

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Space registration/Green card was not accurate and/or missing.	GS-1	General Safety	<p>Information on the hazards, activities and /or emergency personnel for room(s) in roomset for PI/Supervisor is not up to date in the PI Space Registration system. This should be kept current on an ongoing basis and reviewed at a minimum of once a year.</p> <p>Green Card outside of lab/space is not accurate or missing. The Green Card is used to: (1) to be able to contact lab members 24 hours a day if an emergency occurs inside the lab/space and (2) an emergency outside the lab impacts lab equipment (e.g. water leak that may damage equipment). Knowledgeable lab members could provide valuable information about the current hazards to the MIT Emergency Response Team and the Fire Dept</p> <p>(Modified: 09/22/2008)</p>	
Rooms were not posted with warnings for the hazards present in the room.	GS-2	General Safety	<p>One or more of the following signs required due to potential hazards as determined by PI space registration might be missing: radioactive material, BL, laser, magnetic field, etc.</p> <p><u>Reference:</u> OSHA Lab Standard 29CFR1910.1450 and NFPA 45</p> <p>(Modified: 09/22/2008)</p>	
Required EHS training was not up to date.	GS-3	General Safety	<p>EHS Training must be kept up to date for all current lab members.</p> <p>(Modified: 09/22/2008)</p>	
The appearance of the laboratory/shop was not neat, orderly and clean.	GS-4	General Safety	<p>Poor housekeeping can lead to trip/fall hazards, as well as life/fire safety code violations. Examples of poor housekeeping include: storage of materials in aisle ways between laboratory benches, restricted or block exits, cluttered work surfaces, desks and bench tops, as well as blocked emergency equipment. Waste containers of all types should be emptied on a regular basis. Do not stack containers.</p> <p>Clean-up of spills is addressed in GS-5. Lab benches should be free of chemical residues, razor blades and other sharps.</p> <p>Any items which must be stored in aisleways should be positioned on only one side. Aisleways in work areas must be maintained a minimum of 36 inches. Main corridors must</p>	

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			<p>be maintained a minimum of 44 inches.</p> <p>Leaks from pipes, ceiling or other facility related equipment should be reported immediately to the local facilities zone office. Caution tape, barriers or warning signs should be erected to warn others who may enter the area until such time as the leak has been repaired and the area cleaned.</p> <p>For general purpose storage, a rule of thumb is 15 pounds per sq. foot of wall mounted shelf. Heavy items should preferably be stored on free-standing storage shelving that has been designed for that purpose and the heaviest items should be stored on the lowest shelves. Avoid storing power supplies, monitors and CPUs on standard wall shelving that is intended for book storage. Storage must be kept a minimum of 18 inches from ceiling or wall mounted sprinkler heads. Storing items on the tops of fume hoods is prohibited.</p> <p>(Modified: 09/22/2008)</p>	
There was evidence of spills not properly cleaned up.	GS-5	General Safety	<p>Evidence of spills not properly cleaned up may include: liquid or solid residues, stains, discolored surfaces or puddles anywhere in space, including around benches, floors and/or equipment.</p> <p>(Modified: 09/22/2008)</p>	
There was evidence of eating and/or drinking in the area.	GS-6	General Safety	<p>No eating, drinking, gum-chewing or applying cosmetics are allowed in the lab/space. Do not store food, drink, cups or other eating and drinking utensils in the lab/space. Additionally, empty food or drink containers/wrappings must not be disposed of in the lab/space trash can, even if consumed outside the lab/space.</p> <p>The State of Massachusetts Radiation Control Program does not allow eating, drinking, or cosmetic application in the vicinity of radioactive materials.</p> <p><u>Reference:</u> Massachusetts Department of Public Health 105CMR120</p> <p>(Modified: 09/22/2008)</p>	

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Compressed gas cylinders were not properly secured and/or labeled.	GS-7	General Safety	<p>Compressed gas cylinders must be properly restrained and labeled. Wherever feasible, cylinders should be restrained singly, by use of a separate restraint system for each cylinder. If multiple cylinders must be restrained by a single restraint such as a belt or chain, the restraint system must be sufficient to prevent any of the cylinders from falling or rolling.</p> <p>Standing cylinders are properly restrained when a tight, sturdy chain or belt restraint is used around the body of the cylinder but above the center of gravity (about 2/3 of the way up the cylinder) at all times, including when empty. If the restraint is not tight or is too low on the cylinder, a cylinder may tip with enough force to break the restraint. The restraint must either be securely attached to a wall or sturdy work surface. Alternatively, a gas cylinder stand designed for holding cylinders may be used.</p> <p>Storing cylinders on a cart is not an acceptable storage method and the cart should be used for transport only.</p> <p>All compressed gas cylinder need to be clearly labeled as to their contents for obvious operational and emergency response purposes.</p> <p>OSHA 29 CFR 1910.101 references the Compressed Gas Association. The GCA outlines the required in-plant handling and storage practices for compressed gas cylinders.</p> <p><u>Reference:</u> OSHA 29CFR1910.101 MIT EHS SOP, Compressed Gases</p> <p>(Modified: 09/22/2008)</p>	
Vacuum aspirator setup was incorrect or was missing in-line filter.	GS-8	General Safety	<p>Tap water cannot be used to generate a vacuum for aspiration of chemicals. All house vacuum systems must be protected by an inline HEPA filter. The inline HEPA filters are used as part of an aspiration set up to prevent biological liquids from being aspirated into the house vacuum lines.</p> <p><u>Reference:</u> BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	

