



ENVIRONMENT, HEALTH & SAFETY DIVISION

Integrated Functional Appraisal (IFA) Materials Sciences Division

Performance Year 2003

(July, 2002 - June, 2003)



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Executive Summary

The triennial Integrated Functional Appraisal of the Materials Sciences Division was conducted by LBNL Environment, Health and Safety during late Spring, 2003. The IFA team consisted of individuals having technical expertise in the wide variety of activities in which the Division engages. Particular emphasis was placed on examination of the various Formal Authorizations held by researchers in the Division. Division spaces were also inspected to locate and correct hazards.

For the most part, Formal Authorizations held by the Division were up to date and fully authorized. Discrepancies between EH&S and Materials Sciences records were found in relation to Activity Hazard Documents, and some steps that the Division had been taking in managing their AHD reauthorizations were found to be at odds with the requirements of PUB-3000. When these were pointed out to the Division immediate correction was begun, and systems are now fully compliant.

Inspections of the spaces showed that considerable improvement has been made in the areas of housekeeping, seismic safety and hazardous waste compliance, areas that had been issues in the past. Additional efforts in these areas will remove these as issues. Materials Sciences is also to be commended for being the first LBNL Division to unequivocally recognize its responsibility to assure safety for LBNL activities conducted in UC Berkeley spaces.

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1.0 Introduction

1.1 IFA Purpose

The Integrated Functional Appraisal (IFA) is a key component of Lawrence Berkeley National Laboratory's Integrated Safety Management (ISM) system. It is part of Core Function #5 (Continuous Improvement) of the ISM concept, and forms one of the three tiers of the Laboratory's safety assessment program that evaluates the ongoing effectiveness of Divisions' Integrated Safety Management programs. LBNL's Environment, Health and Safety (ESH) Division has been conducting IFA's of all laboratory organizations since 1996, with each organization reviewed every three years. The Material Sciences Division's last IFA was conducted during Performance Year 2000.

1.2 Scope

The 2003 Integrated Functional Appraisal of the Materials Sciences Division consisted of the following elements:

- Identifying of all spaces being utilized for Materials Sciences operations as of the time of the Appraisal. This was done by downloading a list of spaces assigned to the Materials Sciences Division from the LBNL Space database.
- Determining the basic operations (laboratory, shop, office, other) being conducted in each space assigned to MSD.
- Reviewing the status of compliance of all operations in MSD that require formal authorizations. These formal authorizations include Satellite Accumulation Areas (SAA) for hazardous waste, Sealed Source Authorizations (SSA), X-Ray Authorizations (XRA), Biological Use Authorizations (BUA), and Activity Hazard Documents (AHD). There are no Radioactive Work Authorizations in MSD.
- Inspecting of all technical spaces (laboratory and shop) and a representative number of non-technical spaces, for purpose of identifying and correcting hazards.

2.0 Appraisal Process

2.1 Team

Team members were selected based upon the technical abilities required to properly assess the hazards present in MSD operations.

- John Seabury is the EH&S Division Liaison assigned to the Materials Sciences Division and was the team leader.
- Matt Kotowski is the EH&S Safety Engineer assigned to the Materials Sciences Division.
- Larry McLouth is an EH&S Industrial Hygienist, formerly assigned to assist the Materials Sciences Division and is John Seabury's formal backup during his absences from LBNL.
- Ted Decastro is LBNL's Laser Safety Officer and is also the supervisor of the X-Ray Safety Program. Materials Sciences has a number of laser users and three X-Ray machines.
- Connie Grondona, RN is LBNL's Principal Occupational Health Nurse.
- Katherine Johnescu is the Department of Energy, Berkeley Site Office Program Representative for Basic Energy Sciences.
- Peter Ruegg is Materials Sciences Division Building Manager for Buildings 62 and 66. Mr. Ruegg serves to coordinate the correction of safety issues identified in Materials Sciences facilities.

The composition of the team on any given day of inspections and/or reviews depended upon the activities scheduled for that day. Team members primarily evaluated areas within their expertise. Mr. Seabury, Mr. Kotowski, Mr. McLouth and Mr. Ruegg were present during all inspections.

2.2 Defining Appraisal Areas

Review of Operations under Formal Authorization

Materials Sciences has five types of formal authorizations: Satellite Accumulation Areas (SAA) for hazardous waste, Sealed Source Authorizations (SSA), X-Ray Authorizations (XRA), Biological Use Authorizations (BUA), and Activity Hazard Documents (AHD). The first four have audit or reauthorization processes in which EH&S is intimately involved. Activity Hazard Documents are initially authorized with significant EH&S input, but reauthorized at the sole discretion of the Division.

For SAA, SSA, XRA, and BUA the most recent audit or reauthorization reports prepared by the EH&S Subject Matter Expert were reviewed by the IFA Team Leader and discussed with the SME.

Activity Hazard Document review was conducted by IFA team members according to the team members' technical expertise. AHD review included the following items:

- Content: Did the researcher and EH&S have copies of the AHD and amendments?

- Initial Authorization: Did the researcher have access to the fully-signed signature page indicating that the work had been fully authorized? Did EH&S have a copy of the signature page?
- Reauthorization: Was there a reauthorization signed by the Division Director at annual intervals, and did that reauthorization contain a statement indicating that there had been no changes in the AHD? Did the Division provide copies of the reauthorization to EH&S?
- Work Review: Was the work being performed consistent with the work that is authorized in the AHD? Are all individuals working on the project listed on the AHD and is their training current? Do the individuals know the contents of the AHD?

Space Inspection

All technical spaces (laboratory, shop) assigned to Materials Sciences were inspected as part of the Integrated Functional Appraisal. Review of records in the LBNL Chemical Inventory was included in the evaluation of a space. Non-technical spaces (offices, conference rooms, storage areas, etc.) were evaluated by reviewing the results of the most recent MSD Self Assessment inspection (which had occurred only a few months prior to the IFA and included members of the IFA team). A list of the spaces inspected is included in the Appendices.

