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C-A OPERATIONS PROCEDURES MANUAL

9.4.5 C-A Accident / Incident Investigation

Text Pages 2 through 6

Attachment

Hand Processed Changes

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Approved: _____ *Signature on File* _____
Collider-Accelerator Department Chairman Date

P. Cirnigliaro

9.4.5 C-A Accident / Incident Investigation

1. Purpose

1.1 In spite of extensive Environmental Safety and Health procedures, and management support, it is expected that an occasional accident/incident may occur. Prompt and complete investigation of accidents and incidents are key to identifying the causes and establishing effective corrective actions to prevent recurrence. The purpose of this procedure is to establish the roles of employees at all levels in the investigation, reporting and follow up of accidents and incidents occurring at the C-A complex.

1.2 Definitions

1.2.1 Accident - An unexpected event that produces personal injury, illness or death; damage to, or loss of, property or vehicles; or environmental occurrences involving reportable quantities (RQs) of specific substances. This procedure focuses on personal injury or illness.

1.2.2 DOE Computerized Accident Investigation Reporting System (CAIRS) - Reporting database used to track occupational injuries and illnesses and to submit required reports to DOE and Department of Labor.

1.2.3 Trained Investigator - One trained in Principles of Accident Investigation. Safety & Health Services (SHS) Division, Safety Engineering (SE) Group, maintains a list of trained investigators at BNL for higher-level investigations.

2. Responsibilities

2.1 The C-A Department Chair, or designee, shall:

2.1.1 Ensure the requirements of SBMS, [Investigation of Incidents, Accidents, & Injuries](#) are met.

2.1.2 Appoint at their discretion, investigators, other than the first line supervisor, for First Aid, Precautionary OMC Visits, or type C investigations.

2.1.3 Establish prompt notification and reporting procedures to address investigations, corrective actions and lessons learned.

2.1.4 Ensure that department/division personnel assist in investigations involving contractor and subcontractor personnel working under contracts they administer.

2.1.5 Ensure personnel are trained in this procedure.

2.1.6 Provide the Clinic with a point of contact and telephone number for response for all injuries, as needed, especially where the designated person with line authority or supervisor is unavailable.

2.2 Line Authority/First Line Supervisor shall:

2.2.1 Investigate all accidents and incidents, including Type C, First Aid and precautionary Occupational Medicine Clinic (OMC) Visits, to determine the cause and to mitigate safety issues, as appropriate.

2.2.2 Ensure that the C-A ESH Coordinator and C-A ESHQ Division Management are promptly notified.

2.2.3 Ensure all personnel under their supervision report all injuries and illnesses to the Occupational Medicine Clinic (OMC) immediately.

2.2.4 Report to the OMC when notified that one of their workers is at OMC reporting an occupational illness or injury.

2.2.5 Ensure the integrity of the accident site is maintained to facilitate investigation, where appropriate, until the scene is secured by either Fire/Rescue or Safeguards and Security.

2.2.6 Provide support, as necessary, if a higher level of investigation is forthcoming.

2.2.7 Ensure that all appropriate corrective actions have been implemented, and report this information back to the C-A ESH Coordinator.

2.2.8 Complete and forward the investigation report within 24 hours, (or 80 hours if weekends and holidays are involved), of receiving notice that an injury or illness involving a worker, for which they are responsible, has been determined to be reportable.

2.2.9 Follow up with injured /ill personnel, especially if lost time is involved, and notify OMC of progress. See [C-A-OPM 1.22, "Return to Work and Restricted \(Light\) Duty Work Policy"](#).

2.2.10 Provide restricted duty, as assigned by OMC, in accordance with BNL Restricted Duty Policy.

- 2.3 Department ESH Coordinator, or designee;
 - 2.3.1 Shall assist and support all investigations as necessary.
 - 2.3.2 May be required to serve as the default investigator for Type C accidents.
 - 2.3.3 Shall monitor the progress of corrective actions and advise management when schedules are not being met.
 - 2.3.4 Shall determine the need for a critique and assign a responsible person to lead a Critique Team.
 - 2.3.5 Critiques will use the general form of “Critique Outline”, Table 1. Table 2 may be used to help determine the causes of the accident/event.
- 2.4 Employees shall:
 - 2.4.1 Immediately report all accidents and incidents to their supervisor. Report to OMC for treatment of minor injuries. For serious injuries, and for hours when the OMC is not in operation, report to the Fire/Rescue Group.
 - 2.4.2 Complete the required notification paperwork at the OMC.
 - 2.4.3 Use the 911/2222 system, or other approved local method, to report an emergency.
 - 2.4.4 Cooperate and participate fully in investigations and corrective measures as required.
 - 2.4.5 Keep Supervisor and OMC advised of status, at least on a weekly basis, if losing time due to an occupational injury or illness.
 - 2.4.6 Obtain a Return-to-Work Slip from OMC when returning to work after an absence resulting from an occupational injury/illness, or if out of work for 5 consecutive work days for a non-occupational illness or injury. Present Return-to-Work Slip to supervisor before resuming work.

3. Prerequisites

- 3.1 Supervisor training modules, which cover the requirements of this procedure, can be found under BTMS, TQ-OSH-019W (Accident Investigating).

4. Precautions

None

5. **Procedure**

Note:

This procedure focuses on Injury/Illness Reports required by the OMC. If an event/issue occurs, investigation shall follow the requests of [C-A-OPM 10.1, “Occurrence Reporting and Processing of Significant Operations Information”](#), and [Event/Issue Management Subject Area](#).

