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C-A OPERATIONS PROCEDURES MANUAL

1.7 Supervisory Practice for Working with Hazards

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**Hand Processed Changes**

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

J. Scott

## 1.7 Supervisory Practice for Working with Hazards

### 1. Purpose

This procedure specifies work rules for Environmental, Safety and Health Hazards at the Collider-Accelerator Department in accordance with BNL Standards Based Management System (SBMS). This procedure provides general guidance on many of the common hazards found in the Collider-Accelerator complex. The SBMS provides detailed responsibilities for supervisors.

### 2. Responsibilities

Line supervisors shall implement this procedure. Supervisors shall review and update hazard information in their areas as required. Supervisors shall ensure work planning is performed when needed, and that hazards are specified on the workers Job Assessment Form (JAF) from the Occupational Medicine Clinic (OMC).

### 3. Prerequisites

None

### 4. Precautions

If help is needed in interpreting the SBMS subject areas, contact the ES&H Coordinator, Facility Support Representative, Environmental Coordinator (EC), or Environment Compliance Representative (ECR).

### 5. Procedure

- 5.1 Supervisors shall periodically review the [on-line database](#) of hazards in their areas and forward updates to the ES&H Coordinator as necessary.
- 5.2 Supervisors shall ensure the appropriate warning signs are posted for the hazards in their areas.
- 5.3 Supervisors shall ensure that work areas and job hazards are fully evaluated and that procedures or Work Planning in accordance with [C-A OPM 2.28](#) has been done. Feedback on safety concerns or improvement ideas should be documented on the Work Permit, or be given to the supervisor.
- 5.4 Noise Areas – Any area where the sound level can be greater than 85 dBA. Supervisors shall ensure that engineering or administrative controls are used when feasible, or that proper hearing protection is worn by workers in the area. Hearing protection should also be provided for operations which produce noise in excess

of 85 dBA, such as using power tools or venting gas. See [C-A-OPM 1.17](#) for noise hazard requirements. When workers are likely to be working in a Noise Area for a majority of the day, the Noise box should be checked off on the JAF. Check with C-A ESH Coordinator if you are not sure about filling out the JAF.

- 5.5 Confined Spaces – Any areas that are classified as Class II or higher shall be posted with a Danger sign. Any hot work (cutting, welding) in a Confined Space increases the classification to 2C, and a Confined Space Permit is required. See [C-A OPM 8.14](#) for requirements for Confined Spaces. The Confined Spaces box should be checked off on the JAF for any workers that may enter Confined Spaces. See [SBMS Subject Area Confined Spaces](#).
- 5.6 Magnetic Fields - Any area where the magnetic field can exceed 5 Gauss should be posted with a Caution sign. Workers should not be exposed to greater than 600 Gauss whole body exposure for an eight-hour period, or 6000 Gauss to the extremities. The OMC needs to evaluate any workers with pacemakers or medical implants prior to entry into the area. Also, the OMC needs to evaluate any workers exposed above the 600 Gauss 8-hr Time Weighted Average (TWA), or 6,000 Gauss ceiling limits. [See SBMS Subject Area Magnetic Fields, Static](#).
- 5.7 RF and Microwave – Supervisors with RF and microwave equipment shall ensure that operating procedures or a Work Permit are established, and that workers have received appropriate training. Supervisors shall ensure that all safety devices (interlocks, signals) are tested in conformance to operating procedures and shall maintain documentation of this testing. [See SBMS Subject Area RF/Microwave Radiation](#).
- 5.8 Cutting and Welding – Supervisors shall ensure that cutting and welding permits are up to date and posted in the area where the work is done.
- 5.9 Lasers – Supervisors shall ensure that only trained personnel have access to laser equipment and that proper protective equipment is used. Medical surveillance is required for personnel operating class IIIB or IV lasers. Guidance for Laser Safety can be found in [SBMS – Laser Safety](#). The ESH Coordinator is the Department Laser Coordinator.
- 5.10 Chemicals – Supervisors shall ensure that work with hazardous materials is done in accordance with [C-A OPM 1.8](#). A checklist for chemical use can be found in [C-A OPM-ATT 1.8.a](#).
- 5.11 Transfer of Hazardous Materials Onsite and Offsite - Supervisors shall ensure that transfer of chemicals from building-to-building is done in accordance with SBMS Subject Areas, "[Transfer of Haz/Rad Materials Onsite](#)", and "[Transfer of Haz/Rad Materials Offsite](#)". A list of safety assessment documents for hazardous chemical transfers shall be maintained by C-A Point of Contact (POC) Ext. 7520, pager 4234.