Schedule

The IFA was formally begun on 19 March, 2003. Records review was begun immediately thereafter and continued through June, 2003. Field inspections and AHD reviews were begun in mid-April, 2003 and continued through June, 2003. Formal followup inspections were conducted in January 2004 and June 2004, and several interim meetings were held during the time following the IFA as well.

3.0 Findings, Discussion and Recommendations

3.1 Formal Work Authorizations

Formal Work Authorizations are listed in Appendix A.

Satellite Accumulation Areas

Materials Sciences' SAAs fluctuate in number depending upon activity, but average at any time in the mid-to-high 50's. A total of 229 SAA audits for compliance with LBNL requirements were conducted during Performance Year 2003. Compliance for the quarterly inspections was as follows:

Satellite Accumulation Area Compliance	
Quarter	Compliance
1 st (July-September 2002)	88%
2 nd (October-December 2002)	97%
3 rd (January-March 2003)	95%
4 th (April-June 2003)	79%
Overall	90%

Satellite Accumulation Area compliance has long been an issue with Materials Sciences, and was identified as "problematic" in the 2000 Integrated Functional Appraisal. The 90% overall compliance rate for MSD for PY 2003, which reflects a slight drop from the 94% overall compliance for PY 2002, was the lowest overall compliance rate for any research division at LBNL. However, this drop is almost completely due to the poor performance in the 4th quarter. Without that outlier the compliance reflects marked improvement over previous years. It appears that additional efforts could be made by the Division's Principal Investigators to support their Satellite Accumulation Area custodians, who are often junior graduate students without sufficient experience to counsel or "force" more senior students or postdocs into adhering to requirements.¹

Sealed Source Authorizations

Materials Sciences has two Sealed Source Authorizations. They were audited and reauthorized in December 2002 and May 2003, respectively, with no deficiencies.

X-Ray Authorizations

Materials Sciences has three X-Ray Authorizations. All three were audited and reauthorized in June 2003 with no deficiencies.

Biological Use Authorizations/Registrations

Biological work is reviewed and approved by line management and the Institutional Biosafety Committee. Biological work that requires Biosafety Level 2 containment requires a Biological Use Authorization (BUA), which is a formal authorization and is renewed annually. Biological Use Registrations

¹ Note: the finding as written reflects conditions as of June 2003. During PY 2004 Materials Sciences expended considerable effort to improve compliance with hazardous waste requirements. The June 2004 Satellite Accumulation Area compliance inspection of Materials Sciences showed 100% compliance with requirements, which is excellent.

(BUR) are developed for Biosafety Level 1 work and are not formal authorizations.

Material Sciences has two Biological Use Authorizations and one Biological Use Registration. In June 2003, one BUA was renewed and one was cancelled because the project was completed. The BUR was initiated in March 2003 but has subsequently been cancelled as the researcher no longer works at LBNL.

Activity Hazard Documents

Review of the Activity Hazard documents and their associated projects revealed two issues. Both were related to the AHD process; in neither case was safety compromised.

1. Initial records review of MSD's Activity Hazard Documents revealed discrepancies between MSD's records and EH&S's, including:
 - EH&S appeared to have a listing of all AHDs that had at one time been requested, but in some cases did not have copies of the completed AHDs or of the signature pages, and in fact for some AHDs the records did not indicate whether the AHD that had been requested had ever been completed to authorization.
 - In many cases EH&S's records consisted of the original documents but no reauthorizations. MSD's records often contained indications of reauthorization but in some cases did not have full documents or signature pages (original or reauthorization).
 - EH&S had records of active AHDs being held by individuals who had left LBNL.
 - For some AHDs the records of location and/or Principal Investigator differed between EH&S's records and MSD's.

In summary, it could not be initially determined precisely which AHDs were active, who had authorized them, who was responsible for them, and where the activity was taking place.

Upon review it became apparent that there were several causes for the discrepancies, including:

- Practice under a previous EH&S Laser Safety Officer had been to issue AHDs for laser systems without significant coordination with the EH&S AHD Program Manager, and for the LSO to maintain his own list of locations. Thus in some cases the AHD had been completed without tracking through the central system. In addition, it also appeared that activities may have been informally authorized by this same LSO in advance of completing the AHD or signature page, and the paperwork never did get finished.

- For some AHDs the activity remained even though the supervisor of the activity had left LBNL, and a new individual had assumed oversight responsibility for the activity. This should have triggered a full review of the AHD as change in the Activity Supervisor or Principal Investigator is a significant change in the authorized parameters. However, this change in Activity Supervisor had been processed as a routine reauthorization and the required review did not take place.
- Materials Sciences had coordinated the reauthorization process by having the MSD Safety Coordinator determine if the AHD had changed, and if not it was reauthorized. The individual questioned about the AHD was often not the Principal Investigator, but an associate. Under the requirements of PUB-3000, the authority to reauthorize AHDs rests with the Division Director, not the Safety Coordinator.

Technical review of these discrepancies confirmed that safety had not been compromised. When these procedural issues were identified to MSD in early April 2003 the Division responded immediately and aggressively to change their procedures to comply with the requirements of PUB-3000. The initial authorization and reauthorization procedure is now robust, and MSD's records are in complete alignment with EH&S's.

2. During review of the AHDs it was found that two new projects with AHDs in progress but not yet completed and authorized (2051 and 2072) had begun work in advance of the authorization. One additional project (GS 1061) was in operation but also had a substantial revision to the AHD in progress. Work was suspended on the new projects and the AHDs were completed before restarting; the project with the revisions in progress continued after discussion between EH&S and the investigator confirmed that the safety analysis of the project was valid.