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Non-BL Lab Sharps were not properly managed.	GS-9	General Safety	<p>Non-contaminated sharps may include: pipettes, non-functional needles &amp; syringes, slides, cover slips, blades, and broken glass. Place these items in a puncture-proof container for disposal in the regular trash.</p> <p>For potential re-useable needles &amp; syringes, dispose of them as contaminated sharps.</p> <p>Contaminated sharps and laboratory debris include material having free liquids or gross contamination by hazardous chemicals. These are to be accumulated in accordance with MIT hazardous waste regulations in leak-proof, sealable, and puncture-proof containers. 5-gallon containers are currently provided by the EHS Office for the accumulation of this waste.</p> <p>Biologically contaminated sharps: See BS9</p> <p>(Modified: 09/22/2008)</p>	
Personnel were not aware of or following drain disposal guidelines.	GS-10	General Safety	<p>Drain disposal guidelines must be followed. The EHS Office has developed a list of chemicals and materials that may be discharged into sinks or floor drains based on regulatory requirements, MIT EHS policy and professional judgment regarding the potential impact of a chemical if discharged down the drain. Only materials that are described in these guidelines may be discharged to drains unless authorized by EHS.</p> <p>Discharge pH must be maintained between 5.5 and 12. Some drains may be connected to treatment systems. Materials with a pH below 2 or above 12 must generally be collected as a hazardous waste. Tap water cannot be used for vacuum aspiration of chemicals or for non-contact cooling purposes.</p> <p>Inspect sink areas to determine if there is evidence of chemicals being disposed to drain, vacuum aspiration or non-contact cooling with tap water. If there is evidence or likelihood of drain disposal, ask persons working in the area what gets disposed to the drain and if they are aware of the guidelines.</p> <p><a href="http://web.mit.edu/environment/ehs/topic/water_quality.html">http://web.mit.edu/environment/ehs/topic/water_quality.html</a></p> <p>(Modified: 09/22/2008)</p>	<p style="text-align: right;">*</p>

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Use of mechanical lifting equipment was not restricted to trained employees, and/or not under the control of a trained user, and/or not secured to prevent unauthorized use.	GS-11	General Safety	<p>An individual in the DLC who possesses the appropriate hoisting license will be the designated person responsible for the hoisting equipment program within the DLC. The remaining employees that operate hoisting equipment in the department will work under the designated person's license. Equipment operators shall be required to complete the Crane and Hoist Safety training and if using forklifts, the Powered Industrial Trucks training. Hoisting equipment includes: overhead hoists, overhead cranes, lifting devices, powered platforms, powered industrial lift trucks and fork lifts.</p> <p>Reference: 520 CMR 6.00: Hoisting Machinery</p> <p>MIT EHS SOP, Regulations / Guidelines for Powered Industrial Trucks</p> <p>(Modified: 09/22/2008)</p>	
Lock Out Tag Out procedures were not followed where required.	GS-12	General Safety	<p>All equipment required to have the energy source locked out during maintenance and repairs must be identified. All sources of energy are included: mechanical, electrical, hydraulic, pneumatic, chemical, and thermal.</p> <p>This would not include equipment where the energy is controlled completely by unplugging the equipment from an electric outlet and where the person doing the service or maintenance has exclusive control of the plug.</p> <p>OSHA requires that workers or researchers that service or maintain machines or equipment where the unexpected startup, energization, or the release of stored energy could cause injury, be protected from this potential hazard. The Lockout/Tagout standard requires the adoption and implementation of practices and procedures to shut down equipment, isolate it from its energy source(s), and prevent the release of potentially hazardous energy while maintenance and servicing activities are being performed. Locks are supplemented by DANGER tags which identify the person responsible for the lock out, the reason, date, etc.</p> <p>If this equipment is identified, contact EHS for further guidance.</p> <p>Reference: OSHA 29 CFR 1910.147</p> <p>(Modified: 09/22/2008)</p>	<p style="text-align: right;">*</p>

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There was no Lock Out Tag Out kit available where required.	GS-13	General Safety	<p>DLCs are required to have a Lock Out Tag Out kit with equipment for locking out energy sources when equipment required to be locked out is identified in the DLC. See GS-12.</p> <p>Reference: OSHA 29 CFR 1910.147</p> <p>(Modified: 09/22/2008)</p>	
An appropriate sign was not posted at a known confined space.	GS-14	General Safety	<p>All confined spaces must be identified. A confined space meets all of the following criteria:</p> <ol style="list-style-type: none"> <li>1. Is large enough and so configured that a person can bodily enter and perform assigned work or research.</li> <li>2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).</li> <li>3. Is not designed for continuous person occupancy.</li> </ol> <p>Workers or researchers who are exposed to confined spaces must be informed of this by posting danger signs, or through other equally effective means. The information that must be communicated is the existence of the location, and other dangers from the confined space.</p> <p>If confined spaces are identified, contact EHS for further guidance.</p> <p>Reference: OSHA 29 CFR 1910.146(c) (2)</p> <p>(Modified: 09/22/2008)</p>	*
No railings in place for a platform, scaffold, and / or work surface higher than 4 feet.	GS-15	General Safety	<p>OSHA regulations require that any platform, scaffold or work surface, permanent or temporary, that is 4 feet or greater in height be guarded by railings. If this is not feasible, then fall protection (harness &amp; lanyard) are necessary. This would include temporary platforms on equipment that was being serviced, maintained, repaired, adjusted or tested.</p> <p>Reference: OSHA 29 CFR 1910.23</p> <p>(Modified: 09/22/2008)</p>	*

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Other General Safety Finding (see details):	GS-99	General Safety	See finding details or ask your EHS DLC Coordinator for more information.  (Modified: 09/22/2008)	
Current emergency response information (e.g., Green Cards, flip charts, evacuation maps, etc.) was not appropriately posted in all required areas.	EP-1	Emergency Preparedness	<p>Green Cards see: GS-1</p> <p>MIT Emergency Response Guide/ Flip Chart must be posted in every lab in a prominent place. Order a Sign &amp; Sticker order online at: <a href="http://mit.edu/environment/ehs/topic/order_signs.html">http://mit.edu/environment/ehs/topic/order_signs.html</a></p> <p>Evacuation maps must be placed: next to doors leading to fire rated egress stairwells, next to elevators, and other appropriate locations that the emergency coordinator and EHS have designated.</p> <p>EHS Coordinators should check with their EHS Lead Contact to determine other required postings, such as radioactive material, BL, laser, magnetic field, etc., as determined by the space registration.</p> <p><u>Reference:</u> OSHA Lab Standard 29CFR1910.1450 Fire Protection for Laboratories Using Chemicals, NFPA 45 OSHA 29CFR1910.38 Life Safety Code, NFPA 101</p> <p>(Modified: 09/22/2008)</p>	
Emergency eye wash stations/drench showers were obstructed.	EP-2	Emergency Preparedness	<p>Eye wash station / drench shower must be readily accessible and the locations clearly marked with signage. Remove any obstructions around eyewashes or beneath showers that would hinder the proper use of the eyewash or shower.</p> <p>(Modified: 09/22/2008)</p>	