- 5.12 Oxygen Deficiency Hazard – Supervisors shall ensure that all workers have appropriate training for Class 0 areas, and additional training and medical approval for Class 1 areas (for Class 1 areas ODH should be checked off on the JAF). The requirements of [SBMS – ODH Classification/Controls](#) shall be followed.
- 5.13 Ergonomics – Supervisors should ensure that all workstations are set up properly to avoid injuries due to cumulative trauma disorders. Contact Safety Engineering for assistance. [See SBMS Subject Area Ergonomics, Occupational.](#)
- 5.14 Elevated Work – Supervisor shall ensure that work performed at elevations greater than 5 feet are subject to work planning in accordance with [C-A OPM 2.28](#), and all [SBMS Subject Area Fall Protection](#) Requirements. All work at heights over 5 feet must be checked off on JAF and training must be up to date.
- 5.14.1 Supervisor should evaluate those facilities and jobs for fall hazards. Elimination of the fall hazards with engineering controls is the preferred fix. Administrative controls, PPE, Training, and documented standard operating procedures follow. Use [SBMS Subject Area Fall Protection](#) for guidance and proper inspections of equipment.
- 5.14.2 See [C-A OPM 1.25](#) for safety during leading edge work during pre-cast concrete erection and disassembly.
- 5.14.3 Training – Supervisor must ensure that anyone using a ladder has taken and passed web course, “Portable Ladder Safety”, that personnel working on scaffolds have taken and passed web course “Scaffold User Safety”, that personnel performing elevated work using PPE (lanyards, aerial lifts, harnesses, etc.), have taken and passed course “Environmental Safety and Health Course Fall Protection” (GE-Fall Protection).
- 5.14.4 Ladders – C-AD staff shall not use or purchase wooden ladders. OSHA approved and stamped fiberglass or aluminum ladders are acceptable. The C-AD ESH Coordinator must be consulted when purchasing ladders to assure ladder is adequately designed with OSHA stamp (ANSI 14.2 for aluminum and ANSI 14.5 for Fiberglass ladders).
- 5.15 Lead - Lead materials should be covered by duct tape, paint or plastic, whenever possible to minimize worker exposure. Any workers that work with lead, including lead soldering or occasional work, should be evaluated to determine the need for lead worker training ([SBMS subject area Lead](#)). Supervisors shall provide a list to the C-A Training Coordinator of all workers that work with lead for more than 30 days per year. Those workers will have lead training added to their JTA’s and will be required to take the web-based training course yearly. Any job that has not already been evaluated for lead work shall be reviewed by ES&H coordinator or Safety Engineering for personnel monitoring and medical surveillance requirements. All C-A Department lead soldering operations have

been reviewed as part of our EMS and ISO 14000 registration. If your operation has changed, or you feel a review of area is required, contact the ES&H Coordinator and they will have a lead area subject matter expert review your area.

- 5.16 Housekeeping - Supervisors shall ensure a clean and orderly workplace. They shall ensure that non-hazardous waste is recycled or removed in accordance with [C-A OPM 8.22](#). Hazardous waste shall be disposed of in accordance with [C-A OPM 8.20](#), and Radioactive Waste is handled in accordance with [C-A OPM 8.20.2](#).

Supervisors shall inspect their work areas weekly, and ensure their personnel clean up adequately when they work in tunnels, support buildings, and outside areas.

Supervisors shall ensure their personnel read and understand [C-A-OPM 1.7.1 “C-AD Housekeeping Policy”](#).

- 5.17 Electrical Safety

5.17.1 All electrical work shall be done in accordance with [C-A OPM 1.5](#), [C-A-OPM 1.5.1](#), [C-A-OPM 1.5.2](#), and [C-A-OPM 2.36](#).

5.17.2 Operation of breakers, switches and plugs shall be in accordance with [C-A-OPM 1.5.3](#).

5.17.3 See [SBMS Subject Area Electrical Safety](#).

- 5.18 Heat Stress Alert - When the laboratory declares a heat stress alert, the supervisor is responsible for informing all outdoor workers of the level of the alert and the required rest times. Outdoor work should be avoided during heat stress alerts.

- 5.19 Material Handling – Supervisors shall ensure that personnel are assisted with lifting and pulling equipment wherever practicable. Maximum lifting should be limited to 20 kg of repetitive lifting for most people.

5.19.1 See [SBMS Subject Area Lifting Safety](#).

5.19.2 See [C-A-OPM 1.21](#) for cable-pulling safety.

5.19.3 All material handling equipment shall be inspected annually, and used in accordance with [C-A OPM 8.25](#).

- 5.20 Beryllium – Supervisors of workers that work with beryllium shall ensure that all work is done in accordance with [SBMS – Beryllium](#). No machining of beryllium is allowed.