3.2 Line Management ('Self-Authorization') Space/Operations

Technical (laboratory, shop) and non-technical (office, conference, storage, etc.) spaces evaluated are listed in Appendices B and C, respectively. There were 167 findings during this IFA, compared with 173 findings during the 2000 IFA. Findings arising from the evaluations are listed in Appendix D. A follow-up inspection was held in January 2004 and items not yet corrected from the IFA were entered into the Laboratory Corrective Action Tracking System for followup. As of June 2004 all items had either been corrected or were progressing per a long-term resolution discussed with EH&S.

In addition to the issues relating to formal authorizations discussed above, the IFA team observed several issues below in a number of MSD spaces. These appear to be somewhat common throughout the Division and represent

opportunities for Division-wide efforts. There is no particular order to the findings below.

1. *Secondary Containment of Liquids:* In many liquid storage cabinets, bottles are stored on flat shelves without adequate secondary containment. The recessed area in liquid storage cabinets serves as the secondary containment for the lower shelf only; trays should be supplied for bottles on upper shelves.
2. *Chemical Inventory:* There are several indications that the LBNL Chemical Management System is not being actively managed by Materials Sciences chemical custodians.²
 - Materials Sciences has 135 individual rooms that contain chemicals. Of those rooms, there was update activity in the CMS between July 2002 and June 2003 for only 3 of those rooms. In contrast, there were 66 updates during June, 2001, the last time that LBNL-EHS student employees verified and updated chemical inventories.
 - During the IFA we observed several instances in which chemical containers were in a laboratory but they did not have bar code labels on them, indicating that they had been procured from somewhere but not added to the inventory.
 - There are several persons listed as custodians who are no longer with LBNL (e.g., Russ Ellis, Jason Cheng, Jennifer Glass); their chemicals should be transferred to another custodian.
3. *Cutting Tools:* We observed quite a number of single-edge razor blades left unattended on the countertops. In general, though, disposal of razor blades is much better than it was in previous IFA inspections. It seems that this may be research-group dependant; where we observed one blade we generally observed several, while other labs have well-marked and well-used "sharps" containers. Also, the whole issue of using razor blades for cutting should be examined; bare razor blades are very difficult to hold onto safely, and perhaps disposable scalpels or razor blade holders would be safer and more appropriate cutting tools.
4. *Extension Cords:* The proper use of extension cords has been an ongoing challenge to MSD. Although in general the improper use and "daisy-chaining" of extension cords is much less prevalent than in the past,

² Since the time of the IFA the software comprising the core of the Chemical Inventory System has been significantly revised and strengthened. New researchers that have been joining the Division have been quite conscientious about entering their chemical stocks into the Inventory, but there is a significant backlog that still has to be resolved.

opportunities do still exist for providing permanent wiring so that extension cords are not necessary.³

5. *Securing of Cryogen Dewars*: Especially in Building 2, we observed many cryogen dewars that were not adequately secured for resistance to earthquake. Locking wheels or wheel chocks are not sufficient, as this can cause these top-heavy items to tip over and discharge. Rather, anchoring should be to mid-height or above, and secure to a structural member.

There were several other issues commonly observed, some of which were not primarily safety issues, but are noted here:

1. *Window Protection*: Most glass windows on vacuum chambers were open and unprotected. Covers (eg, lexan) should be fitted over the windows to protect against dropping something onto the window (tool, bolt, etc.) leading to window failure. While this observation does have some safety basis (if a window does break, a plastic cover may help protect against backsplash of glass fragments), note that it is primarily intended to help assure experimental integrity.
2. *Housekeeping*: Considerable progress and improvement have been made in the area of housekeeping (see below). Nevertheless, there is still opportunity for improvement. In particular, there appears to be a large amount of obsolete equipment, apparently not in use, that has accumulated in laboratories (especially in B66). This equipment does seem to take up space that could otherwise be productively used; we suggest that Materials Sciences look at the value of this obsolete equipment vs. the value of research space (which is in general very impacted across LBNL) to determine the best value.
3. *"Do Not Drink" signs on B66 eyewashes*: A number of drench hoses located in laboratories had signs on them "Do Not Drink". This related to a finding shortly after the building was constructed that noted high copper content in the water. The plumbing mistake that led to this elevated copper level was corrected many years ago, and subsequent testing of the water confirmed that the problem had been resolved. However, the tags had not been removed. MSD removed the tags when this was pointed out.
4. *Cable Tray Bonding and Grounding*: Overhead electrical cable trays have been electrically bonded and grounded in a number of ways over the

³ As a result of regulatory compliance inspections conducted during early Calendar Year 2004, additional outlets were installed in many locations. It is anticipated that findings of improper use of extension cords and relocatable power taps (aka "plug strips") will be rare in the future.

years. EH&S is in the process of providing guidance on proper bonding and grounding of electrical trays which will be issued to the laboratory as a whole. MSD has an electrician who will work to bring the Division's trays into conformance with the requirements when they are released.

4.0 Noteworthy Practices

1. *Access, Egress and General Housekeeping:* Access, egress and general housekeeping have improved significantly since the last IFA. Laboratories appear to be less cluttered and more ordered. Much obviously unused equipment has been moved out of laboratories and other research spaces, although some remains (see above). During the last IFA, blocked electrical panels and eyewashes were a common finding; this was rare during this IFA.
2. *Seismic securing:* seismic restraints have been largely implemented throughout the Division, with the general exception of the cryogen dewars noted above. Many creative examples were noticed. As with blocked electrical panels, the 2000 IFA found many opportunities for seismic restraint, whereas during this IFA the finding (except for cryogen dewars) was relatively rare.
3. *Non-AHD Formal Authorizations:* Sealed Source, X-Ray, and Biological Use authorizations were generally up to date and compliant. Satellite Accumulation Area compliance was varied but in general improved. In the past the Division has had challenges with recognizing and maintaining compliance with these requirements, whereas in this IFA compliance was much more consistent.
4. *Activity Hazard Documents:* As noted above, early in the IFA process the team noted areas in MSD's Activity Hazard Document management process that would benefit from attention. The Division responded immediately and aggressively to resolve these issues, and attention has been ongoing. The Division is to be complimented for its swift response to the issues.
5. *Recognition of Responsibility for UCB-located researchers:* Prior to this IFA, there was some uncertainty LBNL-wide as to the applicability of LBNL's Integrated Safety Management System to LBNL employees who work in UCB spaces. This uncertainty was clarified in April 2003, and the Materials Sciences Division was the first Division to make it absolutely clear to its UCB researchers that they have responsibility to LBNL and to DOE for safety on DOE-funded projects.

