



## Form 4: New Work Item Proposal

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|---|---|
| Circulation date:<br>2020-02-11<br>Closing date for voting:<br>2020-05-06 | Reference number: <a href="#">Click here to enter text.</a><br>(to be given by Central Secretariat)   |
| Proposer (e.g. ISO member body or A liaison organization)<br>COPOLCO      | <b>ISO/TC</b> <a href="#">Click here to enter text.</a> <b>/SC</b> <a href="#">Click here to enter text.</a><br><input checked="" type="checkbox"/> Proposal for a new PC |
| Secretariat<br>JISC   | <b>N</b> <a href="#">Click here to enter text.</a>  |

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

**IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.**

Guidelines for proposing and justifying a new work item are contained [in Annex C of the ISO/IEC Directives, Part 1.](#)

The proposer has considered the guidance given in the Annex C during the preparation of the NWIP.\_

### Proposal (to be completed by the proposer)

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| <p><b>Title of the proposed deliverable.</b></p> <p><b>English title:</b></p> <p><b>Consumer incident investigation guideline</b></p> <p><b>French title (if available):</b></p> <p><a href="#">Click here to enter text.</a></p> <p><i>(In the case of an amendment, revision or a new part of an existing document, show the reference number and current title)</i></p> |
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**Scope of the proposed deliverable.**

An international standard (guideline) to provide a general guide for investigations of consumer incidents.

Consumer incidents are incidents where consumers suffer physical injury or death in the process of using products, services, facilities or the things related to them. Consumer incident investigation means an investigation aiming to prevent incident recurrence, and to contribute to the safety of consumers.

This document is intended to be beneficial to persons, groups, committees or organizations of all types, such as private, public, and non-profit bodies, regardless of the size of the organization which is investigating consumer incidents.

**Purpose and justification of the proposal\***

Incident / accident manuals and guidelines describing methods of investigation exist for aircraft, occupational and medical incidents. Even though these fields are different, the commonality is that they do aim to investigate the root cause and contributing factors of the incident, leading to proposals to prevent recurrence, and they do not aim to pursue incident responsibility. The background of the development of the incident survey methods in the fields of aircraft or occupational safety, useful for preventing recurrence more effectively, is that in these areas, investigations were strongly requested or the duties existed. On the other hand, in the case of a consumer incident, especially a serious incident where an investigation is pursued, they would only look for the cause of who was responsible rather than having an individual investigation for preventing recurrence. So far, we cannot confirm the existence of a guideline for that purpose. There are some guidelines in the preceding field which are the common, essential way of thinking. The guideline mentioned here is not a division of expertise in individual fields, but rather focuses on the method to look carefully at the background of the incident using universal causation models and to search for the root cause and contributing factors. Based on such guidelines, it is the purpose of this proposal to create a guideline for incident investigation that contributes to preventing recurrence in consumer incidents.

*Consider the following: Is there a verified market need for the proposal? What problem does this standard solve? What value will the document bring to end-users? See Annex C of the ISO/IEC Directives part 1 for more information.*

*See the following guidance on justification statements on ISO Connect:*  
<https://connect.iso.org/pages/viewpage.action?pageId=27590861>

