



Environment, Health and Safety Division

Integrated Functional Appraisal
of the
Environmental Energy Technologies Division

FY 2001

Final Report
July 16, 2001

Executive Summary

The Environment, Health and Safety Division (EH&S) conducted an Integrated Functional Appraisal (IFA) of the Environmental Energy Technologies Division (EETD) during May and June 2001. The purpose of the appraisal was to identify uncontrolled hazards and to recommend control measures. The inspection team consisted of specialists from EH&S, the EETD Safety Coordinator and Department of Energy Berkeley Site Office observers.

The IFA demonstrated that hazards are effectively identified and controlled within EETD; though several issues were noted. These are summarized below. A detailed list of the IFA findings and recommended corrective actions is presented in Appendix 1.

- *Electrical Shock Hazards:* Several eyewash/safety showers or drench hoses are located near light switches, power outlets, laser interlock panels and other energized circuits. This poses a potential shock hazard. Stores has weatherproof cover plates in stock that can be installed. Also noted were some suspect splices, connections and modifications done to equipment.
- *Workstation Ergonomics:* Several workstations in EETD are not ergonomically configured. Use of such equipment may contribute to repetitive motion injuries. EETD has an initiative underway aimed at identifying and correcting ergonomic deficiencies.
- *Chemical Safety:* Several chemical safety issues were noted, such as storage of incompatible chemicals, absence of secondary containment and lack of proper spill kits. The lack of spill kits was very common. These issues are easily remedied by obtaining commercially available photo trays and spill kits.
- *Housekeeping, Clutter and Combustibles Loading:* Generally, housekeeping was good in the areas inspected, but in several spaces, clutter encumbered egress paths. Also the amount of combustibles observed (usually empty cardboard boxes) poses an increased fire hazard. These problems can be prevented with regular housekeeping. In one area (70-269) housekeeping and chemical storage are of particular concern. It is recommended that the space owner work with the EETD Safety Coordinator and EH&S to clean the area and to identify and dispose of unneeded materials.
- *Seismic Safety:* Several areas had bookshelves, filing cabinets and storage cabinets that were not properly anchored. Also, shelves lacked lips or restraints. These can be corrected through the Work Request Center.

Safety within EETD has commendable management support and the Division has a proactive safety program that is both innovative and effective. The commitment of EETD is evidenced by the condition of the spaces evaluated and the safety conscious attitude demonstrated by management and scientific staff. With a solid program in place, vigilance needs to be continued to ensure the ongoing success of EETD's ES&H program.

1.0 Introduction

The IFA is a key component of the Laboratory's Integrated Safety Management (ISM) program. It serves as one of the three tiers of the Laboratory's self assessment program. EH&S has been conducting IFAs of all laboratory organizations since 1996. Each Division is reviewed on a triennial basis. EETD's last IFA was conducted in 1998.

2.0 Appraisal Process

2.1 *Scope Development*

A Team Leader was appointed to initiate, plan and implement the IFA. He met with the EETD Safety Coordinator on May 4, 2001 to develop the scope of the IFA walkthrough. The meeting agenda is presented in Appendix 2. The IFA walkthrough plan stemming from this meeting is given in Appendix 3.

The scope of the IFA was focused on areas having formal authorizations (e.g., Activity Hazard Documents), areas where Medium and High Level of Concern (LOC) hazards were identified during the 1996 Integrated Hazard Assessment (a representative number of Low LOC hazards were also selected) and other areas as deemed appropriate by the IFA Team Leader and EETD Safety Coordinator. It was agreed that the IFA would not duplicate other inspections and information gathering systems already in place such as Satellite Accumulation Area and Radiological Work Area inspections.

2.2 *Field Appraisal*

The IFA Team Leader assembled an appraisal team consisting of the following individuals. Their respective areas of subject matter expertise are also listed.

- Larry McLouth (EH&S) - IFA Team Leader, industrial hygiene and laboratory safety
- John Seabury (EH&S) - Industrial hygiene and pressure safety
- Matt Kotowski and Don Van Acker (EH&S) - General safety, accident prevention and ergonomics
- Tom Caronna (EH&S) – Electrical safety
- Connie Grondona and Peter Lichty (EH&S) – Occupational medicine, accident prevention and ergonomics
- Guy Kelley (EETD) - Division Safety Coordinator
- Joe Krupa and Warren Yip (DOE) - DOE Berkeley Site Office Representatives - Observers

2.3 Site Visits

The appraisal team visited the sites during May and June, 2001. The team members and the dates they participated in the field activities are listed in the table presented below.

