Module 1

Basic Incident Investigation Procedures

TLO 1: Explain basic incident investigation procedures.

ELO 1.1: Explain the language of incident investigations including the difference between accident and incident.

ELO 1.2: Explain the value of conducting an incident investigation.

ELO 1.3: Explain employer responsibilities related to workplace incident investigations.

Module 1: Basic Incident Investigation Procedures

This module covers basic incident investigation tools and processes, as well as analysis techniques. The goal of any incident investigation is to identify what actions can be taken to prevent future incidents and prevent workplace injuries and illnesses.

Exercise/Discussion: Can you think of any other benefits of investigating incidents, in addition to preventing future incidents?

Words Matter: "Accident" vs. "Incident"

This course uses the term "incident", rather than "accident" to describe a workplace event that results in an injury or illness, or *could have* resulted in an injury or illness. Many people use the word "accident" to describe such an event. The word "accident" however, has a connotation that is associated with a random event that could not be prevented, as in "Oh well, it just happened. It was an accident." This type of thinking implies that the event (or "accident") was unavoidable and could not have been prevented.

On the contrary, most such events don't "just happen". Most are actually wholly preventable.

This course uses the term "incident" rather than "accident" to reinforce the idea that these events do not *have* to occur, and that they can be prevented by addressing shortcomings in the workplace.

Below are some key terms used in this course:

Incident	A work related event in which an injury or ill health (regardless of severity) or fatality occurred, or could have occurred.
Root Causes:	The underlying reasons why unsafe conditions exist, why procedures or safety rules were not followed, or were improperly designed or implemented. Root causes generally reflect management, design, planning, organizational, or operational failings. For example: • Damaged guard not repaired • Failure to use the guard was routinely overlooked by supervisors to ensure speed of production.
Close Call, or Near Miss	An incident that could have caused serious injury or illness but did not.

Causes of Incidents

One early tenant of accident/incident theory comes from the work of Herbert William Heinrich published in 1931. Heinrich's "accident" triangle is based on the premise that if there is an unsafe situation in the workplace, 300 out of 331 times this situation will result in a near miss incident. 30 out of 331 times this will result in a minor injury or illness, and 1 time out of 331 times this situation will result in a serious injury or illness, even a fatality.

Many of Heinrich's theories on "accident" causes and prevention from 1931 have been replaced by more advanced thinking as more research has been completed and knowledge of workplace incidents has evolved. However, his basic premise applies: When a hazard exists, workplace incidents caused by the hazard that result in no injury or minor injuries are much more common than workplace incidents that result in serious injuries. This tells us two things:

1. Accidents/Incidents are rate. The fact that a hazard so often does not result in an injury re-enforces the idea that the hazard in question is not going to cause a serious injury or illness. Management and workers receive positive re-enforcement that failure to the correct the hazard will not actually lead to a serious injury.
2. If a workplace were to focus on identifying causes of near miss incidents, and correcting the potential hazards that are identified, this workplace can prevent more serious injuries and illnesses from occurring.


Heinrich's "Accident" Triangle:

1 — Serious
30 — Minor
300 — Near Miss
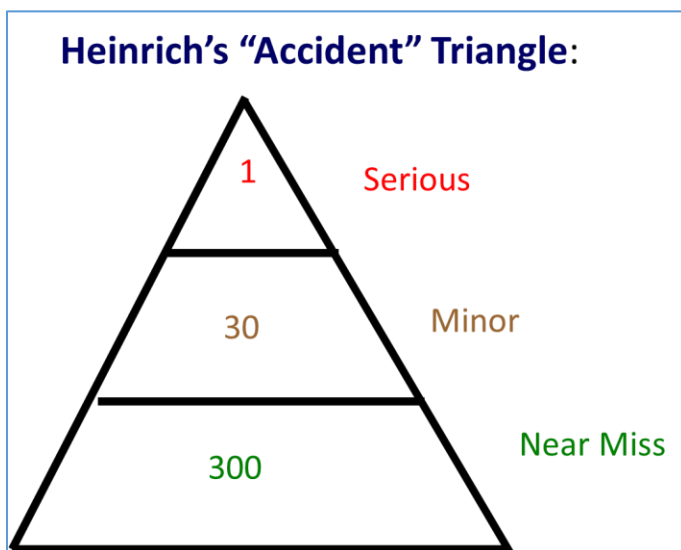
Exercise/Discussion: What are some examples of "workplace factors" that can lead to incidents?