|   |
|---|
| <p><b>Preparatory work</b> (at a minimum an outline should be included with the proposal)</p> <p><input type="checkbox"/> A draft is attached                      <input checked="" type="checkbox"/> An outline is attached    <input type="checkbox"/> An existing document to serve as initial basis</p> <p>The proposer or the proposer's organization is prepared to undertake the preparatory work required:</p> <p><input checked="" type="checkbox"/> Yes    <input type="checkbox"/> No</p>   |
| <p>If a draft is attached to this proposal,:</p> <p>Please select from one of the following options (note that if no option is selected, the default will be the first option):</p> <p><input type="checkbox"/> Draft document will be registered as new project in the committee's work programme (stage 20.00)</p> <p><input type="checkbox"/> Draft document can be registered as a Working Draft (WD – stage 20.20)</p> <p><input type="checkbox"/> Draft document can be registered as a Committee Draft (CD – stage 30.00)</p> <p><input type="checkbox"/> Draft document can be registered as a Draft International Standard (DIS – stage 40.00)</p> <p><input type="checkbox"/> If the attached document is copyrighted or includes copyrighted content, the proposer confirms that copyright permission has been granted for ISO to use this content in compliance with clause 2.13 of the ISO/IEC Directives, Part 1 (see also the Declaration on copyright).</p> |
| <p><b>Is this a Management Systems Standard (MSS)?</b></p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p> <p>NOTE: if Yes, the NWIP along with the <u>Justification study</u> (see <a href="#">Annex SL of the Consolidated ISO Supplement</a>) must be sent to the MSS Task Force secretariat (<a href="mailto:tmb@iso.org">tmb@iso.org</a>) for approval before the NWIP ballot can be launched.</p>   |
| <p><b>Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal.</b></p> <p><input checked="" type="checkbox"/> International Standard                      <input type="checkbox"/> Technical Specification</p> <p><input type="checkbox"/> Publicly Available Specification    <input type="checkbox"/> Technical Report</p>   |
| <p><b>Proposed development track</b></p> <p><input type="checkbox"/> 18 months*                      <input type="checkbox"/> 24 months                      <input checked="" type="checkbox"/> 36 months</p> <p><input type="checkbox"/> 48 months</p> <p><b>Note: Good project management is essential to meeting deadlines. A committee may be granted only one extension of up to 9 months for the total project duration (to be approved by the ISO/TMB).</b></p> <p>*DIS ballot must be successfully completed within 13 months of the project's registration in order to be eligible for the direct publication process</p>   |
| <p><b>Draft project plan (as discussed with committee leadership)</b></p> <p>Proposed date for first meeting: <a href="#">Click here to enter text.</a></p> <p>Dates for key milestones: DIS submission <a href="#">Click here to enter text.</a></p> <p>Publication <a href="#">Click here to enter text.</a></p>  |

**Known patented items** (see [ISO/IEC Directives, Part 1](#) for important guidance)

Yes  No

If "Yes", provide full information as annex

**Co-ordination of work:** To the best of your knowledge, has this or a similar proposal been submitted to another standards development organization?

Yes  No

If "Yes", please specify which one(s):

[Click here to enter text.](#)

**A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized.**

**Relevant existing ISO deliverables, etc.**

■ **ISO 10377, Consumer product safety – guidelines for suppliers**, are guidelines created for suppliers that are limited to products. Our proposal includes products and services, and is not restricted to within the supplier's organization, but extends to product maintenance contractors, repair contractors, the user environment, operators, supervisors, and other parties. Therefore, the existing standards are not adequate for incorporating our proposal.

■ **ISO 10393, Consumer product recall – Guidelines for suppliers**, are also limited to products, and are guidelines for suppliers. They are first and foremost for recalling products, and therefore, are not adequate for revision and incorporation of our proposal.

■ **ISO 31000, Risk management**, are standards to handle the risks involved in achieving the various objectives set out by an organization. The risks handled under the standards we are proposing are risks to the body and life of consumers. Assessments are carried out beforehand and constantly repeated, but accident investigation is different, as it is an investigation to prevent recurrence of various accidents after the fact, i.e., accidents that have already occurred. Therefore, the revision of ISO 31000 is considered inappropriate for realizing the proposed accident investigations to reduce the risk of injury to the life and body of consumers.

As stated above, with regard to accidents that cause injury to consumers when using and applying the product and services, there are no existing ISO standards that deal with accident investigation for the purpose of preventing recurrence of similar accidents, and to increase safety regarding the body and life of consumers. Therefore, we insist that a new ISO standard be created.

**A listing of relevant existing documents at the international, regional and national levels.**

- ★ CSA Z1005-17, *Incident investigation*
- ★ *Investigating accidents*, “OS&H” July 2001, The Royal Society for The Prevention of Accidents (ROSPA)
- ★ *Incident Investigation*, Canadian Centre for Occupational Health and Safety
- ★ ISO 10393:2013, *Consumer product recall – Guidelines for suppliers*
- ★ ISO 10377:2013, *Consumer product safety – Guidelines for suppliers*
- ★ ISO 14971, *Risk management for medical devices*
- ★ ISO 22000, *Food safety management systems — Requirements for any organization in the food chain.*
- ★ ISO/IEC Guide 51:2014, *Safety aspects – Guidelines for their inclusion in standards*
- ★ ISO 31000:2009, *Risk management – Principles and guidelines*
- ★ IEC/ISO 31010:2009, *Risk management – Risk assessment techniques*
- ★ *Safety Management System*, ICAO (International Civil Aviation Organization)
- ★ *Manual of Aircraft Accident and Incident Investigation*, ICAO
- ★ NFPA 921, *Guide for fire and explosion investigations*