5.0 Conclusions

The Materials Sciences Division is a large research division having widely varying activities and hence types of hazards. It operates with a decentralized safety management program, emphasizing the responsibility of each research director or group leader to control safety within his/her spaces. It is clear that the message of "safety" is being communicated to the researchers and group leaders. For example, many of the issues noted here, especially those involving higher hazard work requiring formal authorizations, relate to administrative requirements rather than safety issues. Also, as issues are identified then increased effort goes into resolving them (e.g., electrical panel clearance, seismic safety). Considerable improvement has been made since the 2000 Integrated Functional Appraisal in many areas, and as time progresses additional efforts will likewise prove to be well spent.

Appendix A Formal Authorizations

Type of Formal Authorization	Identification Number	Building	Room
Satellite Accumulation Area (SAA)	n/a	002	0104
			0126A
			0137
			0137
			0216
			0224
			0236
			0237
			0238
			0256
			0258
			0260A
			0263A
			0328
			0338
			0358
			0434
		062	0101
			0101
			0102
			0104C
			0108
			0108F
			0110
			0138
			0142
			0148

Type of Formal Authorization	Identification Number	Building	Room
			0150
			0155
			0208
			0214A
			0214C
			0248
			0316
			0338
			0344
			066
		0215	
		0219	
		0221	
		0225	
		0231	
		0301	
		0304	
		0306	
		0314	
		0324	
		0331	
		0334	
		0403	
		0411	
		0416	
		0421	
		0426	
		0427	

Type of Formal Authorization	Identification Number	Building	Room
			0430
		072	0102
			0102
			0161
Sealed Source Authorizations (SSA)	SSA 191	002	0137, 0424
	SSA 192		0254
X-Ray Authorizations	62-145-S1	062	0145
	62-145-S2		
	62-145-3		
Biological Use Authorizations and Registrations	B030-090500 (BUA, BL 1 & 2)	66	0322
	B057-022202 ⁴ (BUA, BL 1 & 2)	66	0409
	B101-031903 ⁵ (BUR, BL 1)	66	0219, 0221, 0409
Activity Hazard Documents (AHD)	2062	002	0137
	2015		0214
	2047		0216
	BE1024		0229
	2000		0256
	GS1061		0258
	220		0328

⁴ This Biological Use Authorization was cancelled at the Principal Investigator's request on 6/11/2003 because the project was completed.

⁵ This Biological Use Authorization has been cancelled as the researcher no longer works at LBNL.

Type of Formal Authorization	Identification Number	Building	Room
	BE1010		
	BE1021		0338
	2071		0340
	BE1028		0357
	176		0360
	112		0260A
	BE1013		
	2040		0260A; 0263A
	BE1009		0261C
	105		0407A
	2029	006	BL 1.4.2
	2016		BL 5.3.1
	166		0127
	172		0208
	BE1014	062	0310
	2064		0316
	148		0102, 0150
	219		0225
	2039		0306
	BE1026		0313
	2052		0403
	2041	066	
	2024		0411
	BE1015		0427
	2072		0433
	2051	070A	3343
	174	072B	(all)

Appendix B Technical Spaces Inspected

Building	Room
002	0102
002	0104
002	0106
002	0111
002	0113
002	0115
002	0119
002	0133
002	0137
002	0207
002	0212
002	0214
002	0216
002	0221
002	0222
002	0224
002	0227
002	0229
002	0230
002	0236
002	0237
002	0238
002	0238
002	0241
002	0243

Building	Room
002	0245
002	0250
002	0256
002	0258
002	0322
002	0328
002	0328
002	0338
002	0340
002	0357
002	0358
002	0360
002	0422
002	0426
002	0428
002	0434
002	0115A
002	0126A
002	0126C
002	0247A
002	0247B
002	0260A
002	0260A
002	0260B
002	0261A
002	0261B
002	0261C
002	0263A
002	0263B

Building	Room
002	0407A
002	0435A
002	0435B
002	0435D
002	0441A
002	0441B
062	0100
062	0101
062	0102
062	0105
062	0108
062	0110
062	0114
062	0116
062	0118
062	0121
062	0127
062	0131
062	0135
062	0138
062	0142
062	0144
062	0145
062	0146
062	0148
062	0150
062	0155
062	0201
062	0207

Building	Room
062	0208
062	0214
062	0218
062	0242
062	0248
062	0310
062	0316
062	0338
062	0344
062	0100A
062	0100B
062	0100C
062	0100D
062	0101B
062	0104C
062	0108B
062	0108E
062	0108F
062	0121A
062	0127A
062	0127B
062	0214A
066	0201
066	0204
066	0207
066	0210
066	0215
066	0219
066	0221

Building	Room
066	0224
066	0225
066	0229
066	0231
066	0232
066	0301
066	0304
066	0306
066	0310
066	0314
066	0322
066	0324
066	0328
066	0331
066	0334
066	0335
066	0401
066	0403
066	0407
066	0411
066	0416
066	0421
066	0424
066	0426
066	0427
066	0430
066	0433
070A	3343
072	0101