5.1 Accident/Incident Investigation

5.1.1 All employees reporting occupational injuries or illnesses, and their supervisor or designee, must report to OMC to begin the investigation for all potentially recordable cases.

5.1.2 All injuries and illnesses shall be investigated using a graded approach.

5.1.3 The level of investigation and documentation required depends upon “recordability” and severity.

5.1.4 Once notified of an occupational injury /illness, the supervisor, or designated person with line authority, will go to the scene to mitigate the potential hazards and preserve the accident/incident scene.

5.1.5 The supervisor, or designee, will conduct the investigation and complete the [Line Organization Accident/Incident Investigation Report](#). The injured individual, the investigator, and BNL SHS Division, SE Group, sign off on the forms.

5.1.5.1 Table 1 may be used to help determine the causes of the accident/incident.

6. **Documentation**

6.1 Once an Occupational injury /illness is reported to OMC:

6.1.1 The injured/ill person shall complete a notification form as requested at the OMC reception area.

6.1.2 The Supervisor shall send completed investigation reports for recordable cases to the C-A ESH Coordinator and BNL SHS Division, Safety Engineering Group. To ensure compliance with federal reporting and record-keeping requirements, this completed report form must be sent as soon as possible, but never later than six days after notification of an accident/incident.

- 6.1.3 Non-recordable, Precautionary OMC Visit, or First Aid case reports shall be retained by the line organization, unless specifically requested by BNL SHS Division, Safety Engineering Group. Where applicable, photographs and witness statements, etc., may need to be taken in support of the investigation.
- 6.1.4 The injured employee and the investigator sign off on all investigation forms. In reportable cases, BNL SHS Division, Safety Engineering Group reviews the completed investigation and signs off.

7. References

- 7.1 [SBMS, Investigation of Incidents, Accidents & Injuries](#)”.
- 7.2 [C-A-OPM 1.22 “Return to Work and Restricted \(Light\) Duty Work Policy”](#).
- 7.3 [C-A-OPM 10.1, “Occurrence Reporting and Processing of Significant Operations Information”](#).
- 7.4 [SBMS Subject Area – Event/Issues Management](#)
- 7.5 Title 29 CFR, Parts 1904.4 through 1904.11; 1904.29 through 1904.33; 1904.44 and 1904.46, “Recording and Reporting Occupational Injuries and Illnesses.”

8. Attachments

Attachment 1, Critique Outline

Attachment 2, Human Error Description Listing.

Attachment 1
Critique Outline

Critique No.:

Date of Critique:

Facilitator:

Meeting Participants:

Brief Event Description:

Reference Material:

RELEVANT FACTS AND DATA ASSOCIATED WITH THE EVENT

Sequence of events:

ANALYSIS OF RELEVANT FACTS AND DATA:

Root Cause:

Recommended Corrective Actions:

Lessons Learned:

Signature:

Facilitator

Date:

Attachment 2

Human Error Description Listing

1. Inattention to detail
 - Erroneous self-supervision of work/not paying attention
 - Focus on timely completion of overall task/schedule pressure
 - Too many things to keep track of
 - Distractions and interruptions
 - Other
2. Incorrect Assessment
 - Too many things to keep track of
 - Acted on past experience rather than actual situation (habit)
 - Worked on wrong item due to similarities
 - Absence of objective problem solving (mindset)
 - Assumptions incorrect or incomplete
 - Information/pre-task briefing incorrect or incomplete
 - Information/communications not clear or binary
 - Other
3. Procedural Deviation
 - More expedient method selected (rushing)
 - Too many things to keep track of
 - Higher priority placed on other tasks
 - Distractions and interruptions
 - No internal tests for task completion/detection
 - Less than adequate job design
 - Human error is difficult to detect
 - Human error is unrecoverable short of consequences
 - Less than adequate insistence upon good work practices
 - Other
4. Insufficient or Low Experience Level
 - Narrow assessment/view of situation
 - Less than adequate training
 - Job performance standards not clear
 - Less than adequate labeling or markings
 - New to task or infrequently performed
 - Available information not known or utilized
 - Other

5. Inadequate Mental State

- Highly routine repetitive task
- Unable to recall how to do task
- Actions subconsciously performed (reflex)
- Fear of doing task incorrectly
- Fatigue, illness, emotional factors, drug, alcohol, medications, health factors
- Over Confidence of knowledge/abilities
- Insufficient motivation
- Less than adequate learning of past incidents
- Less than adequate cultural work environment
- Other

Layers of Protection (LOP) for Human Error

1. LOPs that promote (good instruction and design)

- Cultural values
- Training
- Coaching
- Design
- Labeling
- Planning
- Briefing
- Tooling
- Communication
- Procedures
- Inspections
- Work Permits (enhanced, RWP, digging, etc.)
- Other

2. LOPs that discourage (warnings)

- Caution labels
- Adequate supervision
- Training
- Coaching
- Design
- Planning/pre-task briefings
- Other

3. LOPs that prevent (high integrity)

- Physical barriers
- Interlocks/locks
- Fail safe design
- Physical separation
- Trips
- Other

4. LOPs that detect (Actively looking)

- Operator pre-inspection
- Adequate supervision
- Verification activity
- Remote monitoring
- Post testing/inspection
- Alarms
- Logs and records
- Other

5. LOPs that compensate (less consequential)

- Back-up system
- High error margin
- Fault tolerant design
- Compensatory personnel (fire watch, supervision, security, etc.)
- Other