Please fill out the relevant parts of the table below to identify relevant affected stakeholder categories and how they will each benefit from or be impacted by the proposed deliverable(s).

|   | <b>Benefits/impacts</b>   | <b>Examples of organizations/companies to be contacted</b> |
|---|---|--|
| <b>Industry and commerce – large industry</b> | Improved understanding of the basis for accident investigation.<br>Improve credibility of products and services by realizing effective accident prevention. It can (may) reduce risk of economic and social losses incurred by companies to respond to accidents. | To be nominated through National Member Bodies             |
| <b>Industry and commerce – SMEs</b>           | Improved understanding of the basis for accident investigation.<br>Improve credibility of products and services by realizing effective accident prevention. It can (may) reduce risk of economic and social losses incurred by companies to respond to accidents. | To be nominated through National Member Bodies             |
| <b>Government</b>                             | Improved understanding of the basis for accident investigation. By effectively preventing accidents, it is possible to raise the safety level of the life and body of citizens  | Click here to enter text.                                  |
| <b>Consumers</b>                              | The safety of life and body will be enhanced when effective accident prevention measures are implemented.   | Consumers International                                    |
| <b>Labour</b>                                 | Improved understanding of the basis for accident investigation.<br>The safety of life and body will be enhanced by effective accident prevention measures when implemented.   | Click here to enter text.                                  |
| <b>Academic and research bodies</b>           | Improved understanding of the basis for accident investigation.   | Science Council of Japan                                   |
| <b>Standards application businesses</b>       | Click here to enter text.   | Click here to enter text.                                  |
| <b>Non-governmental organizations</b>         | Improved understanding of the basis for accident investigation.<br>By effectively preventing accidents, the safety of citizens can be enhanced.   | Click here to enter text.                                  |
| <b>Other (please specify)</b>                 | Click here to enter text.   | Click here to enter text.                                  |

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|---|--|
| <p><b>Liaisons:</b><br/>A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s).<br/>ISO/TC 20<br/>ISO/TC 34/SC 17<br/>ISO/TC 210<br/>ISO/TC 262<br/>ISO/TC 283<br/>ISO/TC 326</p>  | <p><b>Joint/parallel work:</b><br/><b>Possible joint/parallel work with:</b><br/><input checked="" type="checkbox"/> IEC (please specify committee ID)<br/>IEC Advisory Committee on Safety<br/><input type="checkbox"/> CEN (please specify committee ID)<br/><a href="#">Click here to enter text.</a><br/><input type="checkbox"/> Other (please specify)<br/><a href="#">Click here to enter text.</a></p> |
| <p><b>A listing of relevant countries which are not already P-members of the committee.</b><br/><a href="#">Click here to enter text.</a></p> <p>Note: The committee secretary shall distribute this NWIP to the countries listed above to see if they wish to participate in this work</p>   |  |
| <p><b>Proposed Project Leader</b> (name and e-mail address)<br/>Masaaki Mochimaru, Ph.D.<br/>Director of Human Augmentation Research Center<br/>The National Institute of Advanced Industrial Science and Technology (AIST)<br/>E-mail : m-mochimaru@aist.go.jp</p>   | <p><b>Name of the Proposer</b><br/>(include contact information)<br/>Makiko Kawamura<br/>Board Member<br/>SHUFUREN<br/>Plaza-f 3F, 15 Rokubancho, Chiyoda-ku<br/>Tokyo, Japan 102-0085<br/>E-mail: <a href="mailto:mkkatsea@gmail.com">mkkatsea@gmail.com</a></p>  |
| <p><b>This proposal will be developed by:</b></p> <p><input type="checkbox"/> An existing Working Group (please specify which one: <a href="#">Click here to enter text.</a>)<br/><input type="checkbox"/> A new Working Group (title: <a href="#">Click here to enter text.</a>)<br/>(Note: establishment of a new WG must be approved by committee resolution)</p> <p><input type="checkbox"/> The TC/SC directly<br/><input checked="" type="checkbox"/> To be determined</p>              |  |
| <p><b>Supplementary information relating to the proposal</b></p> <p><input checked="" type="checkbox"/> This proposal relates to a new ISO document;<br/><input type="checkbox"/> This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;<br/><input type="checkbox"/> This proposal relates to the re-establishment of a cancelled project as an active project.<br/>Other:<br/><a href="#">Click here to enter text.</a></p> |  |