In actuality, it is generally multiple workplace factors, or failures, that lead to an incident. This could be an unsafe condition, such as a trip hazard, an unguarded moving part, or a tool that produces excess vibration.

Some theorists postulate the most (or sometimes they claim all) workplace incidents result from "unsafe behaviors." This leads to a "blame the worker" mentality and may neglect to consider hazards in the environment. For example, *"if the worker had stepped over the trip hazard, they would not have tripped."*

A combination of factors causes the incident:

Human Component: Actions of Incident Victim AND Coworkers

Unsafe Practice

Unsafe Condition
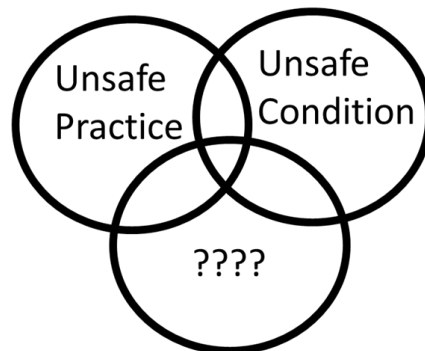
Environmental Conditions, Machinery, Tools, Etc

????

The difference between an injury and a near miss

That is not to say the trip hazard in the environment could not have been the result of human action. If the floor supervisor had seen the trip hazard and failed to have it corrected, this action (or inaction) would be a causal factor if an incident occurred.
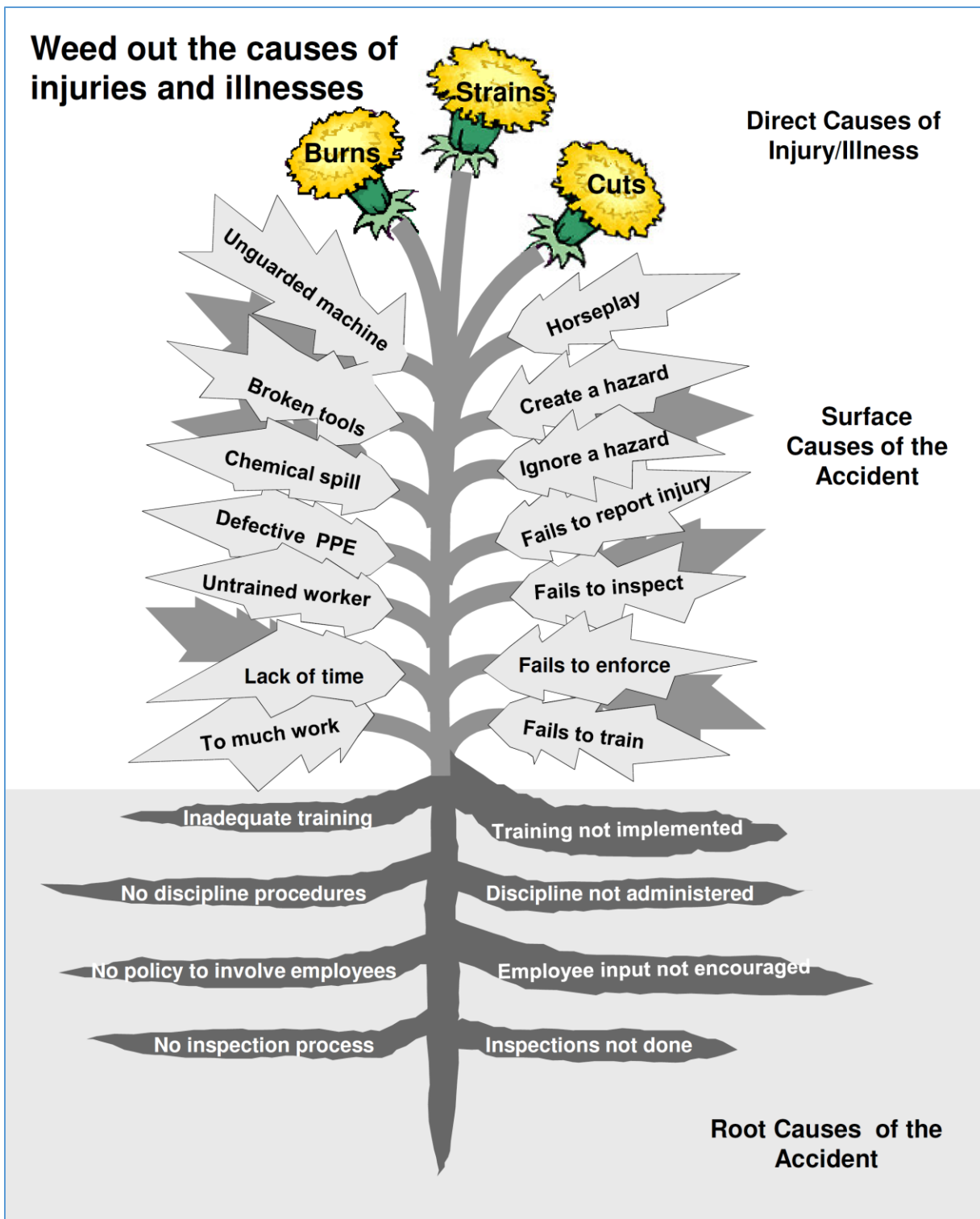

