

## INCIDENT INVESTIGATION AND ANALYSIS

*Note: Section 8 on Lessons Learned will remain, pending the completion of the new OQBP Procedure #3903. This new procedure will formally outline the Lessons Learned program at FNAL.*

### 1.0 INTRODUCTION

This chapter applies to all Fermilab employees, subcontractor personnel and visiting experimenters.

### 2.0 PURPOSE

To outline incident/near miss reporting, investigation, and causal analysis procedures.

There are many benefits from an incident and near miss investigation, with one ultimate purpose -- PREVENTION OF INJURIES and future incidents. For this reason, incident reports, i.e., CAIRS, should be written so that persons not familiar with the activity may understand and gain knowledge from the report.

Trending analysis of all CAIRS will be done and used to evaluate:

1. Frequency/severity of incidents;
2. Effectiveness of safety programs and work procedures; and
3. Current incident prevention and awareness activities.

Incident/near miss prevention is most effective when all incidents and near misses are promptly reported, thoroughly investigated, and the root causes identified, and corrective and preventive actions identified. An incident report (CAIRS) must be completed within a reasonable amount of time following knowledge of an incident.

### 3.0 SCOPE

All incidents and near misses shall be investigated, analyzed, and recorded. This also applies to property damage and vehicle incidents. The depth of a near miss

investigation is dependent on its potential to cause severe damage or personal injury should the incident occur. Those incident reports that meet DOE's reporting criteria will be submitted to DOE.

## 4.0 DEFINITIONS AND ABBREVIATIONS

**4.1 Corrective Action (CA)** - Action to eliminate the cause of a detected nonconformity or other undesirable situation.

*Note: There can be more than one cause for a nonconformity. Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.*

**4.2 Incident** - An unplanned event that interrupts the completion of an activity or causes injury and property/vehicle damage or near miss. Sometimes referred to as an "accident".

**4.3 CAIRS** - Computerized Accident Incident Reporting System

**4.4 Near Miss** - An unplanned event that did not result in injury, illness, or damage but had the potential to do so. Only a break in the chain of events prevented an injury, fatality or damage. Other familiar terms for these events is a "close call", or in the case of moving objects, "near collision".

**4.5 Nonconformity** – Non-fulfillment of a requirement.

*Note: A nonconformity can be any deviation from work standards, practices, procedures, legal requirements, or applicable code of federal regulations.*

**4.6 Investigation Team** - Individuals responsible for conducting and documenting the incident investigation. The team shall include at a minimum, the SSO as lead, the employee involved in the incident, and the supervisor.

**4.7 OSHA**- Occupational Safety and Health Administration. An agency under the US Department of Labor.

**4.8 OSHA Recordable Injury/Illness** - Any occupational injury or illness resulting in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid.

**4.9 Preventive Action (PA)**- Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.

*Note: There can be more than one cause for a potential nonconformity. Preventive action is taken to prevent occurrence whereas corrective action is taken to prevent recurrence.*

**4.10 Root Cause (RC)** - An identified reason for the presence of a defect or problem. The most basic reason, which if eliminated, would prevent recurrence. The source or origin of an event.

**4.11 SME** – Subject Matter Expert

**4.12 Motorized Vehicle** - For the purpose of this chapter, a motorized vehicle is any conveyance that transports people or objects. This includes automobiles, trucks, mobile cranes, fork trucks, golf carts, tow motors, magnet movers, riding lawn mowers, tractors and electric carts.

## 5.0 RESPONSIBILITIES

### 5.1 Employees

- Report to their supervisor any injuries/illnesses or any involvement in an incident regardless of how minor it may initially appear.
- Deliver the Form-5 Injury/Illness Evaluation (Attachment 1) to the supervisor immediately upon return from the Medical Department. A Form-5 is used to inform the supervisor of any medical restrictions placed upon the employee.
- Complete an Incident Involvement Form (Attachment 2) as soon as possible for any incident or near miss in which they were involved or witnessed.
- Participate in the investigation as directed by the supervisor.

### 5.2 Supervisors

- Direct injured employees to the Medical Department. Dial x3131 if necessary.

- Direct any employee to the Medical Department who has been involved in a collision while riding in/on a moving vehicle whether or not there has been an injury. Dial 3131 if necessary.
- Immediately report any incident or near miss to your line manager and SSO.
- Complete documentation of the incident (Supervisory Form Attachment 3) and submit to the Division/Section SSO. The supervisory Form must be completed within a reasonable amount of time after the incident.
- Review the Form-5. If restrictions have been identified, determine if such restrictions will affect the employee's ability to perform normally assigned duties. Complete and sign the Form-5.
- Forward the Form-5 to the division/section SSO for signature.
- Ensure the preventive and corrective actions identified by the incident investigation are implemented.

### 5.3 Division/Section Heads

- Ensure investigations are completed within a reasonable amount time.
- Review the final CAIRS or near miss report to ensure that the root, direct and contributing causes and the corrective and preventive actions are appropriate.

### 5.4 Division/Section Senior Safety Officer (SSO) or designee

- Lead the investigation team.
- Review the Form-5 and provide signature. If medical restrictions have been placed on the employee, the Division/Section SSO signature on the Form-5 signifies concurrence with the supervisor's assessment of whether the restrictions are job limiting. The SSO then forwards the Form-5 to the Medical Department.
- For OSHA Recordable cases, enter investigation report containing all the information required by the OSHA 300A into CAIRS database as soon as practicable.
- For OSHA Recordable Cases, assure that a causal analysis has been of performed using the [Causal Analysis Tree](#) found in DocDB under FESHM 3020. Assure that corrective and preventive actions are sufficient to address these causal factors.
- For first aid cases, enter pertinent information into the CAIRS database. The extent of the information required will be proportional to the potential

for the injury having been more serious. A Causal Tree Analysis review may be warranted depending on the nature of the first aid case.