- 5.21 HEPA Vacuum Cleaners – Supervisors that have HEPA vacuum cleaners for use on radiological materials shall ensure annual testing is done and that the requirements of [C-A OPM 9.5.9](#) are followed.

- 5.22 Transfer of Radioactive Materials Onsite - Supervisors shall ensure that all transfers of radioactive materials onsite or offsite conform to SBMS Subject Area

["Transfer of Haz/Rad Materials Onsite"](#). Contact C-A Division "Point of Contact" Ext. 7520, pager 4234, with any questions.

5.23 Asbestos – If asbestos is known to be in your area, or is suspected, the Plant Engineering Asbestos Abatement Group, and Asbestos Subject Matter Expert ([SBMS Asbestos](#)), have to be contacted to analyze and remove material.

5.24 Cryogenics – If cryogenics are used in your area, follow the requirements given in [SBMS – Cryogenics Safety](#).

5.25 Environmental Management System –

5.25.1 Supervisors shall ensure that all processes have been evaluated in accordance with the Environmental Management System by the Environmental Compliance Representative.

5.25.2 Supervisors shall ensure compliance with SBMS Subject Areas:

[Liquid Effluents](#)

[Non-radioactive Airborne Emissions](#)

[PCB Management](#)

[Pollution Prevention and Waste Minimization](#) – includes a reference to the BNL Pollution Prevention Web page, with answers to many questions about disposing of common waste streams. ([How Do I Manage This Waste Stream?](#))

[Spill Response](#)

[Storage & Transfer of Haz/Nonhazmat Materials](#)

[Transfer of Haz/Rad Materials Onsite](#)

[Transport of Haz/Rad Materials Offsite](#)

[Lead](#)

[Asbestos](#)

5.26 Identification of Piping Systems

5.26.1 Piping containing tritiated water shall be labeled “ESH Concerns” to let workers know that tritium is present.

5.26.2 All piping shall be labeled as per the requirements of [SBMS - Piping Systems, Identification of](#)

5.27 Pressure – Follow SBMS Subject Area on [Pressure Safety](#).

5.28 Machine Shop Safety – Follow SBMS Subject Area on [Machine Shop Safety](#).

## **6. Documentation**

The supervisor shall maintain the following documentation in his/her work area whenever it applies:

6.1 Environmental Discharge permits

6.2 Confined Space Entry Certification forms

6.3 List of all authorized laser users

- 6.4 Interlock testing records
- 6.5 Cutting/Welding permits
- 6.6 LOTO Logbooks

## 7. **References**

- 7.1 See [SBMS Subject Area Electrical Safety](#).
- 7.2 [C-A OPM 1.5, Electrical Safety Implementation Plan](#)
- 7.3 [C-A-OPM 1.5.1, Disconnected Cable Policy](#)
- 7.4 [C-A-OPM 1.5.2, Engineering / Design Guidance Grounding / Bonding Methods for Tray, Raceway, Beam Components, Equipment, and Safety Devices](#)
- 7.5 [C-A OPM 1.5.3, Procedure to Open or Close Breakers and Switches and Connecting Disconnecting Plugs](#)
- 7.6 [C-A-OPM 1.7.1, C-AD Housekeeping Policy](#)
- 7.7 [C-A OPM 1.8, Hazard Communication](#)
- 7.8 [C-A-OPM 1.21, Cable Pulling Safety Procedure](#)
- 7.9 [C-A-OPM 1.25, Alternate Fall Protection Plan for Leading Edge Work During Precast Concrete Erection and Disassembly](#).
- 7.10 [C-A-OPM 2.36, Lock and Tag Program for Control of Hazardous Energy](#)
- 7.11 [C-A OPM 2.28, Procedure for Enhanced Work Planning](#)
- 7.12 [C-A OPM 8.14, Confined Space Entry Procedure](#)
- 7.13 [C-A OPM 8.20, Handling and Disposal of Hazardous Waste](#)
- 7.14 [C-A OPM 8.20.2, Radioactive Waste Disposal](#)
- 7.15 [C-A OPM 8.22, Handling and Disposal of Non-Hazardous and Recyclable Solid Waste](#)
- 7.16 [C-A OPM 8.25, C-AD Incidental Rigging Procedures](#)
- 7.17 [C-A OPM 9.5.9, Use of HEPA Vacuum Cleaners](#)
- 7.18 SBMS Subject Areas for Hazards are found at [SBMS](#).

## 8. **Attachments**

None