Figure Source: Oregon OSHA Accident Investigation Workbook https://osha.oregon.gov/edu/Documents/workshop-materials/1-110w.pdf

In reality, few workers _want_ to cause a workplace injury or illness for themselves or their co-workers. There have been instances in which someone deliberately causes a self inflicted injury or an injury to someone else, but this type of event is called a "crime" rather than a workplace incident or "accident." Most workplace incidents are not the result of a crime, and workplace incident investigations should not be mistaken for a criminal investigation: The purpose of the investigation is to identify and correct root causes of the incident, and not to place blame or find fault.

Value of Incident Investigation

Investigation of a worksite incident-regardless of whether it resulted in a fatality, injury, illness or a near miss-provides employers and workers the opportunity to identify hazards in their operations and shortcomings in their safety and health programs. Most importantly it enables employers and workers to identify and implement the corrective actions necessary to prevent future incidents. Incident investigations that focus on identifying and correcting root causes, not on finding fault or blame, also improve workplace morale and increase productivity by demonstrating an employer's commitment to a safe and healthful workplace.

WHY INVESTIGATE?
Incident investigations help employers:
- Prevent injuries and illnesses
- Save lives
- Save money
- Demonstrate commitment to health and safety
- Promote positive workplace morale
- Improve management

Investigation of incidents-regardless of size or impact- helps employers look beyond _what_ happened to discover _why_ it happened. This allows employers to identify and correct shortcomings in their safety and health management programs.

> The Bureau of Labor Statistics reports that more than a dozen workers died every day in American workplaces in 2013, and nearly 4 million Americans suffered a serious workplace injury. And tens of thousands are sickened or die from diseases resulting from their chronic exposures to toxic substances or stressful workplace conditions. These events cause much suffering and great financial loss to workers and their families, and also result in significant costs to employers and to society as a whole. Many more "near misses" or "close calls" also happen; these are incidents that could have caused serious injury or illness bud did not, often by sheer luck. Practically all of these harmful incidents and close calls are preventable.
>
> ---OSHA's _Incident (Accident) Investigations: A Guide for Employers_

OSHA strongly encourages employers to investigate all workplace incidents-both those that cause harm and those that are close calls or near misses that could have caused harm under slightly different circumstances. Incident investigation should be an integral part of an occupational health and safety management program. Such a program is structured to identify and control workplace hazards, and should emphasize continuous improvement in health and safety performance. When done correctly, an effective incident investigation uncovers the rout causes or underlying factors of the incident. If appropriate actions are taken to correct the root causes discovered in the investigation, future incidents can be prevented.

Cost of Workplace Incidents

Prevention of workplace incidents save money. Workplace incidents are far more costly than most people realize. The National Safety Council estimates that, on average, preventing a workplace injury can save $39,000 and preventing a fatality can save more than $1.4 million (setting aside for a moment the pain and suffering of workers and families.)

The most obvious financial costs are those related to worker's compensation claims, but those are only the direct costs of the incidents. The indirect costs are less obvious, but if added up, typically exceed the dollar amount related to the direct costs. Indirect costs include lost production, schedule delays, administrative time (for emergency response, investigation, claim processing, for example), lower moral, training of new or temporary personnel, increased absenteeism, and damage to customer relations or corporate reputation.

What do Incidents Cost a Company?

Unseen costs can sink the ship!

Direct - Insured Costs

"Just the tip of the iceberg"

Indirect - Uninsured, Hidden Costs - Out of Pocket

Examples:
1. Lost time by fellow employees and supervisor.
2. Investigation of incident.
3. Schedule delays.
4. Legal fees.
5. Training costs for new/replacement workers.
6. Damage to tools and equipment.
7. Lower morale.
8. Increased absenteeism.
9. Poorer customer relations.
10. Others?