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Emergency eye wash stations/drench showers were not appropriately tested / inspected / tagged.	EP-3	Emergency Preparedness	<p>Regular testing and inspection must be performed to ensure equipment readiness in the event of an emergency.</p> <p><b>Safety Showers</b> – run/tested twice yearly (Department of Facilities)  <b>Plumbed eye-wash stations</b> – run/cleaned on a weekly basis (DLC)  <b>Portable eye-wash units</b> – inspected monthly to ensure that bottles are full and that expiration date is current (DLC)</p> <p>(Modified: 09/22/2008)</p>	
Area was not equipped with sufficient drench showers and eye wash stations.	EP-4	Emergency Preparedness	<p>Eye wash and drench showers are required where injurious corrosive materials are present. Inspection and maintenance is outlined by the American National Standard for Emergency Eyewash and Shower Safety. This standard applies to the design, location, testing, performance and maintenance of eyewash and safety showers.</p> <p>Reference: OSHA 29CFR1910.151            248 CMR 10.00            527 CMR 10.00            ANSI Z358.1</p> <p>Contact EHS for further guidance including options to install additional units.</p> <p>(Modified: 09/22/2008)</p>	*
Fire extinguisher tag was missing or outdated.	EP-5	Emergency Preparedness	<p>Contact Department of Facilities to replace tag or test and retag extinguisher</p> <p>(Modified: 09/22/2008)</p>	
Fire extinguisher was missing, discharged, or inaccessible.	EP-6	Emergency Preparedness	<p>Portable fire extinguishers must be readily accessible and not blocked by equipment or other obstruction, so they are available to either trained lab personnel or emergency personnel in the event of a fire.</p> <p>Reference: OSHA 29CFR1910.157            527 CMR 10.00</p>	*

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			<p>Portable Fire Extinguishers, NFPA 10</p> <p>(Modified: 09/22/2008)</p>	
Emergency strobe lights were obstructed.	EP-7	Emergency Preparedness	<p>Storage must be kept away from strobe lights (at least 12 inches) so that the flashing light can be seen in all directions in an emergency.</p> <p>(Modified: 09/22/2008)</p>	
Clearance around sprinklers was less than 18".	EP-8	Emergency Preparedness	<p>The clearance below and horizontally from the top of the sprinkler head must be 18 inches or greater from any storage/shelving/items.</p> <p>Contact EHS for further guidance.</p> <p>(Modified: 09/22/2008)</p>	
Appropriate Biological/chemical spill kit was not readily available.	EP-9	Emergency Preparedness	<p>Biological: Biological spill materials should include disinfectant (e.g., low-mercury bleach) gloves, paper towels or other absorbent material, tongs/forceps, dustpan and broom, safety glasses or face shield, spray bottle, autoclave bags for disposal, etc. The laboratory should have enough absorbent materials to deal with the largest spill possible within the area. The ability to control and contain a spill of biological materials is essential for the safe conduct of biological research.</p> <p>Chemical: Spill response equipment should be available to respond to minor spills of the hazardous materials present in the lab or space. This could be as simple as paper absorbents for labs with minor chemical use. For larger users this should include a dedicated response "kit" which would include appropriate PPE, absorbents or neutralizers suitable for the types of materials used, disinfecting agents for biologic agents if applicable and containers or bags for collection of the debris. If floor drains are present, it should include material to cover or protect the drain.</p> <p>Chemical Spill kits can be customized and ordered through the EHS Office for a fee email: <a href="mailto:environment@mit.edu">environment@mit.edu</a></p>	

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Other Emergency Preparedness Finding (see details):	EP-99	Emergency Preparedness	See finding details or ask your EHS DLC Coordinator for more information. (Modified: 09/22/2008)	
Extension cords were not used properly (e.g., daisy chained, used in place of permanent wiring)	ES-1	Electrical Safety	<p>Extension cords (including power strips) are not to be used as a substitute for the fixed wiring of a structure. Extension cords are prohibited for equipment in continuous service, with the exception of computers. Computer peripherals are not exempt. Cube taps (outlet multipliers) should not be used. Strip outlets with overload protection may be used, but only with low-amperage devices, and within the capacity of the strip. Grounding plug adapters should not be used. Nearly all electrical outlets are three-prong type; therefore, this will unlikely be seen at MIT.</p> <p>Cords and cord-use applications must be evaluated based on the following criteria:</p> <p>Grade of the cord: It should be of commercial grade and in sound, non-compromised condition. Shop-made cords or any non UL or ANSI cords must not be used. Commercial-grade cord sets will have an outer cover enclosing the inner conductors (which themselves are insulated). Narrow gauge home-use types are not acceptable in most applications. Actual reading of the classification of the cord is not necessary, but it should be evident that the cord is of reasonable quality and durability.</p> <p>Placement of the cord: The cord must not be draped over, on or under objects which crimp, crush, or cut the cord or conductors within. The cord must not cause a trip hazard. Cords should not be used in series.</p> <p>Devices served by the cord: Use of high-demand devices (which draw high current/amperage) for long periods, such as resistance heaters, broilers, large motors, air conditioners, compressors, etc., should be more closely evaluated as to whether they exceed the rated capacity of the cord. These devices generally have specific restrictions on length and gauge of cord required, if an extension cord is used. Manufacturers of certain high-demand devices prohibit the use of extension cords.</p> <p>Simpler devices such as computers, monitors, simple light fixtures, radios, small</p>	

