted their  
knee exiting a truck

1) Why did the employee  
twist his knee?

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# Process: Ask “Why” Four More Times

## Employee twisted their knee exiting a truck

1) Why did the employee  
twist his knee?

He slipped off  
the step

2) Why did he slip  
off the step?

- The step was covered in snow
- The driver wasn't wearing proper footwear
- Driver didn't use three points of contact

3) Why was the employee  
not wearing proper  
footwear?

New employee had  
not purchased yet

4) Why did the employee  
not purchase footwear  
yet?

Company policy  
does not allow  
reimbursement  
until after 30 day  
assessment

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**Process:  
Ask “Why”  
Four More  
Times**

Employee twisted their knee exiting a truck

Why?

He slipped off  
the step

Why?

Driver wasn't  
using 3 Points  
of Contact

Why?

Driver was  
late to drop  
off

Why?

Driver wasn't  
wearing Proper  
Footwear

Why?

Employee did not  
purchase yet

Why?

Company policy  
does not allow  
reimbursement  
for 30 days



# Process: Ask “Why” Four More Times

Employee twisted their knee exiting a truck

Why?

He slipped off the step

Why?

Causal Factor 2

Driver wasn't wearing Proper Footwear

Why?

Causal Factor 1

Driver wasn't using 3 Points of Contact

Why?

Employee did not purchase yet

Why?

Driver was late to drop off

Why?

Company policy does not allow reimbursement for 30 days

# 5 Causal Factor “Buckets”

## Management

- HR Shoe Purchase Policy

## Human

- New Driver

## Task

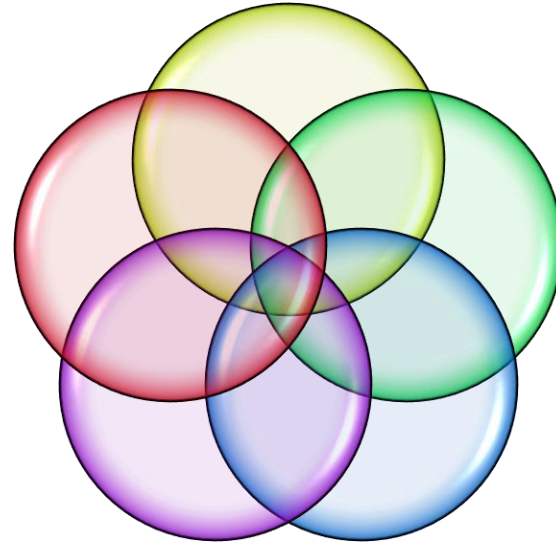
- 3 Points of Contact

## Material

- Stair tread

## Environment

- Snowing
- Slippery



## **Process: Know When to Stop**

You'll know that you've revealed the root cause of the problem when asking "why" produces no more useful responses, and you can go no further.

# **Now What? Identify Counter- Measures**

- Short-Term vs Long-Term Solutions
- Realistic solutions
- Sustainable
- Senior Management Support

**Process:  
Ask “Why”  
Four More  
Times**

Employee twisted their knee exiting a truck

Why?

He slipped off the step

Why?

Driver wasn't using 3 Points of Contact

Why?

Driver was late to drop off

Why?

Driver wasn't wearing Proper Footwear

Why?

Employee did not purchase yet

Why?

Company policy does not allow reimbursement for 30 days

Causal Factor  
1 leads to  
counter  
measure 1

Causal Factor  
2 leads to  
counter  
measure 2

# Now What? Action Plan Sample

	Factor(s)	Action Plan	Assigned To:	Completion Date
Task		Short Term:		
		Long Term:		
Material	Truck PM did not address stair tread degradation resulting in employee slip/trip/fall	<b>Short Term:</b> Install new stair on truck# 211		
		<b>Long Term:</b> Add tread inspections to daily inspection sheet		
Environment	Weather conditions contributed to late delivery resulting in employee slip/trip/fall	<b>Short Term:</b> Delivery schedule review based on weather conditions		
		<b>Long Term:</b> Weather condition delays added into contracts		
Human		Short Term:		
		Long Term:		
Management / Process failure	HR Shoe purchase policy was contributing factor to slips/trips/falls incident.	<b>Short Term:</b> Provide PPE solution (i.e. yaktrax) to new employees		
		<b>Long Term:</b> Revise HR policy to allow new employees to purchase shoes with reimbursement plan		

# **Now What? Measure Progress and Success**

- Tracking & Dashboards
- Check-in Timelines

*What Gets Measured  
Gets Accomplished*

## Tips & Tricks

- You do not have to always ask “5” whys, sometimes its more, others its less
- When employee mistakes happen, don’t assign blame, instead find out why
- Information gathering at the time of incident is crucial for successful root cause analysis



# 5 Why's

**The Problem:** A worker slips and falls, and suffers an injury.

- 1st Why: There was a puddle of oil on the plant floor.
- 2nd Why: Oil spilled from a compressor.
- 3rd Why: An oil leak from the compressor was not detected.
- 4th Why: The compressor was not inspected on a regular basis and repaired (if required).
- 5th Why and the Root Cause: The compressor was not in the maintenance system.

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