**Maintenance agencies and registration authorities**

This proposal requires the service of a **maintenance agency**. If yes, please identify the potential candidate:

[Click here to enter text.](#)

This proposal requires the service of a **registration authority**. If yes, please identify the potential candidate:

[Click here to enter text.](#)

NOTE: Selection and appointment of the MA or RA is subject to the procedure outlined in the [ISO/IEC Directives](#), Annex G and Annex H, and the RA policy in the ISO Supplement, Annex SN.

Annex(es) are included with this proposal (give details)

An explanatory concept paper outlines the aims, intent and likely future content of the the project.

Additional information/questions

[Click here to enter text.](#)

## CONCEPT PAPER

### Consumer Incident Investigation Guideline

This is a paper for supplemental contents for the NWIP.

It does not exactly follow the way of an ISO Standard form; however, by means of basing it on this paper, it is possible to rearrange it into Standard format.

The scope of the incident of this proposal assumes general incidents, where consumers might have become victims.

The assumed users of this guideline are those who conduct incident investigations for preventing recurrence of consumer incidents in any persons and in any organizations including individuals, groups, companies, administrative organizations.

This guideline is aimed for providing a general guideline of incident investigation that contributes to prevention of recurrence.

This concept paper is greatly helped by the comments from Ms. Norma McCormick of Canada at the PSW meeting at COPOLCO 40th meeting.

Besides, this was written based on Mr. McCormick's reference to CSA Z1005-17 Incident investigation. Please note that in advance.

CSA Z1005-17I is created from the viewpoint of investigating occupational incidents to prevent recurrence. Here we rearranged it to become a general guideline, suitable for investigation of consumer incident.

This guideline can be adopted to various causes of consumer incidents.

For example,

To investigate the true cause within the manufacturer who had the fire incident from the smartphone, to formulate and implement measures to prevent recurrence.

Or other cases are, the facilities of the amusement park, the incidents of the elevator and the escalator, the incident at the nursery school, etc.

In order to implement neutral and fair investigations as much as possible to prevent recurrence, the organization itself will be able to adopt this guideline.

# Consumer Incident Investigation

## What is an incident?

The term incident can be defined as an occurrence, condition, or situation that resulted in or could have resulted in injuries, illnesses, damages to health, or fatalities.

The term "accident" is also commonly used, and can be defined as an unplanned event that include injury or property damage. Some make a distinction between accident and incident. They use the term incident to refer to an unexpected event that did not cause injury or damage that time but had the potential. "Near miss" or "dangerous occurrence" are also terms for an event that could have caused harm but did not.

The term incident is used in some situations to cover both an "accident" and "incident". It is argued that the word "accident" implies that the event was related to fate or chance. When the root cause is determined, it is usually found that many events were predictable and could have been prevented if the right actions were taken - making the event not one of fate or chance (thus, the word incident is used). For simplicity, we will now use the term incident to mean all of the above events.

## What is a consumer incident?

A consumer incident is when consumers get involved in the process of using products, services, facilities or related incidents.

## Why should it be investigated?

Sole reason to investigate a consumer incident is to prevent similar incidents in the future

The same principle applies to an inquiry of a minor incident and to the more formal investigation of a serious event. Most importantly, these steps can be used to investigate any situation (e.g., where no incident has occurred ... yet) as a way to prevent an incident.

This guideline is intended to be a general guide for persons, groups or committees who/which are investigating consumer incidents. When incidents are investigated, the emphasis should be concentrated on finding the root cause of the incident so they can prevent the event from happening again. The purpose is to find facts that can lead to corrective actions, not to find fault. Always look for deeper causes. Do not simply record the steps of the event.