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			<p>electronics, etc., are less likely to draw current that will exceed commercial extension cords. The distinction regarding these devices requires that knowledge and judgment be used in the assessment process.</p> <p>If an application is encountered that is clearly questionable, but is not readily or confidently answered, it should be flagged for further evaluation. For example, if a large refrigerator is temporarily being run from heavy-gauge but relatively long extension cord you will not be able to determine if the length for the gauge is adequate. This should be noted as an item for further investigation but not a finding.</p> <p><u>Reference:</u> OSHA 29 CFR 1910.305 and EHS SOP Guidelines for Inspecting Extension Cords</p> <p>(Modified: 09/22/2008)</p>	
Electrical equipment, cords, plugs and wiring were not maintained in good condition.	ES-2	Electrical Safety	<p>The cord and plug must be in good condition, free of splits, cracks, or derangement. Repairs to cords are generally not acceptable unless it returns the cord to its original level of continuity; this requires some judgment. Generally, flimsy repairs or many repairs (to the same cord set) are not acceptable.</p> <p>(Modified: 09/22/2008)</p>	
An appropriate High Voltage warning sign was not posted.	ES-3	Electrical Safety	<p>High voltage warning signs required for voltages equal to or greater than 600 volts.</p> <p>Reference: OSHA 29 CFR 1910, Subpart S</p> <p>(Modified: 09/22/2008)</p>	
Access to an electrical panel was obstructed.	ES-4	Electrical Safety	<p>Access to electrical panels needs to be unobstructed to allow for quick access in the event of an emergency if power needs to be de-energized.</p> <p>A minimum of 36 inch working clearance in front of electrical panels is required and the working space may not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be suitably guarded</p>	

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			<p>Reference: OSHA 29CFR1910.303 527 CMR 12.00</p> <p>(Modified: 09/22/2008)</p>	
<p>An area where wet conditions are anticipated was not protected by a Ground Fault Circuit Interrupter (GFCI).</p>	<p>ES-5</p>	<p>Electrical Safety</p>	<p>Ground Fault Circuit Interrupters (GFCI) are required for any area where wet conditions are expected or anticipated nearby; this would include bathrooms, janitors closets, outlets near sinks of any kind or wet process areas.</p> <p>Any workplace or work classification that comprises non-fixed, non-standard activities should be considered as a construction activity. For construction activities, all portable and temporary electrical devices are required to be used with a GFCI</p> <p>A GFCI is a device intended for the protection of personnel that functions to de-energize a circuit within an established period of time when a current to ground is 6 mA or higher.</p> <p>GFCIs can be the outlet itself or at an outlet downstream of a number of outlets on the same circuit or at the breaker panel. It is harder to verify the breaker panel as being GFCI protected as you usually have to look at the breaker itself. Sometimes outlets that are protected at the breaker are so indicated as GFCI protected. If you are not sure contact the Department of Facilities. GFCIs can also be present as an adapter or as part of an extension cord. GFCIs work with two or three prong plugs.</p> <p>Reference: OSHA 29 CFR 1910, Subpart S</p> <p>(Modified: 09/22/2008)</p>	<p>*</p>
<p>Exposed electrical wiring was observed.</p>	<p>ES-6</p>	<p>Electrical Safety</p>	<p>Exposed electrical wiring is wiring that has live parts (energized conductive components), i.e. not insulated, isolated or guarded, capable of being inadvertently touched or approached nearer than a safe distance by a person.</p> <p>Reference: OSHA 29 CFR 1910, Subpart S</p> <p>(Modified: 09/22/2008)</p>	<p>*</p>

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Portable electric tools and equipment were not grounded/double insulated.	ES-7	Electrical Safety	<p>All small, portable electrical devices must either have a three pronged cord, or be of “double insulated” design (two pronged plug). Generally this means that the housing and parts that the user touches are non-conductive (e.g. plastic) or that the internal conductors cannot contact the housing (shielded). The designation of “double insulated” is usually on the device. Nearly all UL approved devices are double insulated or have three-pronged plugs. Older, non-standard devices would be most suspect and should be checked.</p> <p>You can generally see that a plug is three-pronged by the shape of it, without unplugging the device. Generally you should not unplug devices to determine this.</p> <p>Reference: OSHA 29 CFR 1910, Subpart S</p> <p>(Modified: 09/22/2008)</p>	
Other Electrical Safety Finding (see details):	ES-99	Electrical Safety	<p>See finding details or ask your EHS DLC Coordinator for more information.</p> <p>(Modified: 09/22/2008)</p>	
Hazardous liquids were stored above eye level.	CS-1	Chemical Storage & Use	<p>No corrosive, toxic, reactive or flammable liquid should be stored where it is difficult for <i>any</i> member of the lab to reach without having a clear view, i.e. eye level, because of the risk that the container could be dropped during handling, presenting a significant hazard. In addition, potential problems with containers, e.g. leaking or damaged, are obscured when the hazardous liquids are not in clear view.</p> <p>(Modified: 09/22/2008)</p>	
Chemical containers were not properly labeled.	CS-2	Chemical Storage & Use	<p>For labs: Labels for all containers, including containers of non-hazardous materials, must identify contents of container and be legible. For materials generated in the lab, the label must also contain the generator’s name or initials and date generated.</p> <p>Labels must be firmly affixed to container.</p> <p>Codes and abbreviations may be used, but all members of the lab need to know either what the code or abbreviation means, or where to access the key to the code. The key</p>	

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			<p>must be in a prominent location.</p> <p>Small containers of chemicals can be labeled in groups by labeling an outer container.</p> <p>For all other areas: Labels for all containers, including containers of non-hazardous materials, must identify contents of container and must be legible.</p> <p>Labels must be firmly affixed.</p> <p>Working containers that are not the original container for a product must be labeled with chemical product name and chemical hazard, as found on the original label.</p> <p>(Modified: 09/22/2008)</p>	
<p>Incompatible chemicals were stored together.</p>	<p>CS-3</p>	<p>Chemical Storage &amp; Use</p>	<p>Detailed guidance for compatible storage can be found in the SOP <i>Chemical Storage</i>. The greatest concern is with liquids, but solids and liquids together also should be scrutinized for compatibility issues.</p> <p>Some common problems are: Organic acid stored with oxidizing acid, e.g. acetic acid and nitric acid.</p> <p>Acids and bases stored together.</p> <p>Anhydrides should be separated from all other materials wherever they are stored. Different anhydrides should be stored separately from each other.</p> <p>Organic chemical stored with oxidizing chemical, e.g. acetone and hydrogen peroxide.</p> <p>Cyanides (solid or liquid) stored with acids, or other liquids (not common, but a bad situation)</p> <p>Water reactives stored near liquids.</p> <p>Secondary containment can be used to isolate incompatible materials where space is limited for separate storage.</p> <p>(Modified: 09/22/2008)</p>	