Building	Room
072	0102
072	0103
072	0109
072	0110
072	0113
072	0114
072	0118
072	0112A
072	0112B
062C	0100
062D	0100
062E	0100
062F	0100
072A	0010
072A	0210
072B	0010
072B	0110
072B	0210
072C	0159
072C	0161
072C	0163
072C	0165
072C	0167
072C	0169
072C	0171
072C	0173
072C	0208
072C	0210
072C	0163A

Building	Room
072C	0165A
072C	0167A
072C	0169A
072C	0171A
072C	0212B

Appendix C Non-Technical Spaces Inspected

Building	Room
002	0101
002	0103
002	0105
002	0107
002	0108
002	0109
002	0110
002	0112
002	0114
002	0116
002	0118
002	0120
002	0121
002	0122
002	0124
002	0125
002	0127
002	0128
002	0201
002	0202
002	0203
002	0205
002	0206
002	0208
002	0209
002	0211

Building	Room
002	0213
002	0215
002	0217
002	0218
002	0219
002	0220
002	0223
002	0228
002	0231
002	0232
002	0233
002	0234
002	0235
002	0239
002	0240
002	0242
002	0244
002	0246
002	0248
002	0249
002	0251
002	0252
002	0253
002	0254
002	0257
002	0259
002	0326
002	0423
002	0433

Building	Room
002	0434
002	0455
002	0126B
002	0126D
002	0200B
002	0200C
002	0200F
002	0200G
062	0104
062	0109
062	0111
062	0113
062	0115
062	0117
062	0119
062	0139
062	0141
062	0149
062	0205
062	0209
062	0211
062	0213
062	0215
062	0217
062	0219
062	0221
062	0223
062	0227
062	0233

Building	Room
062	0235
062	0237
062	0239
062	0241
062	0243
062	0245
062	0247
062	0253
062	0255
062	0319
062	0321
062	0357
062	0101A
062	0104A
062	0104B
062A	0105
062A	0106
066	0113
066	0202
066	0203
066	0206
066	0208
066	0211
066	0212
066	0214
066	0220
066	0222
066	0223
066	0226

Building	Room
066	0227
066	0230
066	0233
066	0234
066	0235
066	0236
066	0237
066	0238
066	0239
066	0240
066	0242
066	0243
066	0244
066	0245
066	0246
066	0247
066	0248
066	0249
066	0250
066	0302
066	0303
066	0307
066	0308
066	0312
066	0322
066	0323
066	0324
066	0325
066	0326

Building	Room
066	0329
066	0332
066	0336
066	0337
066	0402
066	0404
066	0405
066	0408
066	0409
066	0414
066	0422
066	0425
066	0428
066	0431
066	0435
066	0487
066	0201A
066	0204A
066	0207A
066	0210A
066	0219A
066	0224A
066	0225A
066	0231A
066	0235A
066	0249A
066	0250A
066	0250B
066	0250C

Building	Room
066	0250D
066	0250E
066	0250F
066	0415A
066	0415B
066	0425A
066	0434A
066	0434B
072	0107
072	0121
072	0125
072	0127
072	0131
072	0133
072	0107A
072C	0155
072C	0157
072C	0201
072C	0205
072C	0207
072C	0209
072C	0211
072C	0212
072C	0213
072C	0215
072C	0216
072C	0217
072C	0218
072C	0219

Building	Room
072C	0220
072C	0221
072C	0222
072C	0223
072C	0201A

Appendix D Inspection Findings

Building	Room	Finding	Action
002	0102	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		Gas cylinders using chains for restraint should have two chains, high and low.	Install second chain
		A wheeled electronics rack was not secured against movement during an earthquake.	Install seismic restraint.
	0133	Containers of liquid flammable materials were not placed in secondary containment (upper shelf of flammable cabinet)	Provide secondary containment (eg, trays)
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		Numerous electrical safety problems were noted on the pyrometer: improper cord splicing, cooling fan requires three-wire grounding power supply cord	Contact Tom Caronna, LBNL Electrical Safety Specialist (x4314) for advice on correcting electrical problems.
		The cooling fan blades were not guarded against accidental contact.	Guard cooling fan blades.
	0148	There were several single edge razor blades left on the benchtop, which is a potential laceration hazard.	Place sharp-edged objects (glass, blades) in a sharps container when use is complete. Consider alternatives to single edge razor blades.
		The guillotine was left open after use, posing an amputation hazard.	Close the guillotine after use.
	0207	Uncovered razor blades were left on countertops or other accessible surfaces.	Dispose of blades when done. If blades are still usable, protect sharp edge against contact by tape or other means.
		Vacuum pump drip pan is full of oil	Drain the drip pan into a suitable container and dispose of the oil.

Building	Room	Finding	Action
	0216	The table holding the tube furnaces is not restrained against seismic movement.	Bolt the table to the floor.
		A vacuum pump has an exposed V-belt and pulley	Reinstall the belt guard, or fabricate a new one (NOTE: corrected).
	0221	An electrical panel is obstructed.	Electrical panels must be unobstructed the full panel width, 30" in front, from floor to ceiling.
		The hoisting apparatus is configured so that there is an angled pull on the eyebolts. Eyebolts must only be pulled longitudinally.	Revise the apparatus so that the pull on the eyebolts is straight.
	0224	The calcium gluconate gel (first aid for hydrofluoric acid burns) is beyond its expiration date of July 2002.	Replace with current.
	0227	The bandsaw has exposed blade on the underside of the work surface.	Install a blade guard for the exposed area.
	0229	There appears to be a Class IIIb confocal microscope and a Class IV laser installation. EH&S is not aware of any Activity Hazard Document covering either installation.	Contact Ted de Castro x5256 to obtain AHDs.
		The magnet and power supply are not restrained against seismic movement.	Anchor the magnet and power supply. The restraint system requires approval by LBNL Structural Engineering group due to its weight.
	0230	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		The system appears to have a potential for developing Xrays. EH&S is not aware that it has been properly evaluated.	Contact Ted de Castro x5256 to assist in this determination.
		The hydrogen cylinder needs to be properly secured to a restraint on the floor, not on a chair.	Move the hydrogen cylinder to the floor and provide proper restraint.

