

Chemical Sciences Division Integrated Safety Management Plan

The Chemical Sciences Division (CHD) will conduct all of its operations in a manner that protects the health and safety of its employees and guests and that does not endanger the environment. All activities will be carried out in a manner consistent with applicable Berkeley Lab (LBNL), university (UCB) and government agency policies and regulations as described in the Regulations and Procedures Manual (RPM), PUB-3000, the Operating and Assurance Program (OAP) and the Memo of Understanding between LBNL and UCB governing EH&S management and oversight of LBNL programs conducted on the UCB campus. This document describes the mechanisms that will be applied in CHD to insure that these policies are properly implemented.

This ISM Plan covers all LBNL workers, including employees, students, guests and visiting scholars, regardless of work location. LBNL work performed at the UC Berkeley campus must conform to the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" dated March 15, 2004.

1.1. Scope of Plan

Chemical Sciences Division (CHD) has 213 members including 19 administrative support personnel, 106 PhD scientists and 86 graduate students. 53 of the 106 PhD scientists are postdoctoral fellows. The division has 26 Principal Investigators, 14 of these are based primarily in the College of Chemistry on the UCB Campus while the remaining 12 are based on the LBNL site. Most of the research is performed by groups of students, postdocs, and staff scientists under the direction of a Principal Investigator (PI). Many PIs hold joint appointments at LBNL and the UCB faculty. The research groups operate in 6 different buildings at LBNL and several buildings on the UCB campus. The research groups based at LBNL and occupying CHD spaces are: Actinide Chemistry (Raymond, Shuh, Rao, Booth, Lukens and Durbin, and the G.T Seaborg Center Program) in Building 70A; the Atomic Molecular and Optical Physics Group (Belkacem, Gould, McCurdy, and Rescigno) with spaces in Bldgs 2, 6, 50F and 71; the Chemical Dynamics Group (Leone, Ahmed) which includes ALS Beam line 9.0.2 and laboratories in buildings 2 and 10; the Molecular Environmental Science Beam line 11.0.2 and laboratory in building 6. Responsibility for EH&S covering CHD spaces on the ALS floor or the ALS Booster ring electron beamline is shared with ALS Division. CHD, as the majority tenant of Bldg 70A, has responsibility for the leadership of its emergency team.

A large fraction of CHD's members and guests (about 60%) perform their research on the UCB campus and do little or no work in spaces belonging to LBNL. This work will be carried out in accordance with the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" dated March 15, 2004, as provided in the Institutional ISM Plan:

- Lab PIs have an obligation to Berkeley Lab management to provide a safe workplace for all Berkeley Lab-sponsored work. At UCB, this is satisfied by complying with the UCB Safety System.
- Lab PIs are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. The type and method of training for work performed at UCB is specified by UC Berkeley.
- Lab PIs conducting Berkeley Lab-sponsored work are free to implement controls and other measures beyond the institutional requirements if they deem it appropriate.
- Lab PIs working at UCB can request a joint safety assessment (to be conducted by representatives of both the UCB and LBNL EH&S organizations) to further aid them in ensuring a safe workplace.
- Lab PIs conducting Berkeley Lab-sponsored work at UCB will provide an assurance that they have met UCB standards including properly specifying training requirements (for themselves, workers and students), obtaining and adhering to UCB work authorizations, and meeting UCB self-inspection requirements.

1.2. Accountability

Principal Investigators (PIs) are responsible and accountable to the Division Director for assuring that all activities under their direction are carried out in a safe manner and in accordance with all LBNL EH&S policies and requirements. This responsibility and accountability cannot be delegated. PIs are responsible for seeing that those they supervise have received necessary EH&S training for their work, they also consult with qualified specialists (e.g. the CHD EH&S Coordinator, EH&S Liaison or other EH&S Division Staff) for guidance in achieving required or improved levels of EH&S performance. PIs are required to take the Supervisors and Managers Training EHS26. All PIs, including those located on the UCB campus, sign a Safety Assurance statement annually; this states that they have reviewed their projects for EH&S impact and that proper procedures and training are in place to conduct the work. This is done normally in conjunction with the annual preparation of FWP documents. In the case of work conducted on the UCB campus, the Safety Assurance statement refers to the relevant UCB based requirements for EH&S training and procedures (as per the MOU between UCB and LBNL).