## Who should do the investigating?

Ideally, an investigation would be conducted by someone or a group of people who are:

- experienced in incident causation models,

- experienced in investigative techniques,
- knowledgeable about safety
- expert on the specialized products related to the incident that occurred, individual services and its facilities
- able to use interview and other person-to-person techniques effectively,
- knowledgeable of requirements for documents, records, and data collection,
- able to analyze the data gathered to determine findings and reach recommendations;
- and not having conflicting interest relationship between the problem and the investigation.

### **Why look for the root cause?**

An investigator who believes that incidents are caused by unsafe conditions will tend to try to uncover 'conditions' as causes. On the other hand, one who believes incidents are caused by unsafe acts will attempt to find the human errors' that are causes. Therefore, it is necessary to ensure that all who may be called on to investigate incidents have sufficient knowledge and training to understand all potential underlying factors that can feature in a chain of events that ends in an incident.

**The most important point is that, even in the most seemingly straightforward incidents, seldom, if ever, is there only a single cause.**

For example, an "investigation" which concludes that an incident was due to persons (victims/those directly involved in that incident, eg: laborers) carelessness, and goes no further, has failed to seek answers to several important questions such as:

- Was the person's attention distracted? If so, why is attention distracted?
- Was the safety working procedures being followed? If not, why the reasons?
- Were the safety devices in order? If not, why the reasons?
- Were the persons properly trained? If not, why they could not well-trained?

An investigation that answers these and related questions will, in most cases, reveal conditions whose correction will be easier and more effectively giving better solutions than simply attempting to prevent "carelessness".

Another example of investigation failure is where the outcome concludes that an incident was due to, say, faulty equipment (eg: an elevator breakdown), and the investigators have looked no further. Why was the fault not spotted during routine maintenance inspections? Were there any earlier symptoms of the fault? Were they reported? If so, why was the fault not corrected then immediately? These and any other, relevant avenues must be explored to ensure that the conclusions identify all causes.

Similarly, an investigation fails if it looks no further than its conclusion that an incident was due to, say, adverse weather conditions such as amusement park rides. Avenues that should have been explored include: Why was management allowed to continue in such adversity? Why were no special supervision, equipment or other measures introduced to remove the risk of managing in

such adversity?

### ***Incident response process***

#### INVESTIGATION PROCESS

- Gather the facts.
- Identify the causes and its contributing factors.

Draft improvement measures

- Summarize the results in the report.

#### POST INVESTIGATION

- Implement the plan.
- Evaluate the effectiveness of the corrective action.
- Make changes for continuous improvement.

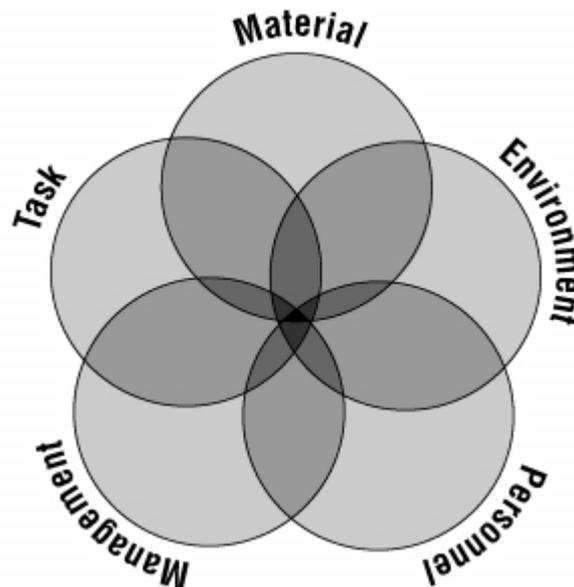
### ***Causation Models***

Regarding investigation of incidents, investigation should be done not only with one (incident causation model) but also several incident causation models will be recommended.

Many models of incident causation have been developed, ranging from Heinrich's domino theory to the sophisticated "Management Oversight and Risk Tree" (MORT).