Building	Room	Finding	Action
		A shipping container blocks the required second exit from this laboratory.	Move the shipping container to make the second exit accessible in an emergency.
	0236	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
	0245	The Atomic Force Microscope is not secured against tipping during an earthquake	Secure the AFM to the table, and secure the table to the floor.
	0247A	The calcium gluconate gel (first aid for hydrofluoric acid burns) is beyond its expiration date of July 2002.	Replace with current.
		The Bay Area Air Quality Management District permit for the gallium arsenide saw does not have any evidence as to whether it is current or not.	Contact Pat Thorson, x5852, to determine if this permit is still active and if so post a copy of the current permit.
		There is an extension cord leading to the vacuum pump near the torch that appears to be a substitute for permanent wiring.	Install permanent wiring.
	0247B	The calcium gluconate gel (first aid for hydrofluoric acid burns) is beyond its expiration date of July 2002.	Replace with current.
	0258	It is unclear whether the Ion Implanter is properly secured to the floor for seismic restraint.	Verify with the Facilities Seismic Engineering Group (through Work Request Center) that this equipment is properly secured to the floor.
	0261A	The calcium gluconate gel (first aid for hydrofluoric acid burns) is beyond its expiration date of July 2002.	Replace with current.
		The sharps container is overfilled and needs to be disposed of, and replaced with an empty one.	Dispose of full sharps container. NOTE: empty container has been placed into service next to full one.
	0251B	The spectrometer does not appear to be properly restrained against an earthquake.	Secure the spectrometer.

Building	Room	Finding	Action
	0263A	The calcium gluconate gel (first aid for hydrofluoric acid burns) is beyond its expiration date of July 2002.	Replace with current.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
	0263B	Vacuum pump drip pan is full of oil	Drain the drip pan into a suitable container and dispose of the oil.
	0322	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
	0328	A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		A compressed helium cylinder needs to be restrained against movement during an earthquake.	Restrain the cylinder.
	0340	A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		Aisleways were severely obstructed with boxes, equipment, and other stuff.	Maintain clear aisleways and exit passages.
	0407A	There are bare wires exposed on the laser door interlock..	Protect the wires against damage by conduit, wire wrap, or other means.
		Cable tray appears to need some upgrade to its grounding.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
	0422	The small gas cylinders must be secured against movement.	Secure the gas cylinders.
	0428	Containers of liquid flammable materials were not placed in secondary containment (upper shelf of flammable cabinet)	Provide secondary containment (eg, trays)
	0441A	Cable tray appears to need some upgrade to its grounding.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.

Building	Room	Finding	Action
	0455	There are significant and widespread ergonomic issues that need to be addressed in this area. NOTE: this is a repeat finding from the 2000 IFA that has not been addressed.	Provide proper work stations for the CADD stations.
062	0100	Containers of liquid flammable materials were not placed in secondary containment (upper shelf of flammable cabinet)	Provide secondary containment (eg, trays)
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		There is a one-gallon paint can with the labels "cadmium" and "germanium"; more information, including hazard identification, needs to be put on the label.	Prepare a more complete label listing contents, hazards and a person to contact.
	0100B	In the gray storage cabinets there are several beakers with liquid in them apparently not in use, but the beakers are not liquid-tight nor are they adequately labeled. They may belong to "Inna"	Prepare more complete labels listing contents, hazards and a person to contact. Provide liquid-tight containers for storage.
	0102	In the chemical storage cabinets there are many chemicals without inventory stickers.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
		There is quite a bit of obsolete equipment stored high in the room on shelves. Although restrained, this does pose a potential falling hazard during an earthquake.	Consider discarding obsolete equipment.
		There are many containers of liquids throughout the laboratory, including in the storage cabinets, that do not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).

Building	Room	Finding	Action
		In the inert atmosphere glovebox, lithium is used. The fire extinguishing agent provided is MetalX, which is not effective for a lithium fire. NOTE: this is a repeat finding from the 2000 IFA.	Provide a LithX fire extinguisher. (Note: this is available from Lab Safety Supply Co., part number 52329)
	0108	In the fume hood there is a cylinder of chlorine gas, which is a "health hazard" gas and requires an Activity Hazard Document. EH&S is not aware of any AHD covering this use.	Contact Larry McLouth, x5286, to prepare an AHD for this use, or if the chlorine is not in use, dispose of the cylinder through EH&S Waste Management.
		In the room there inorganic arsenic is used. EH&S is not aware of any hazard assessment covering this listed OSHA carcinogen.	Contact John Seabury, x6547, to conduct a hazard assessment on the use of inorganic arsenic.
	0108B	There is a paper cutter with an unguarded knife edge that poses a laceration/amputation hazard.	Install a guard to protect against fingers getting into the blade path, or replace the paper cutter with a new one that has a blade guard.
	0110	There appears to be perchloric acid and a hotplate, leading to the presumption that hot perchloric digestions have taken place in this hood. This hood is not equipped with a washdown system and is not appropriate for perchloric acid digestions due to the potential for buildup of explosive perchlorates in the exhaust system.	Have the person who knows about these digestions contact John Seabury, x6547, for a hazard evaluation.
		The corrosives storage cabinet is overfilled with corrosive liquids.	Either provide additional storage space or eliminate some of the corrosives stored in the cabinet.
		There are several containers in the hazardous waste Satellite Accumulation Area that do not have hazardous waste labels.	Provide hazardous waste labels on all waste containers as soon as they are put into service.
		There are many containers of liquids throughout the laboratory, including in the storage cabinets, that do not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).

