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Sunderland Marine

Safe Home

Incident (Accident) Investigations

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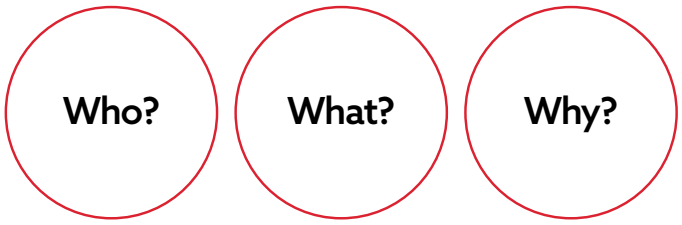
Introduction

It is important that we learn from the past. Safety and loss prevention measures evolve as lessons are learnt from previous incidents, whether our own or other's misfortune. A very important process that ensures we learn from the past is the incident (or accident) investigation.

Fundamentally, an investigation must establish:



Who was involved?

What actually happened?

Why did it happen?

No particular method of incident investigation is best. With this in mind, this quick reference guide outlines the basic investigation process and includes guidance on how to ensure your incident investigations are effective and used to their best potential.

Which Incidents to Investigate?

The need for an investigation may be measured by the seriousness of what happened or, in the case of a near-miss, the seriousness of what could have happened. Remember, a near miss is an incident or a potentially hazardous situation that had no actual consequences but could have reasonably had serious consequences or where the consequences were minor but could reasonably have been much greater.

The Basic Process

1.Properly Prepare the Investigation

- Act Promptly: An investigation should be initiated as soon as possible following an incident. However, common sense must prevail if a serious casualty has occurred and emergency actions remain in progress
- Control Access: A number of interested parties might request access to the scene. Exercise great caution when faced with requests for documentation from visitors and perhaps seek advice
- Keep an Open Mind: Be objective and do not just accept the reported versions of events at face value
- Be Sensitive: The incident may have resulted in serious injuries or fatalities to persons very close to the people you are interviewing.

For more information, please visit www.sunderlandmarine.com

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2. Collect, Preserve and Record Evidence

Good quality evidence is vital, not only for incident investigation but also for any subsequent claim or litigation. The extent and type of evidence required depends on the type of incident. But the simple process on managing evidence following an incident is:

- Collect: Gather physical, documentary and electronic evidence and witness statements
- Preserve: Ensure evidence remains protected, secure and a chain of custody exists
- Record: Maintain a record of the items of evidence

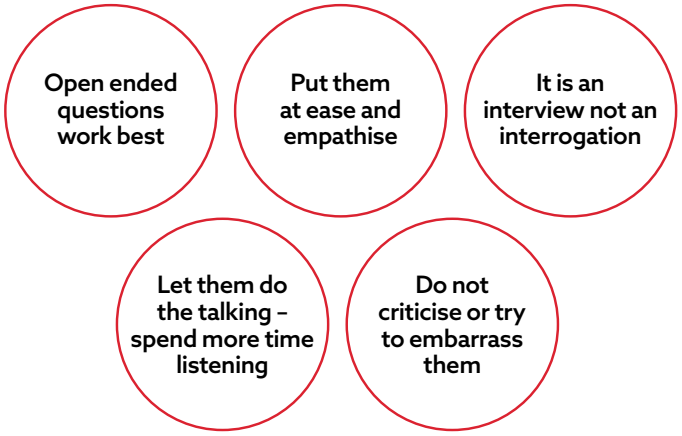
Taking Witness Statements

There are two types of evidence with regard to statements and it is important to differentiate between a person's opinions and facts. *Factual evidence* relates to what actually was seen or done at time of the incident and *opinion evidence* concerns what people think happened.

Witness statements should be taken as soon as possible after the event. There are three main reasons for this:

- Memories fade. The ability to accurately recollect what happened fades with time
- Collaboration. People's versions of events can change after they have had the opportunity to discuss it with either their managers or fellow crew. There can be a tendency to amend their version to match others either subconsciously effect or through coercion
- Legal value. If a claim or legal dispute arises, a court may hold a statement made on the day of the incident in higher regard than a statement weeks later.