Cost/Benefit Analysis of Incident Prevention

The best hazard controls cost money, and in most organizations, there are financial controls in place to ensure that funds are spent appropriately and provide the greatest value. After all, that is how a workplace stays in business. How do you measure the value of something that hasn't happened?

If a hazard exists in the workplace, there is a reasonable expectation that a disabling injury is likely in the foreseeable future (for example, the next five years). In considering whether control measures are cost effective or not, it is important to consider both the direct and indirect costs of the incident, even though indirect costs are less tangible and harder to measure.

Some examples of direct costs of incidents using 2015 dollars are:

Type of Incident	Direct costs
Struck by	$32,855
Falls/Slips	$40,043
Strains	$30,744
Caught in equipment/objects	$36,974

Direct costs would include costs related to medical treatment and time loss from work would be covered by worker's compensation insurance. However, insurance rates are based on claims history, so insurance premiums will be impacted and will increase in the future.

OSHA suggests using cost multipliers to estimate the indirect costs of an incident:

Direct Cost	Cost Multiplier
$0 - $2,999	4.5
$3,000 - $4,999	1.6
$5,000 - $9,999	1.2
$10,000 or more	1.1

For example: Consider that a condition exists in a warehouse in which an elevated platform does not have a compliant guardrail. Several employees work on the platform each day, and a well-used walkway passes directly under the platform. The most likely injury is a fall to a lower level, which would have a direct cost of $43,043. The cost multiplier for this value from the above table is 1.1, so the estimated indirect costs can be calculated as:

Indirect costs =$40.043 x 1.1 = $44,047

The total cost of the injury is the sum of the direct costs plus the indirect costs, or:

$40,043 + $44,047 = $84,090

The value of the total cost of the injury incident can be compared to the cost of implementing the control to provide a Return on Investment (ROI).

Incident Investigation Programs

An Incident Investigation Program is an important component of an Occupational Safety and Health Management System. An effective Incident Investigation Program includes:

- Written procedures with clear statement that are easy to follow, including:
    - Who to notify when an incident occurs;
    - Process for contacting emergency services, such as fire or police;
    - Process for contacting OSHA or the State Agency in the event of a workplace fatality, hospitalization, amputation or loss of an eye;
    - Who conducts the incident investigation;
    - Who receives copies of incident investigation reports;
    - Who is responsible for follow up on corrective actions through completion;
    - How corrective actions are tracked.
- Training for personnel on incident investigation and the employer's procedures;
- Collaboration between workers, worker representatives and management;
- A focus on identification of root causes rather than establishing fault;
- Emphasis on correcting root causes of incidents;
- Timely implementation of corrective actions identified in incident investigations;
- An annual program review to identify improvements to the program that can be made as part of a continuous improvement process;
- Review of incident trends.
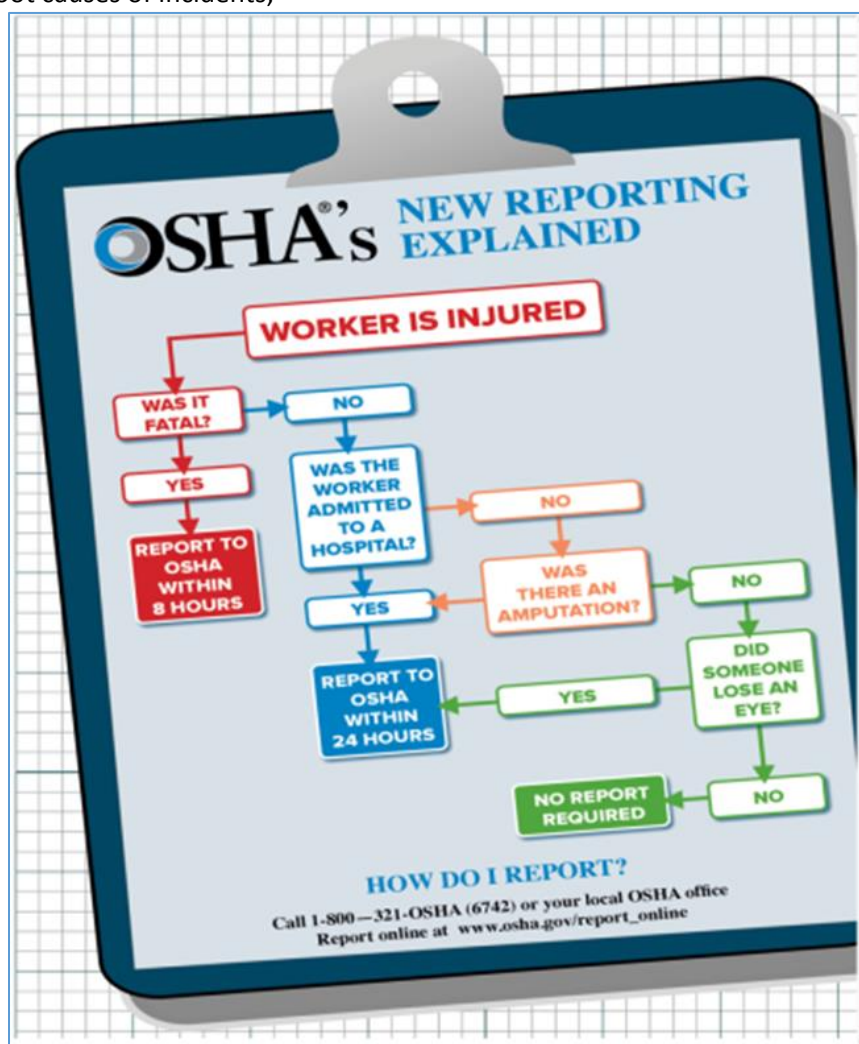
Alaska Reporting Requirements