Building	Room	Finding	Action
	0118	A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
	0127A	The "Unsafe" light on the interlock/warning system is on but the machine is not operating. This is confusing to occupants and needs to be clarified whether this is a malfunction or not.	Determine why the "unsafe" light is on. If it is a malfunction, repair it. If not, post an explanatory note to remove uncertainty.
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
	0135	There is a cylinder of 4% hydrogen in helium that is secured with a single chain. Two chains are needed to properly secure a full size cylinder.	Provide a second (lower) chain, or provide one of the LBNL aluminum plate holders.
	0138	Some of the chemical storage cabinets are overfilled, with containers stacked on top of other containers.	Provide additional storage for chemical containers, or discard unused containers to reduce the number.
	0142	Multiple cryogen dewars need to be restrained against movement during an earthquake.	Restrain the dewars.
	0155	There is a container of hydrofluoric acid that does not have secondary containment.	Provide secondary containment.
		There is no hydrofluoric acid exposure first aid kit in the area where hydrofluoric acid is used.	Contact Health Services at x6266 to obtain a HF treatment kit.
		There is a cabinet underneath the hood that is labeled "Flammable" but is used to store corrosives.	Relabel the cabinet to reflect the actual contents.
	0208	Incompatible chemicals (HCl and KOH) are stored together under the hood, not in secondary containment.	Provide separate secondary containment for each of the incompatible chemicals.
		A potential peroxide-forming chemical (cyclohexene) is stored under the hood. There is no information on the bottle to indicate when it was opened, or if or when it was tested for peroxides.	Assure that all potential peroxide-forming chemicals are handled per the EH&S guidelines for peroxide-forming chemicals. See http://www.lbl.gov/ehs/chsp/html/reactives.shtml

Building	Room	Finding	Action
	0242	There is a mercury barometer that poses a potential spill hazard.	Evaluate whether this unit is still necessary, and if not dispose of it.
		The cable tray does not appear to be grounded to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		An instrument rack need to be restrained against movement during an earthquake.	Restrain the instrument rack.
	0248	The foam sound absorbant material in the enclosures may be flammable and require fire protection within the enclosures.	Contact Gary Piermattei, x6370, to determine if supplemental fire protection is needed.
		The emergency eyewash and safety shower were blocked and not available for immediate use.	Maintain full accessibility to the EWSS at all times.
	0316	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Finely divided or water reactive pure metals (Ti, Mg, Zr, Ag) are present in the flammable cabinet, and should be stored separately from the flammables.	Provide storage for the metals separate from the flammables.
	0338	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		The power cord on the green tumbler is frayed and needs to be replaced.	Replace the power cord.
		There are multiple cords running to the central island that form a tripping hazard.	Provide permanent power to the central island so cords do not need to be laid across walkways.
		Incompatible materials (hydrogen peroxide (oxidizer) and flammable solvents (fuel)) are stored together in the flammables cabinet.	Provide separate storage for the incompatible materials.
	066	0201	A swivel chair with four legs appears to be in use.

Building	Room	Finding	Action
		The cable tray appears to require bonding (grounding to the building ground appears to be acceptable).	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.
	0204	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.
		There is a HF burn kit in this room, but no evidence of HF. The gel in the kit is out of date (2002).	If HF is used in this room, replace the gel by calling Health Services at x6266. If HF is not used in the room, discard the gel.
	0207	There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.
		Several swivel chairs with four legs appear to be in use.	Replace with five-legged, adjustable chairs. If the chairs are used at a computer work station, combine the chair replacement with an ergonomic assessment of the workstation.
		The door to the power supply of the ESCA was open for no apparent reason, exposing room occupants to high voltage.	Assure that the operator closes access doors to the ESCA power supply when the system is not being worked on.

Building	Room	Finding	Action
		There was a propylene cylinder that had one chain securing it against movement.	Provide a second (lower) chain, or provide one of the LBNL aluminum plate holders.
	0210	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Multiple cryogen dewars need to be restrained against movement during an earthquake.	Restrain the dewars.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		There was a nozzle on an air gun that had its "safety nozzle" defeated.	Repaired on site. Assure that all MSD personnel know not to defeat safety nozzles on air guns.
		The isolation pad has a tripping hazard associated with it.	Eliminate the tripping hazard.
	0218	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.
	0221	There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.
		There was hazardous waste in the hood that did not have completely filled out hazardous waste labels.	Complete the hazardous waste labels.
		Liquids in the underhood cabinet did not have secondary containment.	Provide secondary containment for all liquids.
	0224	The exit path from this laboratory was obstructed by a computer work station.	Relocate the work station out of the exit path.

Building	Room	Finding	Action
	0225	The cable tray appears to require bonding and grounding to the building ground. In addition, the laser tables need to be bonded together, and grounded.	Bond the laser tables with low-impedance wiring and connect to the building ground. EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		There are multiple outlet strips and extension cords serving the desk.	Provide permanent building power to the desk area.
	0231	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
	0232	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Liquid containers on the upper shelves of the flammable storage do not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).
	0301	Liquid containers on the upper shelves of the flammable storage cabinet, in the refrigerator, and on the benchtop did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).
		There was a "Do Not Drink" sign on the emergency drench hose. This sign was placed there many years ago as was the result of water quality problems that have been corrected.	Remove the "Do Not Drink" sign.