Here is a model that is popular because of its simplicity is to break down the potential causes of any incident into five categories:

- Task
- material (Products, facilities)
- environment
- personnel
- management



When this model is used, possible causes in each category should be investigated. Each category is examined more closely below: but remember that these are indicative questions only. They illustrate the kind of matter considered in each group, so the investigator(s) should be able to develop a comprehensive checklist relevant to the event, activities and organization at a particular incident site.

### **Event**

Here to inspect the situations at the time of incident.

Members of the incident investigation team will look for answers to questions such as:

- Was procedure properly used for its safety?
- Had conditions changed to make its procedure unsafe?
- Were safety devices working properly?

For these questions, an important follow-up question is "If not, why not?"

### **Material (Products, facilities)**

To seek out the causes of contributing factors from the facilities and products used, investigators might clarify such as:

- Was there a product or facility failure?
- What was its condition or environment?
- Was the product or facility poorly designed?
- Was the raw material substandard in some way?
- Was the PPE (e.g.: Helmet, etc.) used?

Again, each time the answer reveals an unsafe condition, the investigator must ask why this situation was allowed to exist.

### **Environment**

The physical environment, and especially sudden changes to that environment, are factors that need to be identified. The situation prevailing at the time of the incident is important, not what the "usual" conditions were. For example, incident investigators may want to know:

- What were the weather conditions?
- Was the place of incident clean and tidy enough?
- Was it too hot or too cold?
- Was noise a problem?
- Was there adequate light?

### **Personnel**

The physical and mental condition of any individuals directly involved in the event must be explored.

The purpose for investigating the incident is not to establish blame against someone. However, the investigation will not be complete unless personal characteristics are considered. Some factors will remain essentially constant while others may vary from day to day:

- Did the persons have previous experience?
- Had they been adequately trained? (When there was a person involved other than the victim, for example, such as surveillance at an amusement park, transport operator or driver)
- Were they physically able to act on that work?
- What was the condition of their health?
- Were they tired?
- Were they under stress (personal or in order to achieve that task)?
- Were they subject to distraction?

### **Management**

Not only the person directly involved in an incident but also the role of supervisors and higher management (Organizational Contribution Factors) must always be considered in an incident investigation. Answers to any of the preceding types of questions logically lead to further questions such as:

- Was the employer's safety policy, organization and arrangements, understood by all employees (e.g.: product designer) and other workers (e.g.: maintenance workers of elevator)?
- Were the employer's safety rules informed to, and understood by consumers or its users?
- Were written procedures, instruction manuals, and caution available?
- Was there adequate supervision?
- Were workers who involved in that incident trained to do the work?
- Was the adequacy of training monitored?
- Had hazards relevant to the incident been previously identified?
- Had measures been developed to overcome them?
- Were unsafe conditions improved?
- Was regular maintenance of equipment, product, and facility carried out?
- Were regular safety inspections carried out?

This model of incident investigations provides a guide for uncovering all possible causes and reduces the likelihood of looking at facts in isolation. Some investigators may prefer to place some of the sample questions in different categories; however, the categories are not important, as long as each pertinent question is asked. Obviously, there is considerable overlap among categories; this reflects the situation in real life. Again it should be emphasized that the above indicative questions do not make up a complete checklist, but are examples only.

Taking all this into account, the investigator/ team is unlikely to approach an investigation with a blank sheet of paper, but rather with a checklist to provide a guide through the job of gathering facts

that will achieve the aim of the exercise.

## ***Incident Investigation***

### **Gathering the facts**

The steps in incident investigation are simple: the incident investigators gather information, analyze it, draw conclusions, and make recommendations. Although the procedures are straightforward, each step can have its pitfalls. As mentioned above, an open mind is necessary in incident investigation: preconceived notions may result in some wrong paths being followed while leaving some significant facts uncovered. All possible causes should be considered. Making notes of ideas as they occur is a good practice, but conclusions should not be drawn until all the information is gathered.

### ***Physical evidence***

Premise: In the case where the investigation is conducted by an administrative agency, and the police are involved in the incident, it is ideal that a "cooperative relationship" with an incident investigation agency is established between criminal investigation to pursue legal liability and the administrative agency for the prevention of incident recurrence.