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Flammable liquids were stored in a nonflammables storage refrigerator.	CS-4	Chemical Storage & Use	Flammables (chemicals with a flashpoint of 100 F or less) must be stored in a refrigerator designed for such storage and labeled as UL approved for flammable storage. Flammables in a regular refrigerator can present a fire hazard because of ignition sources in the refrigerator and potential for build up of flammable vapor in the confined, unventilated location.  (Modified: 09/22/2008)	
Liquid Chemicals were stored on the floor without secondary containment.	CS-5	Chemical Storage & Use	Liquid chemicals must be stored on the floor in appropriate secondary containment. Containers on the floor must be appropriately placed, e.g. not in high traffic areas or blocking egress paths, to minimize the possibility of damage to the container. . Chemicals that remain in their original DOT packaging do not need secondary containment.  (Modified: 09/22/2008)	
Volatile hazardous materials were stored in a cold room.	CS-6	Chemical Storage & Use	Volatile hazardous materials must not be stored in a cold room. Since cold rooms do not have a good exchange of air and have ignition sources, storage and potential use of volatile hazardous materials in these rooms creates significant risk of a toxic, corrosive or flammable environment.  (Modified: 09/22/2008)	
Chemical containers were in poor condition.	CS-7	Chemical Storage & Use	Containers and caps should be intact, not dented, cracked or rusted.  (Modified: 09/22/2008)	
MSDSs were not readily accessible.	CS-8	Chemical Storage & Use	Persons working in lab or shop should know how to quickly obtain an MSDS for chemicals that are in the lab or shop. In shops, where the number of chemicals is usually limited, it is recommended that the MSDS be available in a notebook. MSDSs can be obtained from a variety of sources such as the internet, the chemical manufacturer, or by contacting the EHS Office for assistance.	

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Other Chemical Storage Finding (see details):	CS-99	Chemical Storage & Use	<p>Some additional possible findings: The storage area is quite dirty or excessively corroded.</p> <p>The storage area has insufficient ventilation, e.g. non-flammable but volatile toxics stored in a closet or other space with no ventilation.</p> <p>A High quantity of seldom-used hazardous materials is present, indicating failure to maintain good accounting of materials present or failure to dispose of materials no longer needed.</p> <p>Storage space is limited, causing chemicals to be crowded together or stacked on top of one another.</p> <p>Chemicals are stored in an inappropriate cabinet.</p> <p>(Modified: 09/22/2008)</p>	
Chemical waste containers were not firmly closed.	SAA-1	Satellite Accumulation Area (SAA)	<p>Chemical waste containers must be firmly closed except when waste is being added to the container. A container is considered <i>closed</i> if material will not pour out if the container is tipped and vapors are controlled.</p> <p>Pressure relieving caps should be used for hydrogen peroxide and wastes which may continue to react and generate pressure.</p> <p>If attached funnels are used, they must be liquid tight and have closed covers.</p> <p><u>Reference:</u> 40 CFR 265.173</p> <p>(Modified: 09/22/2008)</p>	

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Multiple waste containers of a single waste stream were within an SAA.	SAA-2	Satellite Accumulation Area (SAA)	<p>Hazardous waste regulations permit only one active container of hazardous waste per process in a given SAA. Once the active container is filled and dated, a second container of the same waste stream can be started. The full container must be removed from the SAA within 3 days. (The three day issue for full containers is dealt with in SAA5). The container size cannot exceed 55 gallons for hazardous waste and 1 quart for acutely hazardous waste.</p> <p>If full containers are noted in an SAA check the date and ensure that a request for pickup has been generated online at the MIT EHS website or by calling the MIT EHS office at x2-3477.</p> <p><u>Reference:</u> 310 CMR 30.340(6)(c) and Fact Sheet published by the MA DEP in September 2005</p> <p>(Modified: 09/22/2008)</p>	
Chemical waste containers were inappropriate or in poor condition.	SAA-3	Satellite Accumulation Area (SAA)	<p>Chemical waste containers should be of seamless construction and not cracked or otherwise damaged. Typically, triple-rinsed glass or plastic bottles of various sizes are used, with original labels removed or fully obscured. Containers must have lids that are in good condition. Venting or pressure relieving covers should be used for wastes which may continue to react and build pressure. Obviously inappropriate containers, such as makeshift containers, food containers, etc., should not be used.</p> <p>Containers must be compatible with the waste stored in them, e.g. Hydrofluoric acid should not be stored in glass container, corrosives not in metal containers.</p> <p>(Chemical compatibility tables and charts are available for basic and common questions where chemicals are stored. See: <a href="http://web.mit.edu/environment/ehs/chemical_storage.html">http://web.mit.edu/environment/ehs/chemical_storage.html</a>)</p> <p><u>Reference:</u> 310 CMR 30.340 and 30.253</p> <p>(Modified: 09/22/2008)</p>	