Building	Room	Finding	Action
		A potential peroxide-forming chemical (tetrahydrofuran) is stored in the flammable storage cabinet. There is no information on the bottle to indicate when it was opened, or if or when it was tested for peroxides.	Assure that all potential peroxide-forming chemicals are handled per the EH&S guidelines for peroxide-forming chemicals. See http://www.lbl.gov/ehs/chsp/html/reactives.shtml
		In the flammable storage cabinet there are many chemicals without inventory stickers.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
		There was a bottle of hazardous waste from the HPLC that was outside of the Satellite Accumulation Area. The HPLC was not running.	Hazardous waste containers must be in the Satellite Accumulation Area except when waste is being added to them.
		Under the hood there are incompatible chemicals stored without adequate separation/segregation.	Provide separation and segregation of incompatible materials.
	0304	Two vented flammable storage cabinets were not seismically secured.	Secure the cabinets.
	The glovebox was not adequately secured against seismic movement.	Secure the glovebox.	
	The glovebox, a contaminant-control device, is not included in the Ventilation Database.	Contact John Seabury, x6547, to include this unit in the Ventilation Database.	
	There were beakers in the hood and on the table that did not have labels as to their contents.	Prepare labels listing contents, hazards and a person to contact. Provide liquid-tight containers for storage.	
	Beakers of liquid on the table did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use.	
	The vacuum pump does not have a pan to catch oil drippings.	Provide an oil catch pan.	
	0310	There is a "No Pacemakers" sign on the door, implying a severe magnetic or RF hazard. EH&S is not aware of any hazard assessment supporting this sign.	Contact Ted de Castro, x5256, to document the extent of the hazard, if any.

Building	Room	Finding	Action
		Materials stored or in use throughout the laboratory do not provide sufficient exit pathway width.	Tidy up, relocate or dispose of excess materials to provide minimum 24" exitways from all laboratory locations.
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
	0313	There is inadequate access/egress to and from the confocal microscope.	Provide minimum 24" exit path from the confocal microscope.
	0322	There is an oven on the benchtop that is not seismically secured. This was noted in an inspection on 2/19/2003 but had not been corrected three months later.	Secure the oven.
	0324	Multiple ovens may have asbestos door seals.	Call Ron Acord, x4942, to assess hazard from potentially asbestos containing door seals.
		The hazardous materials storage cabinet marked "corrosive" has flammables stored within.	Either change the sign to indicate flammables, or remove the flammables.
		A potential peroxide-forming chemical (tetrahydrofuran) is stored in the flammable storage cabinet. There is no information on the bottle to indicate when it was opened, or if or when it was tested for peroxides.	Assure that all potential peroxide-forming chemicals are handled per the EH&S guidelines for peroxide-forming chemicals. See http://www.lbl.gov/ehs/chsp/html/reactives.shtml
		There is an oven stored and presumably used on top of a flammable storage cabinet.	Remove this heat source from the top of the flammable storage cabinet.
		The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Liquid materials stored on upper shelves of the tall flammable cabinets do not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).

Building	Room	Finding	Action
	0328	Potential peroxide-forming chemicals (diethyl ether) were present in the laboratory. There is no information on the containers to indicate when it was opened, or if or when it was tested for peroxides.	Assure that all potential peroxide-forming chemicals are handled per the EH&S guidelines for peroxide-forming chemicals. See http://www.lbl.gov/ehs/chsp/html/reactives.shtml
		Throughout the laboratory there are many chemicals without inventory stickers.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
		There is an unlabelled container of some liquid stored under the sink.	Provide labels listing contents, hazards and a person to contact.
	0331	There were several containers of acids stored under the sink and under the hoods that did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use.
	0401	The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		In general, this laboratory is cluttered with apparently unused equipment and supplies stored somewhat haphazardly. As a result, exit aiseways are blocked.	Tidy up, relocate or dispose of excess materials to provide minimum 24" exitways from all laboratory locations.
	0403	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		There were several containers of liquids on the benchtop that did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use.
		Throughout the laboratory there are many chemicals without inventory stickers.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
0407	Several cryogen dewars need to be restrained against movement during an earthquake.	Restrain the dewars.	

Building	Room	Finding	Action
	0411	A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		Throughout the laboratory there are several chemicals without inventory stickers.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
		The mass spectrometer does not appear to be secured against movement during an earthquake.	Secure the mass spectrometer.
	0421	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
	0424	Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
		The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
	0426	There were beakers in the hood and on the benchtops that did not have labels as to their contents, nor did they have secondary containment.	Prepare labels listing contents, hazards and a person to contact. Provide liquid-tight containers for storage. Provide secondary containment for liquids.
		Liquid materials in the flammable storage cabinet did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).
		A cryogen dewar needs to be restrained against movement during an earthquake.	Restrain the dewar.
		An electrical panel had access blocked.	Provide clear access to the electrical panel, 30" deep, the width of the panel, full height.

Building	Room	Finding	Action
	0427	There were several materials (acrylonitrile, nitric acid, etc.) that did not have chemical inventory labels.	Add the chemicals to the inventory, provide inventory stickers and assure that the inventory has been verified within the previous 12 months.
	0430	There were several health hazard gases present and presumably used (1,3-butadiene, nitric oxide, methyl chloride) that require an Activity Hazard Document for their use per LBNL requirements. EH&S is not aware of any approved AHD for this use.	Contact Larry McLouth x5286 to prepare an Activity Hazard Document for these uses.
		An electrical panel had access blocked.	Provide clear access to the electrical panel, 30" deep, the width of the panel, full height.
		Liquid materials in the hood did not have secondary containment.	Provide secondary containment for all liquid containers in storage and in use. For upper shelves of storage cabinets, provide trays, etc. (the cabinet functions as secondary containment for liquids stored in the bottom only).
		The cable tray appears to require bonding and grounding to the building ground.	EH&S is preparing, and will issue, guidelines on cable tray bonding and grounding.
		Windows on chambers should be protected against damage and risk of flying glass fragments.	Cover or otherwise protect the chamber windows.
	0433	There was a Class IV argon laser in this room with the power supply "on", indicating that it is in use. EH&S is not aware of any approved AHD for this use.	Contact Ted de Castro, x5256, to obtain an AHD for this use.