1.3. Development and Enforcement of CHD EH&S Policies

The Division has full responsibility for the G.T. Seaborg Center Program spaces and the Division offices in Bldg 70A, for the Atomic Physics program spaces of H. Gould in the Bldg 71 complex, and of Ali Belkacem in Bldg 2, for Chemical Dynamics spaces in Buildings 2, 10 and 6 (but not on the ALS floor) and for Molecular Environment Science mezzanine laboratory in Bldg 6. There are shared responsibilities for some of the spaces occupied by the CHD programs. Responsibility for the Chemical Dynamics Beam line and the Molecular Environmental Science Beam line on the ALS floor is shared with the ALS Division. Responsibility for Belkacem's space associated with his work at the ALS booster is shared with the ALS Division.

The CHD EH&S Committee consists of all Division PI's conducting or supervising research on the LBNL site; it is chaired by the Division Deputy. This body reviews CHD EH&S performance each year and is consulted by Division management for input on selected issues as needed for the modification or initiation of EH&S policies. It is informed by Division management, the Division Safety Coordinator and the Division EH&S liaison, of EH&S activity, concerns, requirements, document renewals, assessments etc. as these arise. Most of the ongoing management of the yearly cycle of EH&S assessments, document renewals, training requirements etc. is conducted by the CHD Safety Coordinator, and the Division Deputy, with support from the CHD EH&S Liaison. The CHD Safety Coordinator is responsible for maintaining this Division Safety Plan, insuring that routine inspections and the annual Self Assessment are performed, preparing the annual Self Assessment Report (which shall include an evaluation of compliance with this Division Safety Plan), and promoting general EH&S awareness. The triad consisting of the Division Deputy, Safety Coordinator and EH&S Liaison, meet as needed (typically at about two month intervals) to plan execution of Division assessments, and other activities and to look ahead to coming issues. Modification to, and initiation of, new Division EH&S policies or procedures are often first discussed at these meeting before advancement to higher management and/or promulgation to Division PI's and/or staff.

The CHD activities within the Bldg 70A Seaborg Center form a large fraction of Division's research on the LBNL site. Seaborg Center management holds frequent safety meetings of its staff; EH&S issues always have a place on the agenda of Seaborg Center programmatic meetings.

2.1 Scope of Work Authorized

The Chemical Sciences Division conducts basic research in chemical physics and the dynamics of chemical reactions, catalysis, electron spectroscopy, photochemistry, atomic photochemistry, theoretical chemistry, atomic physics, and chemistry of the actinide elements.

Current CHD research programs at LBNL and on the UCB Campus employ tabletop lasers, synchrotron end-stations, materials synthesis and processing laboratories, vacuum systems, wet chemistry labs and other required equipment and facilities. The PIs review the hazards associated with these operations annually, generally at the time of preparation of the FWP documents. The Safety Assurance statement signed by all PIs (including UCB campus based) indicates that this review has taken place and that proper training and procedures are in place to accomplish the work safely.

Research activities proposed in Field Work Proposals (FWPs), Work for Others (WFO) requests, Cooperative Research and Development Agreements (CRADAs), Laboratory Directed Research and Development (LDRD) proposals and other research documents are reviewed for compliance with NEPA and CEQA by the Laboratory NEPA/CEQA coordinator. PIs are responsible both for identifying proposed research activities that have the potential for being hazardous and also for working with appropriate LBNL staff to assure that the research can be pursued safely prior to

commencement of experiments or contractual commitment. In addition, each PI prepares EH&S documentation and obtains all required approvals for potentially hazardous or regulated work as defined in Chapter 6 of PUB-3000 prior to commencement of that work. Work of this kind that is currently carried out in CHD is regulated by Activity Hazard Documents (AHDs) and Radiological Work Authorizations (RWAs).