This guideline is an effective approach to incident investigation for consumer safety, and is focused on it. It naturally means that we cannot step in establishing such "cooperative relationship". Therefore, this guideline is for physical evidence and incident personnel, and an incident investigation agency, which stands from a safety standpoint, is accessible independently of the investigation. By doing so we will deepen our appreciation of society in order to help consumers' safety.

Physical evidence is probably the most non-controversial information available. It is also subject to rapid change or obliteration, therefore, it should be the first to be recorded. Based on investigators' knowledge of the work process, they may want to check items such as

- positions of injured persons
- things being used (products, equipment and facilities)
- safety devices in use
- position of appropriate guards
- position of controls of machinery
- damage to equipment
- environment (an incident place clean and tidy enough)
- weather conditions
- lighting levels
- noise levels

The investigators may want to take photographs before anything is moved, both of the general area and specific items. Subsequent careful study of these pictures may reveal conditions or observations missed previously. Sketches of the incident scene based on measurements taken may

also help in later analysis and will clarify any written reports. Broken equipment, debris, and samples of materials involved may be removed for further analysis by appropriate experts. Even if photographs are taken, written notes about the location of these items at the incident scene should be prepared.

### **Eyewitness accounts**

Although there may be occasions when they are unable to do so, every effort should be made to interview witnesses. In some situations, witnesses may be an investigators' primary source of information because they may be called upon to investigate an incident without being able to examine the scene immediately after the event. Because witnesses may be under severe emotional stress -or afraid to be completely open for fear of recrimination - interviewing witnesses is probably the most difficult task facing an investigator. Witnesses should be interviewed as soon as practicable after the incident. If witnesses have an opportunity to discuss the event among themselves, individual perceptions may be lost in the normal process of accepting a consensus view where doubt exists about the facts.

Witnesses should be interviewed alone, rather than in a group. The interviewers may decide to interview a witness at the scene of the incident where it is easier to establish the positions of each person involved and to obtain a description of the events. On the other hand, it may be preferable to carry out interviews in the quiet of an office where there will be fewer distractions. The decision may depend in part on the nature of the incident and the mental state of the witnesses.

Where an incident has resulted in injury, some witnesses will be the victims themselves. Depending on the injuries sustained, interviews of these witnesses may need to be delayed for some days and, in some cases, take place in hospital.

### **Interviewing**

The purpose of the interview is to establish an understanding with the witness and to obtain his or her own words describing the event. Remember that the witness is likely to be upset, so it is important to put him or her at ease. One thing that should help them do this is to reassure the witness that the investigation aims to find out what happened and why, so that lessons can be learned and acted upon.

As a general rule, only use a voice recorder to record the interview if the witness specifically requests this to be done. When they have asked a question, let the witness do the talking whilst they listen. And show listening ear - do not bury one's head in the paperwork, writing copious notes as they talk. When the witness has given his or her answer, paraphrase it briefly to confirm the interviewers have understood it properly - then make a brief note and confirm that what they have written is also correct. During the interview, try to sense any underlying feelings of the witness. On no account should the interviewer:

- intimidate the witness
- interrupt

- prompt
- ask leading questions
- show own emotions
- make lengthy notes while the witness is talking.

They should construct open-ended questions asks that cannot be answered by simply "yes" or "no". The actual questions they ask the witness will naturally vary with each incident, but there are some general questions that, should be asked each time:

- Where were the person(s) at the time of the incident?
- What were the person(s) doing at the time?
- What did the person(s) see and hear?
- What were the environmental conditions (weather, light, noise, etc.) at the time?
- What was (were) the injured person(s) doing at the time?
- Has something like this ever happened before?
- In the person(s) opinion, what caused the incident?
- How do the person(s) think similar incidents could be prevented in the future?

Asking questions is a straightforward approach to establishing what happened. Obviously, care must be taken to assess the credibility of any statements made in the interviews. Answers to the first few questions will generally show how well the witness could actually observe what happened.

Another technique sometimes used to determine the sequence of events is to have them re-enacted as they happened. Clearly, where the injured person or other witness is asked to re-enact in slow motion the actions that preceded the incident, great care must be taken so that further injury or damage does not occur.