When taking statements, some key aspects to consider are:



It is worthwhile asking the crew what they think caused the incident and what may have prevented it.

Onboard Incident Report Form

A very important item of documentary evidence is the incident or accident report form which is completed by the vessel's master or safety officer.

Poor standards of onboard incident reporting is a common failing observed by Sunderland Marine. Its value as evidence is undermined and therefore makes it difficult to rely on in claim settlements or in litigation. It is therefore vital that the incident report forms generated on board the vessels are used with the following in mind:

- They are sufficiently detailed and completed as fully as possible
- They are legible
- Avoid poor use of language, abbreviations and acronyms which might lead to misinterpretation
- Do not use incident report forms for political gain or trying to force a point – stick to facts and the issue in hand.

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3. Analyse Data and Determine Causes

An analysis is only as good as the information collected. The old adage of 'garbage in – garbage out' holds true.

There is no right way to analyse but the key is to dig deep enough to identify the root causes. A common mistake is to identify what is known as the 'immediate' or 'apparent' cause and go no further.

Root Cause Analysis

There are a number of methods of root cause analysis that are commonly used. Probably the most simple is the 'Five Whys' method. The basic technique is to identify the problem or the causal factor and ask why it happened. This should identify one or more 'sub-events' and then the process is repeated for each – asking why did it happen? Repeating this process four or five times should then lead to the root causes.

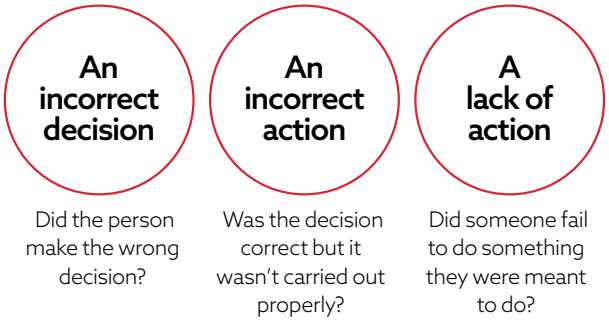
Identifying Causal Factors

The events leading to an incident are rarely simple. It is quite usual for a number of preconditions to exist or minor events to come together. These causal factors can be broadly categorised as follows

Design: If a piece of equipment, component or system fails, one of the questions that can be asked is "was it fit for purpose and of a suitable design for its duty?" This should not be confused with *defective* equipment, which will be addressed next.

Structural or Material Failure: If a component has failed, it should first be determined if it failed prematurely or if it had reached the end of its expected life. In both cases the question is "why?" Possible reasons for premature failure include defects in fabrication or construction, overloading during operation, improper use and lack of maintenance. If the failed part has reached the end of its expected life, consider why this was allowed to happen and identify any failings in preventative maintenance.

The Human Element: In the vast majority of incidents, there is human involvement. In some cases it is clear that someone made a mistake that either led or contributed to the incident – human error. In some cases the outcome was influenced by someone violating a procedure.



Violating Procedures: The root of a problem is not *"someone didn't follow the procedure"*. It is important to understand why a person acted in the way they did. People break the rules or take short cuts for a number of reasons. These reasons can range from the ignorant to the well intentioned to the reckless. The problem can only be addressed if the reasons for the violation are understood.

Unintentional *"I didn't know"*	Not aware of procedure Misunderstood the procedure
Routine *"Everyone does it"*	Common practice Automatic behaviour
Situational *"The procedure is wrong"*	Cannot do the job without violating procedure Procedure not workable
Organisational Optimising *"I thought it would help the company"*	Thinking its in best interests of company to violate procedure or take short cut
Personal Optimising *"It makes my life easier"*	Taking a short cut makes life easier Complacency or boredom
Reckless *"Screw you!"*	Reckless or malicious behaviour
Exceptional	Rare and unusual circumstances Not previously identified

The action required to remedy these violations can range from additional training to improving procedures to disciplinary action.

Human Error: It is not enough to say the root cause of an incident was simply 'human error'. It is a hugely complex area of study, but efforts must be made to understand why these errors were made. The following are examples of influencing factors and each might be considered when carrying out an investigation. There are many others that could apply.