Occupational accidents that result in the **death or overnight hospitalization** of one or more employees must be reported to AKOSH within **8 hours**. Immediately report accidents to:

- **1-800-770-4940**
  - **or (907) 269-4940**
    - (8 am to 5 pm M-F; AK time)
- **1-800-321-6742**
  - (After 5 pm or on weekends and holiday)

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Oregon Reporting Requirements

Report within eight hours

- **Death** of any employee or a **catastrophe**
  - Catastrophe: **two or more employees are fatally injured, or three or more employees are admitted to a hospital or clinic** as a result of the same incident.

Report within 24 hours

- In-patient hospitalization, loss of an eye, and either an amputation **or avulsion that results in bone loss**

Washington Reporting Requirements

- A workplace **fatality or in–patient hospitalization of any employee within eight (8) hours** of the incident.
- A **non–hospitalized amputation or loss of an eye(s) of any employee within twenty–four (24) hours** of the incident.

Keys Points in Promoting a Positive Workplace

Overall, good management principles apply to incident investigation:

- Focus on identifying root causes, not placing blame or finding fault. This is an incident investigation, not a criminal investigation.
- Although a supervisor is often assigned primary responsibility for conducting incident investigations, the investigation should actually be conducted by a team. The supervisor should act as the investigation team leader rather than a solitary investigator.
- Working together as a team encourages all parties to "own" the conclusions and recommendations, and to jointly ensure that corrective actions are implemented in a timely manner.

Investigate Programs, Not Behaviors:

Look beyond the direct and surface causes of the incident to find the root cause. For example:

- If a procedure or safety rule was not followed…
    - Why was the procedure or safety rule not followed?
- If production pressures played a role…
    - Why were production pressures permitted to jeopardize safety?
- If the procedure was out of date…
    - Why were the procedures not updated?
- If safety training was not adequate…
    - What is the reason for inadequacies in safety training?

> "One central principle…is the need to consider the organizational factors that create the preconditions for errors as well as the immediate causes."
> -Sidney Dekker (2006)

Incident Investigations that follow a systems approach are based on the principle that the root causes of an incident can be traced back to failures of the programs that manage safety and health in the workplace. This approach is fundamentally different from a behavioral safety approach, which incorrectly assumes that the majority of workplace incidents are simply the result of "human error" or "behavioral" failures. Under a systems approach, one would not conclude that carelessness or failure to follow a procedure alone was the cause of an incident. To do so fails to discover the underlying or root causes of the incident, and therefore fails to identify the systemic changes and measures needed to prevent future incidents. When a shortcoming is identified, it is important to ask why it existed and why it was not previously addressed.

---OSHA's *Incident (Accident) Investigations: A Guide for Employers*

OSHA's *Incident (Accident) Investigations: A Guide for Employers* describes a systems approach for responding to workplace incidents.