### **Other Information**

An often-overlooked source of information can be found in documents such as technical data sheets, maintenance reports, past incident reports, formalized procedures, instruction manuals. Any pertinent information should be studied to see what might have happened, and what changes might be recommended to prevent recurrence of similar incidents.

### ***Identifying the causes***

#### **Analysis and conclusions**

At this stage of the investigation, most of the facts about what happened and how it happened should be known. This will have taken considerable effort to accomplish, but the investigators are only part of the way towards achieving the objective of the investigation. Now comes the key question - why did it happen? To prevent recurrences of similar incidents, the investigators must find all credible answers to this question. Finding these answers and reaching conclusions requires analysis of the facts that have been found. During analysis of the facts, they will discover that, even though they have kept an open mind to all possibilities and sought out all pertinent facts, there may

still be gaps in one's tracing of the sequence of events that resulted in the incident. They need to fill the gaps in their knowledge to enable them to complete their analysis and reach conclusions. So, to fill these gaps, they may need to reinterview some witnesses, retest some equipment, re-examine some documentation, or the like.

In some cases, gaps will remain despite extensive analysis and review of sources of facts. Here they can either resort to assumptions or allow the gaps to remain. Where assumptions are made, make sure they record the bases on which they were reached.

When their analysis is complete, they can marshal their conclusions. Note down a step-by-step account of what happened working back from the moment of the incident. Try to list all possible causes at each step. This is not extra work, but rather a draft for part of the final report. Each conclusion should be checked to see if:

- it is supported by evidence
- the evidence is direct (physical or documentary) or based on eyewitness accounts, or
- the evidence is a justified assumption.

This list serves as a final check on discrepancies that should be explained or eliminated.

Once they have reached their conclusions on how the incident happened and its causes, their findings may be regarded by the employer as incomplete if they report on just these matters. It is necessary for investigation reports to prevent recurrence so it should carefully examine the recommendations listed in the search report.

## **Recommendations**

The most important final step, therefore, is to come up with a set of sensible, practical recommendations designed to prevent recurrences of similar incidents. Once they are knowledgeable about the work processes involved and the overall situation in their organization, it should not be too difficult to come up with realistic recommendations. Resist the temptation to make only general recommendations. This may save them time and effort, but it will result either in someone else having to spend greater time and effort or, as is more likely, an ineffective, palliative action plan in response to the incident. For example, what if they have determined that a blind corner contributed to an incident? Rather than making a bland recommendation to "eliminate blind corners" it would be better to suggest:

- install mirrors at the corner where the incident took place, and
- install mirrors at blind corners where required throughout the site.

Never make recommendations about disciplining any person(s) who may have been at fault. This would not only be counter to the real purpose of the investigation. It would also reduce the chances for co-operation, trust and a free flow of information in future incident investigations.

In the unlikely event that they have been unable to determine the causes of an incident with any certainty, they probably still have uncovered safety weaknesses in the operation. It is appropriate that their report includes an appendix that identifies these deficiencies and makes recommendations

as to their corrections. Where their findings have determined the causes of the incident, don't ignore any unrelated safety weaknesses identified during the investigation. However, here it would be more appropriate to cover the unrelated weaknesses, with recommended corrective measures for these, in a separate report.

### **The Written Report**

The prepared draft of the sequence of events can now be used to describe what happened. Remember that readers of their report do not have the intimate knowledge of the incident that they have so include all relevant details, including photographs and diagrams. Identify clearly where evidence is based on certain facts, witness accounts, or on the team's assumptions.

If doubt exists about any particular part of the event, say so. The reasons for their conclusions should be stated and followed by their recommendations. Do not include extra material that is not required for a full understanding of the incident and its causes such as photographs that are not relevant and parts of the investigation that led them nowhere. The measure of a good report is quality, not quantity. Present the information 'in context' so everyone understands how the incident occurred and the actions needed to put in place to prevent it from happening again.

Always provide all of the information needed to help others understand the causes of the event, and why the recommendations are important.

### **Reference :**

- ◆ **CSA Z1005-17 Incident investigation**
- ◆ **Canadian Centre for Occupational Health and Safety: Incident Investigation**
- ◆ **The Royal Society for the Prevention of Accidents(ROSPA): “OS&H” July 2001, Investigating Accidents**