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People Factors

- Skills, competence and training of crew
- Familiarity with the vessel and its equipment
- Personality, behaviour, relationship with others
- Physical and medical fitness
- Fatigue and stress

Ship Factors

- Design of vessel, its systems and equipment including vessel specific characteristics
- Safe condition of vessel and its equipment with functioning safety equipment, guards and interlocks
- Tools and spares to properly maintain vessel

Environment

- Weather and sea conditions
- Traffic density
- Port and berthing facilities

Onboard Management

- Manning levels
- Supervision and management of crew
- Planning of work, risk assessment and allocation of jobs
- Job role responsibilities and accountability
- Emergency preparedness and response
- Safety management system procedures and their enforcement
- Communications and relationships between senior officers and crew
- Language barriers and cultural differences
- Fatigue management

Shore Management

- Understanding the realities of what actually happens on board
- Support and and oversight of crew
- Communications between ship and shore as well as between shore based departments affecting vessel operation
- Sensible and suitable policies and procedures
- Safety culture starting from the top
- Vessel scheduling

Working and Living Conditions

- Ergonomics and user friendliness: human-machinery interface
- Safe movement and access around vessel
- Living standards - including hygiene and quality of food
- Quality of rest

External Factors

- Pressure from third parties such as agents, inspectors and surveyors

4. Issue Recommendations

After identifying the root and contributory causes of an incident, the next step is to consider how best to prevent it and similar instances from happening again. Think about each causal factor and how it could have been prevented.

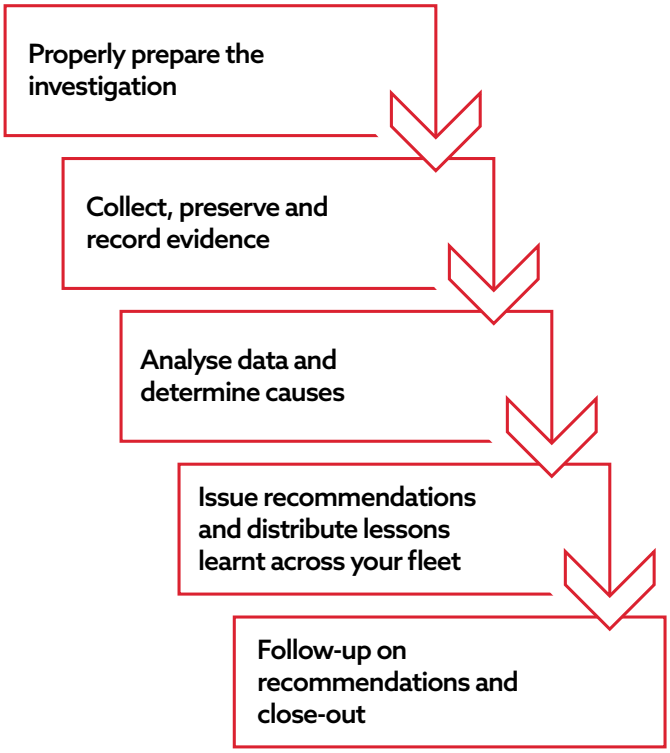
Once agreed, the recommendations should be distributed fully so everyone in the fleet can learn from the incident.

5. Follow-up and Close-out

There must be a system of follow-up and closing-out to ensure the recommendations are put in place, understood and in force.

Timescales should be stated according the urgency.

Summary



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Glossary

Near Miss
An incident or a potentially hazardous situation that had no actual consequences but:

- could have reasonably had serious consequences; or
- where the consequences were minor but could reasonably have been much greater.

Root Cause
The factor that starts a chain of events that leads to the incident.

Causal Factor
One of the numerous factors that affect the outcome or contribute to the incident, other than the root cause.

Removing a causal factor from the chain of events might lead to an incident being avoided or a less serious incident but does not guarantee the prevention of the incident happening again.

Human Element
Anything that influences the interaction between a human and any other human, system or machine on board a vessel (Lloyds Register).

Safety Culture
A culture of self-regulation, with every individual – from the top to the bottom – feeling responsible for actions taken to improve safety and performance (IMO).

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