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Tags or labels on chemical waste containers were missing, incomplete, inaccurate or not legible.	SAA-4	Satellite Accumulation Area (SAA)	<p>The red "Hazardous Waste" tags must be properly completed with the following information:</p> <p>Name of chemical(s) printed legibly in English without abbreviations or chemical formulas.</p> <p>The applicable hazard characteristic(s) checked, i.e. ignitable, corrosive, reactive, and/or toxic.</p> <p>The building and room where the waste was generated.</p> <p>The generator's name, i.e. the name of the person responsible for creating the specific waste stream.</p> <p>The name of the Principal Investigator/Supervisor overseeing the activity resulting in the hazardous waste generation.</p> <p>Once a container in a SAA is or nearly full, e.g. to the bottle shoulders, the date must be written on the label.</p> <p>Red hazardous waste tags are available from the MIT EHS Office.</p> <p><u>Reference:</u> 40CFR262.34 and 310 CMR 30.341</p> <p>(Modified: 09/22/2008)</p>	
Dates on labeled containers with the SAA were over 3 days old.	SAA-5	Satellite Accumulation Area (SAA)	<p>All containers, full or otherwise ready for collection must be dated. Once dated, they can be kept in an SAA for a maximum of three days. Then they must be removed to a Main Accumulation Area (MAA).</p> <p><u>Reference:</u> 310 CMR 30.340</p> <p>(Modified: 09/22/2008)</p>	

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
The label identifying the SAA was missing.	SAA-6	Satellite Accumulation Area (SAA)	<p>MIT requires that a green sticker that reads "HAZARDOUS WASTE SATELLITE ACCUMULATION ONLY" be used at each SAA to meet Environmental Protection Agency (EPA) requirements. This sticker should be readily visible on the secondary containment(s) or the immediate area to be used as an SAA. Other signs are not acceptable.</p> <p>Note: Green-and-white barber pole tape is used for Main Accumulation Areas (MAA).</p> <p>Reference: 40 CFR 260</p> <p>(Modified: 09/22/2008)</p>	
Incompatible wastes were not properly segregated.	SAA-7	Satellite Accumulation Area (SAA)	<p>Incompatible wastes cannot be stored in the same secondary containment, so that in the event of commingling (from breakage or other localized spill or release) there will be no reactivity issues.</p> <p>Reference: 40 CFR 264.175</p> <p>(Modified: 09/22/2008)</p>	*
There was lack of appropriate secondary containment.	SAA-8	Satellite Accumulation Area (SAA)	<p>All chemical waste containers must be provided with secondary containment that is free of cracks or other damage. The MIT Environmental Management Program (EMP) provides and/or approves secondary containment for all hazardous waste storage areas.</p> <p>Reference: 40 CFR 264.175</p> <p>(Modified: 09/22/2008)</p>	
The SAA location was not appropriate	SAA-9	Satellite Accumulation Area (SAA)	<p>SAA's must be located near the point of waste generation. For example, if the generator has to go through a hallway or other public access area to get to his/her hazardous waste accumulation area, it cannot be considered at or near the point of generation.</p> <p>SAA's should not be near drains, sinks, or at locations where an accidental release could create a "release to the environment" such as near a sump pump or an unpaved or non-</p>	