Participant/Observer	5/10/01	5/18/01	5/23/01	5/30/01	6/15/01
Larry McLouth, Team Leader	X	X	X	X	X
Guy Kelley, EETD	X	X	X	X	X
John Seabury, Industrial Hygiene	X	X	X	X	
Matt Kotowski, General Safety	X		X	X	
Don Van Acker, General Safety		X			
Tom Caronna, Electrical Safety					X
Connie Grondona, Health Services	X	X			X
Peter Lichty, Health Services			X		
Joe Krupa, DOE Observer	X				
Warren Yip, DOE Observer	X				

Members of the EETD staff that participated in the appraisal included Don Lucas, John Kerr, Al Hodgson, Mike Ayer, Ted Chang, Frank Asaro, Mark Yahnke, Regine Goth-Goldstein, Elton Cairns, Katy Striebel and Dianne Duhnke.

At the outset of the initial IFA inspection, the IFA Team Leader briefed the team and the DOE visitors on the purpose, scope, schedule, conduct and expectations of the IFA. Any EETD room occupants present during the inspection were also informed about the purpose of the IFA.

Each room inspection consisted of walking through the space, asking staff about the work conducted and recording observed findings as well as their corresponding corrective actions. These were logged on data sheets. Findings from each space were discussed with the EETD Safety Coordinator and the person responsible for that space (if present) at the time of the inspection before proceeding on to the next space.

3.0 Results

Findings and recommended corrective actions resulting from the site visits are presented in Appendix 1. In general, spaces were well maintained, indicating the commitment of management and staff to safety and the effectiveness of the Division's self assessment inspections. There were a total of 160 findings. Of these 35 should be given a higher level of priority for correction. Most of these involved electrical safety issues and are highlighted in yellow in Appendix 1.

A summary of the more prevalent hazards are presented below:

Electrical Shock Hazards: Several eyewash/safety showers or drench hoses are located near light switches, power outlets, laser interlock panels and other energized circuits. These pose a potential shock hazard. Stores has weatherproof cover plates in stock that should be installed.

Glow in the dark light switches may also be installed to allow occupants to find the switch in dark areas. Daisy chained power strips and extension cords were also common. Also noted were some suspect splices, connections and modifications done to electrical equipment. For some of these (such as the tool box that has been modified to house live electrical components located in 63-101) it is recommended that the EH&S electrical safety expert be contacted for consultation.

Workstation Ergonomics: There are a number of workstations in EETD that are not ergonomically configured. Use of such equipment may contribute to repetitive motion injuries. EETD has an initiative underway aimed at identifying and correcting ergonomic deficiencies.

Chemical Safety: There were a number of chemical safety issues noted such as storing incompatible chemicals, absence of secondary containment and lack of proper spill kits. The lack of spill kits was very common. These issues are easily remedied by ordering and using photo trays (available through Stores) and spill kits, which may be obtained from VWR through the Laboratory's Procurement Website (<http://Purch1.lbl.gov/>). Chemical storage guidelines are available through the Chemical Hygiene and Safety Plan. This is accessible on-line at the following web site <http://www.lbl.gov/ehs/chsp/html/storage.htm>

Housekeeping, Clutter and Combustibles Loading: Generally, housekeeping was good in the areas inspected, but in several spaces, clutter encumbered egress paths. Also the amount of combustibles observed (usually empty cardboard boxes) poses an increased fire hazard. These problems can be prevented with regular housekeeping. In one area (70-269) housekeeping and chemical storage is of particular concern. It is recommended that the space owner work with the EETD Safety Coordinator and EH&S to clean the area and to identify and dispose of unneeded materials.

Seismic Safety: Several areas had bookshelves, filing cabinets and storage cabinets that were not properly anchored. Also, shelves lacked lips or restraints. In most cases, these can be corrected through the Work Request Center. However in several cases, EH&S recommends an evaluation by the Facilities Structural Group to provide further guidance for anchoring. These include sputtering equipment in 2-362, the wooden cabinets and some equipment on wheels in 70-133 and a glovebox in 70-295.

4.0 Conclusions

Safety within EETD has commendable management support and the Division has a proactive safety program that is both innovative and effective. The commitment of EETD is evidenced by the condition of the spaces evaluated and the safety conscious attitude demonstrated by management and scientific staff. With a solid program in place, vigilance needs to be continued to ensure the ongoing success of EETD's ES&H program.