2.2. Qualification and Training

It is the responsibility of the PI to determine and document that each employee or guest under his/her supervision has the requisite qualifications and training to perform their work safely. Until such qualifications have been established, the employee or guest may work under the direct supervision of a qualified employee or guest. Qualifications include skills, knowledge, education, training, and certifications required by law or by LBNL policy. Division self-assessment includes an evaluation of the qualifications and training of Division employees and guests. Students are important and valued members of the Division and it specifically recognized that all EH&S requirements and policies apply to them, whether they are compensated or have guest status, as if they were full time regular career staff.

CHD employees, participating guests, and visitors are individually responsible for knowing and following the EH&S requirements that apply to their work. All employees, guests or visitors working in CHD for more than 30 days in a calendar year are required to fill out a Job Hazard Questionnaire (JHQ) within 30 days of joining the Division. The employees, guests or visitors, must take all of the training classes identified by EH&S as required for their work unless they have obtained their supervisor's certification that they have demonstrated "equivalency" to satisfy their training requirements. Applicable information from the Laboratory Lessons Learned program will be disseminated to CHD personnel for accident prevention and/or hazard awareness. For ease of reference the term Division member is used to refer to an employee, guest or visitor registered to work within a Division program.

Division members are expected to work safely and to cooperate with CHD EH&S policies. If they have any reservations about the safety or environmental impact of a laboratory activity, they must stop the work and resolve the issue before proceeding. Also, whenever Division members encounter conditions or practices that appear to constitute an imminent danger (might cause death, serious injury or environmental harm) they have the authority and responsibility to:

- Alert the affected employee(s) and request the work be stopped.
- From an LBNL telephone, call the Berkeley Lab emergency telephone number (7911) and report the situation. The EH&S Duty Officer will be notified to follow-up.
- Inform the immediate supervisor, EH&S Coordinator or Manager (if known).

2.3. Integration of EH&S into Project Planning

PIs will incorporate appropriate resource allocations for EH&S-related activities into all research proposals, including costs of safety equipment, permits, training,

maintenance, waste disposal, and facilities modifications, unless these costs are covered by institutional funding sources.

2.4. CHD Use of EH&S Resources

The following resources are allocated to ensure implementation and execution of the CHD Division Safety Plan: CHD EH&S Committee (0.05 FTE) and the CHD EH&S Coordinator (0.4 FTE). The CHD Deputy is, in part, responsible for oversight of Division EH&S performance (0.10 FTE). Baseline support from EH&S Division comes from the areas of Laser and Radiation Safety, Waste Generator Assistance, Industrial Hygiene, Fire Protection, Occupational Safety, and Emergency Services, and Environmental Protection and consists of chemical waste pickup and disposal, training classes, assistance with the annual Self Assessments and other inspections, and advice on the design of new laboratory spaces. It is estimated that 0.95 FTE total of EH&S effort is required for these activities.

3. Mechanisms to Judge Efficacy of Division Safety Plan

The results of the annual self-inspection and its validation are an important measure of the efficacy of CHD EH&S policies. In addition to the Performance Criteria provided by the Office of Contract Assurance, CHD judges its EH&S performance with the following goals: execution of Self-Assessment on time, all deficiencies logged in the CATS data base and closed within established period of time, all SAAs in compliance, all employees and guests properly trained, all AHDs and RWAs on file, all chemicals properly inventoried, and an OSHA accident rate as close as possible to zero. The annual CHD Self Assessment Report to the Office of Contract Assurance summarizes recent CHD EH&S performance. The annual ES&H Self Assessment Report for the whole laboratory shows the placement of CHD performance among the other LBNL Divisions.

4. Signatures

Submitted by

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EH&S Resource Commitment

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Accepted

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