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p>impervious areas (e.g., broken concrete floor).</p> <p><u>Reference:</u> 310 CMR 30.340 and 40 CFR 260</p> <p>(Modified: 09/22/2008)</p>	
Hazardous waste was kept outside a properly marked SAA.	SAA-10	Satellite Accumulation Area (SAA)	<p>Hazardous waste must be kept in a properly marked SAA.</p> <p><u>Reference:</u> 310 CMR 30.340 and 40 CFR 260</p> <p>(Modified: 09/22/2008)</p>	
Non-waste materials were kept in an SAA.	SAA-11	Satellite Accumulation Area (SAA)	<p>Hazardous waste and only hazardous waste must be kept in a properly marked SAA.</p> <p>(Modified: 09/22/2008)</p>	
SAA(s) was (were) not inspected weekly.	SAA-12	Satellite Accumulation Area (SAA)	<p>SAAs MUST be inspected weekly, though documentation of the inspection is not required. If weekly inspections are being done by users, problems should be minimal. Ask whether inspections are occurring and check the response against conditions you observe.</p> <p><u>Reference:</u> 310 CMR 30.686 and 40 CFR 260</p> <p>(Modified: 09/22/2008)</p>	
Multiple findings were identified in an SAA area (see details):	SAA-98	Satellite Accumulation Area (SAA)	<p>Multiple findings were identified in a single SAA (see details).</p> <p>(Modified: 09/22/2008)</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Other SAA Finding (see details):	SAA-99	Satellite Accumulation Area (SAA)	See finding details or ask your EHS DLC Coordinator for more information.  (Modified: 09/22/2008)	
Calcium gluconate gel was not present or was past the expiration date.	HF-1	HF	If you determine that hydrofluoric acid is in use or if a bottle of HF is visible, ask whether they have the calcium gluconate "antidote" gel and what the expiration date is. The date is printed on the salve tube/box. If it is expired or tube is open please have them call IHP to pick up a new tube.  (Modified: 09/22/2008)	*
Other HF Finding (see details):	HF-99	HF	Findings include: lack of proper training, personal protective equipment, and spill kits. If HF is present, are the workers trained for using HF? (Inspectors should spot check training status with people present in lab). Is the required personal protective equipment (face shields, apron, and HF-resistant gloves) and HF spill kit available? HF can not be stored in glass bottles.  Background: HF is an especially dangerous acid because its effects are delayed. The dilute solutions that are most frequently in use in the lab do not produce an immediate sensation of burning. Instead, HF penetrates the skin and produces a deep, very painful (and often disfiguring) burn hours after the initial skin contact. All users of HF at MIT must be trained in its use and have calcium gluconate gel in their lab (both web and classroom training are available). If any exposure is suspected, the user should wash with water for 5 minutes, apply the calcium gluconate gel (the calcium binds with the fluorine to prevent penetration), and then go to the Medical Department for follow-up treatment.  (Modified: 09/22/2008)	
Fume hood housekeeping was poor and/or had excessive clutter.	HS-1	Hoods Safety	Fume hoods should not be used as a storage area for chemicals, lab supplies and equipment that could be located elsewhere. Enough space should be available and equipment located so that chemical work can be conducted 6 inches back from the front of the fume hood. Hood surfaces must be kept clean. Nothing should protrude through the sash opening large enough to obstruct or disrupt airflow.  (Modified: 09/22/2008)	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
The back slot of the fume hood was greater than 50% obstructed.	HS-2	Hoods Safety	The back bottom slot of the fume hood must not be >50% obstructed within 6 inches of the slot. Obstruction of airflow can occur, creating turbulence and affecting containment. Obstructing equipment or materials should either be moved or mounted on small blocks or equipment grids, which will allow the air to flow under.  (Modified: 09/22/2008)	
The back slots of the fume hood needed cleaning.	HS-3	Hoods Safety	If the back slots of the fume hood have become sufficiently clogged with dust or debris to affect airflow, users must clean them using a wire brush.  (Modified: 09/22/2008)	
The fume hood had not been inspected or tagged by EHS within the last year.	HS-4	Hoods Safety	The EHS Industrial Hygiene Program (IHP) surveys all chemical hoods yearly to ensure that they are operating at their performance specifications. The MIT IHP sticker could be on either side of the hood where the sash slides and contains information on air velocity at the hood face, room and hood number, and survey date. If the hood is only effective to a specified sash height the sticker will indicate this. If the survey date is more than a year ago, you should notify the lab occupants and IHP. The inspection team or lab group should also contact IHP if they have questions or concerns.  (Modified: 09/22/2008)	*
Other Hoods Finding (see details):	HS-99	Hoods Safety	Fume hood slot must not be adjusted by user. Lab ventilation system must not be altered. Low flow alarms must not be ignored or disabled.  (Modified: 09/22/2008)	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
<p>Personal Protective Equipment (PPE) suitable for the hazards in the workplace was not available, stored appropriately, and/or maintained in generally good condition.</p>	<p>PPE-1</p>	<p>Personal protective equipment</p>	<p>All PPE must afford effective protection against the type of hazard present in the workspace, must fit and be worn properly, and must be stored and maintained so that the PPE does not become contaminated or exhibit wear and tear that diminishes its protective features. PPE includes protective headgear, earphones and earplugs, gloves (chemical, cut- and heat/cold resistant), safety shoes/foot protection, respirators/masks, safety glasses/goggles/face shields, and any special clothing specifically designed to protect the limbs and body from chemical, biological, ionizing radiation, non-ionizing radiation and fields, lasers, and other physical hazards. Since disposable PPE is not designed for repeated use, it must not be reused, since pinhole tears and other failures not visible to the naked eye may develop. Instructions for obtaining PPE, as well as a PPE hazard assessment form, are posted at: <a href="http://web.mit.edu/environment/ehs/ppe.html">http://web.mit.edu/environment/ehs/ppe.html</a>. OSHA law requires MIT (or your employer if not MIT) to provide PPE free of charge, provided the PPE is not used as street clothes.</p> <p>(Modified: 09/22/2008)</p>	<p style="text-align: center;">*</p>
<p>Laboratory/shop personnel were not wearing eye protection, lab coats, gloves and other appropriate PPE.</p>	<p>PPE-2</p>	<p>Personal protective equipment</p>	<p>Laboratory/shop personnel must wear appropriate PPE.</p> <p><u>Eye Protection:</u> OSHA, along with several MIT policies and programs, requires employers to provide employees with appropriate eye protection, and identifies classes of hazardous activity where eye protection may be necessary. Potential eye hazards include: biological, radiological, or hazardous chemical material/waste handling; laser work; ultraviolet light sources; certain light-generating activities (e.g., welding); and, activities generating airborne debris that can cut or abrade eye tissue. Many DLCs require eye protection at all times, and post "Eye Protection Required" signs in designated areas. Appendix D of the EHS SOP "Personal Protective Equipment" provides guidance on eye protection selection. Appendix E of the SOP provides instructions on ordering prescription safety glasses.</p> <p><u>Protective Clothing:</u> Protective clothing includes lab coats, Tyvek coveralls, jackets/aprons, and any special jackets/shirts/pants designed to provide a level of protection against workplace hazards or special clothing/uniform that is not worn outside the workspace. Work with hazardous substances requires that personnel wear laboratory coats with long sleeves, long pants (trousers) or long skirt that cover your legs and shoes (no open toed shoes or shoes made of woven material) that cover your feet. Lab coats are required for Biosafety Level 2 (BL2) laboratories and are highly recommended for Biosafety Level 1 (BL1) laboratories. Appendix A of the SOP "Personal Protective Equipment" provides guidance on selection of protective clothing appropriate to the hazard.