In a systems approach, investigations do not focus primarily on the behaviors of the workers closest to the incidents. Instead, the focus is on the factors that prompted such behaviors. The goal is to change the conditions under which people work by eliminating or reducing the factors that create unsafe conditions. These factors can be thought of as program deficiencies that can and should be corrected.
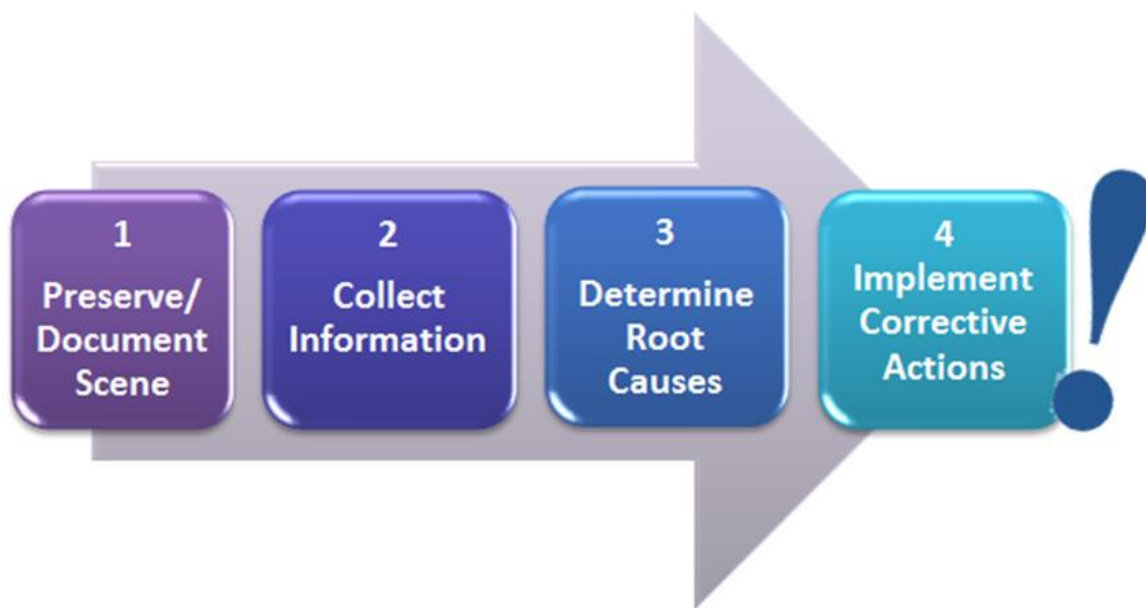
> **"Human error is not the conclusion of an investigation. It is the starting point."**
> -Sidney Dekker (2006)

One of the biggest challenges facing the investigators is to determine what is relevant to what happened, how it happened, and especially *why* it happened. This involves conducting a systems approach incident investigation that focuses on the root causes of the incident to really help prevent them from happening again.

---OSHA's *Incident (Accident) Investigations: A Guide for Employers*

1 Preserve/ Document Scene

2 Collect Information

3 Determine Root Causes

4 Implement Corrective Actions

A SYSTEMS APPROACH TO HELP PREVENT INJURIES AND ILLNESSES

A systems approach looks beyond the immediate causes of an incident. For example:

If a worker suffers an amputation from a table saw, the investigator would ask questions such as:

- Was the table saw adequately guarded?
  - If not, why not?
- Was the guard damaged or non functional?
  - If so, why hadn't it been fixed?
- Did the guard design get in the way of the work?
- Had the employee been trained properly in the procedures to do the job safely?

Ground Rules for Incident Investigation

An incident investigation is about fact finding, not fault finding. Investigators must treat injured employees and witnesses with respect, and avoid creating any atmosphere of blame. It may be that a human action played a role in the outcome of the incident, but if it did, there are likely reasons why the human(s) took the action(s) that they did. If the investigator has any pre-conceived ideas as to who "was at fault" for the incident, the real root causes probably won't be found. Therefore, it is important to start the investigation with an open mind. The focus on the investigation needs to be on programs, not behaviors.

> "Errors are seen as consequences rather than causes"
> -James Reason (2000)

If the incident investigator has any personal issues with the injured employee or witnesses, these need to be set aside. The investigator needs to be objective, and avoid forming conclusions before finding all the facts.

Lastly, be sure to thank everyone for his or her participation in the incident investigation.

Review of Module 1 Concepts:

Exercise/Discussion: In groups, list as many items as possible for each of the questions below:

Why do we use the term "incident" instead of "accident?"

How does incident investigation add value to a work organization?

What are the employer's responsibilities in an Incident Investigation Program?

Who should conduct or lead the incident investigation?

Who should be on the Incident Investigation team?

What are some elements of an effective incident investigation program?

When and how should incidents be investigated?

How can employers use incident investigation to promote a positive workplace?

How do you encourage investigation of programs, not behaviors?