- For near misses, enter into the CAIRS database a summary of the incident, root cause(s), findings if applicable, and any corrective and preventive actions taken. A causal analysis tree review may be warranted depending on the nature of the near miss. Identify whether lessons learned need to be shared with other divisions/sections.
- Monitor cases with continuing lost or restricted time to ensure restrictions are accommodated. Update CAIRS database as necessary to reflect accurate days lost or restricted, or other new information.

## 5.5 ES&H SECTION

- Maintain a staff of formally trained investigators to provide investigation technical assistance when requested.
- Develop and maintain incident investigation/analysis policies.
- Ensure notification of the Laboratory Director, Office of Public Affairs, and the Legal Department of any incident that may result in an independent DOE investigation.
- Review all completed CAIRS forms to ensure consistent quality across the Laboratory.
- Forward completed CAIRS forms and hours worked to DOE, as required by DOE M 231.1-1a.
- Maintain the OSHA 300 form.
- Maintain CAIRS database for trending and training, and statistical information such as incident rates.
- Review incident reports for adverse programmatic trends that should be reported to DOE through the Noncompliance Tracking System (FESHM 3030).
- Assume the investigative readiness role in the event that an incident is severe enough to warrant an independent DOE investigation. The Directorate, supported by the ES&H Section, will coordinate the readiness effort. The incident scene will be secured and control of the scene will be given to the ES&H Section. Investigation readiness shall be in accordance with DOE Order 225.1A. Readiness activities include: securing the scene, photographing the scene, preserving evidence, collecting witness statements, , and maintaining close coordination with the DOE investigation board chairperson to ensure efficient transfer of information and continued support of DOE activities.

## 5.6 Medical Department

- Assess occupational injuries and illnesses to determine extent of injuries, provide for treatment, and place medical restrictions, when necessary, to ensure quick and complete recovery.
- Inform the supervisor and division/section SSO of each employee who has reported to the Medical Department with an injury or illness, or as the result of a vehicle collision or other vehicle incident. This is normally done through electronic mail.
- Enter incident information into the CAIRS database if,
  - the incident resulted in an occupational injury, or
  - illness is alleged by the employee to be the result of an occupational injury or illness, or
  - is the result of a vehicle incident while on Laboratory business.
- Provide the Incident Involvement Form to the employee for completion.
- Provide the employee with a Form-5 to document the employee's visit to the Medical Department.
- Retain all completed Form-5's in the employee file.
- Maintain injury/illness database (for worker's compensation purposes.)

## 6.0 INVESTIGATION/ANALYSIS PROCEDURE

Incident investigations and analyses are conducted to identify unsafe acts and conditions and then formulate corrective and preventive actions to prevent recurrence. Besides a root cause investigation, CAIRS reports must also state corrective and preventive actions identified during the investigation. The process described below is to be applied to all incidents, first aid cases and near misses:

- Preserve the accident scene
- Photograph the accident scene
- Supervisor completes incident report (Attachment 3- Supervisory Incident Investigation Report)
- Interview witnesses
- Collect evidence
- Analyze incident, consulting with SMEs as needed.

- Identify causes (root-direct-contributing)
- Determine needed actions (corrective-preventive)
- Make CAIRS data entry
- Enter findings into ESHTRK
- Identify lessons learned
- Distribute the CAIRS report (internal-external)

## 7.0 REFERENCES

9.1 DOE M 231.1-1A - Environment, Safety and Health Reporting Manual

9.2 DOE O 225.1 – Accident Investigations

## 8.0 LESSONS LEARNED

The SSOs will review incident reports to identify whether there are lessons learned to be shared throughout the Laboratory. The SSO will develop the written lessons learned and send them to ES&H-SEP. The ES&H Section will review CAIRS and other investigation and lessons learned reports to identify trends. The results will be shared with the other divisions/ sections through the Injury/ Illness Prevention Subcommittee and other subcommittees of the Laboratory Safety Committees. Other forms of communication may be used as well.

### Guidance for Preparing a Lessons Learned Document

General Tips:

1. Use technical terms only when necessary. If technical terms must be used, explain the concept.
2. Don't use acronyms.
3. Don't use personal names; use titles.
4. If there have been similar events, discuss trends.
5. Don't use long, run-on sentences.
6. Attach photographs if possible.
7. After drafted review or have someone else review for factual accuracy.

Format:

1. Use attached format.
2. Title:
  - Make it short but make it specific.
  - Include date of incident
3. Event:
  - Summarize event, stick to pertinent facts

- Summarize any tests that were performed
- 4. Actions/ Conditions that May have Contributed to the Incident:
  - Based on incident analysis, identify causal factors
- 5. Identify Lessons Learned
  - Write brief statements about what was learned
  - Be specific about recommendations for other actions
- 6. Recommended Corrective Actions for Other Division/ Sections
  - Identify corrective actions, if any, that were taken

## Lessons Learned

Title  
Date

**Event:**

**Actions/Conditions that May have Contributed to the Incident:**

**Lessons Learned:**

**Recommended Actions for Other Divisions/Sections:**