</p>	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p><u>Gloves:</u> General guidance is given here for chemical and biological hazards. Select and wear appropriate hand protection, generally gloves, to prevent injury to hands or exposure by absorption of chemicals through the skin of the hands. Gloves for work with chemicals must be selected based on the potential contact hazard, and the permeability of the glove material. For incidental skin contact with small amounts of chemicals on a surface, or work with most powders, disposable nitrile gloves are usually adequate. For work involving materials that are readily absorbed through the skin, the glove must be carefully selected using glove impermeability charts. Silver Shield brand gloves work well for many common laboratory chemicals that can be absorbed through the skin, but you should verify their effectiveness for your application. You should also evaluate need for hand protection from physical hazards such as extreme heat or cold, and make sure you use appropriate gloves. Gloves are required for all work with all potentially infectious biological materials. Appendix C of the SOP "Personal Protective Equipment" provides guidance on the appropriate selection of gloves.</p> <p><u>Head/Foot Protection:</u> Hardhats bump hats, helmets, and safety shoes are generally required where overhead obstructions or objects, falling/sharp objects, or chemical or electrical hazards may result in injury to the head or feet. Safety shoes are rated, and must be selected to the hazards present (falling/sharp objects, hazardous chemicals, water/electrical resistance).</p> <p><u>Hearing Protection:</u> If you are unable to hear someone speaking at a normal volume that is within 2 feet of distance from you- that area may be above 85 db. EHS stocks both ear muffs and ear plugs for DLC's to purchase. Contact EHS for advice on selection and care of hearing protection and to conduct noise monitoring.</p> <p><u>Respiratory Protection:</u> Addressed in guidance for PPE-3. Note: MIT has a formal written Respiratory Protection Program and guidance materials which may be accessed at <a href="http://web.mit.edu/environment/ehs/respiratory.html">http://web.mit.edu/environment/ehs/respiratory.html</a>.</p> <p><u>Reference:</u> OSHA 29CFR1910.133 and OSHA Lab Standard 1910</p> <p>(Modified: 09/22/2008)</p>	
Respiratory protection was not appropriate, maintained or stored properly.	PPE-3	Personal protective equipment	Respirators must be stored in an area with a relatively consistent temperature and humidity and away from direct sunlight in order to remain in good, usable condition. Generally, it's good practice to keep respirator facepieces in their original bags or cases. Respirators must NOT be hung by the headstraps for storage – this can stretch out the	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p>headstraps and potentially warp the mask. Heavy items like books and tools should not be stored on top of respirators. Finally, respirators must be kept in a clean, relatively contaminant-free environment. Exposure to contaminants can not only degrade certain respirator parts but can also lead to the premature expiration of respirator filters and cartridges.</p> <p>Proper respirator care and storage will generally facilitate proper respirator maintenance. Respirators should be clean and free from visible damage (warping, cracking, tears, rusting). Headstraps should have plenty of elasticity. The view lens should be clear and free from cracks and excessive scratches. Finally, the valves (both inhalation and exhalation) should still be flexible, free of cracks and warping, and moving freely without sticking.</p> <p>(Modified: 09/22/2008)</p>	
Respirators are being used without an EHS evaluation and approval.	PPE-4	Personal protective equipment	<p>All respirator users must consult with EHS and MIT Medical before using a respirator even if they use it voluntarily. Voluntary use of respirators is defined as respirator use when exposure potential is low but an individual conservatively elects to use a respirator (respirator is not required for protection).</p> <p>In this section, the word "respirators" refers to any tight-fitting respiratory protection device (i.e., air-purifying respirators, supplied air respirators, and filtering "facepieces/dust masks".</p> <p>EHS keeps paperwork on file that confirms whether a medical evaluation and fit test(s) have been performed for a specific individual</p> <p><u>Reference:</u> OSHA 29CFR1910.134</p> <p>(Modified: 09/22/2008)</p>	*
Other PPE Finding (see details):	PPE-99	Personal protective equipment	<p>See finding details or ask your EHS DLC Coordinator for more information.</p> <p>(Modified: 09/22/2008)</p>	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Biological Safety Cabinet (BSC) grates were obstructed.	BS-1	Biological Safety	<p>Grates on BSC should be 100% unobstructed. If the grills in the front and back are blocked, then there will not be good airflow. Poor airflow could potentially contaminate work in the cabinet and compromise the protection of the researcher and/or the environment.</p> <p><u>References:</u> NIH rDNA Guidelines and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
Biological Safety Cabinet (BSC) was not certified or was past re-certification date.	BS-2	Biological Safety	<p>A vendor sticker must be on the front of the BSC indicating dates of certification and expiration. Certification is only valid for 1 year and is the responsibility of the PI.</p> <p><u>References:</u> NIH rDNA Guidelines and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	*
Vacuum aspirator setup was incorrect or was missing in-line filter.	BS-3	Biological Safety	<p>A vacuum aspirator for use with biological liquids must have a primary collection flask with disinfectant, an overflow flask with disinfectant, an in-line HEPA filter, and secondary containment for the system.</p> <p>Vacuum aspirators must have an in-line filter to protect the house vacuum line. Once the filter becomes wet, the flow of the house vacuum is compromised. Addition of the inline filter prevents potential contamination of the house vacuum system and possible exposures of personnel during vacuum system maintenance.</p> <p>To obtain information about in-line HEPA filters, please contact the Biosafety Program.</p> <p><u>Reference:</u> BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Biohazard labels were missing from equipment that comes into contact with biological materials/agents	BS-4	Biological Safety	<p>Biohazard labels must be affixed to any piece of equipment that may be biologically contaminated or may contain biological agents, human blood, body fluids, or cell lines.</p> <p>Such equipment includes but is not limited to the following: refrigerators, freezers, incubators, shakers, sonicators, centrifuges, water baths, fume hoods, etc. Biohazard labels identify equipment and warn personnel who may be unfamiliar with the lab and the research about possible risks. Biohazard labels can be obtained through the Biosafety Program. These labels should be large enough and placed so that they are easily visible.</p> <p><u>References:</u> OSHA BBP Standard 29 CFR 1910, NIH rDNA Guidelines, and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
Biowaste containers were missing biohazard labels.	BS-5	Biological Safety	<p>Biohazard labels must be affixed to waste containers that contain or may potentially be contaminated with live bacteria, yeast, human or animal tissues, cell lines, and other biological materials/agents.</p> <p>Biohazard labels can be obtained through the Biosafety Program. These labels should be large enough and placed so that they are easily visible.</p> <p><u>References:</u> OSHA BBP Standard 29 CFR 1910, NIH rDNA Guidelines, and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
Soap was not available at sinks used for hand washing	BS-6	Biological Safety	<p>Soap must be available on or near all hand washing sinks.</p> <p><u>References:</u> NIH rDNA Guidelines, and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
An appropriate liquid disinfectant was not available.	BS-7	Biological Safety	<p>Approved disinfectants for the biological materials/agents must be available within the lab. Common disinfectants include low-mercury bleach, Wescodyne, and 70% ethanol.</p>	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p>Disinfectants must be mixed/diluted properly in order to be effective against the biological materials/agents used within the lab. Bleach solutions, once diluted, have a short shelf life and fresh solutions should be mixed frequently in order to achieve maximum potency. If questions arise about effectiveness of a particular disinfectant or a recommendation for a disinfectant, consult the Biosafety Program, as the program approves disinfectants for use within the laboratory.</p> <p><u>References:</u> OSHA BBP Standard 29 CFR 1910, NIH rDNA Guidelines, and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
<p>Work surfaces were not being decontaminated with appropriate cleaner or disinfectants following work involving biological materials/agents.</p>	<p>BS-8</p>	<p>Biological Safety</p>	<p>Researchers must regularly clean and disinfect their work areas in order to prevent the inadvertent contamination of personnel or subsequent experiments. Indicators of poor decontamination practices include visible stains or spills on bench tops or equipment and cluttered work spaces.</p> <p><u>References:</u> OSHA BBP Standard 29 CFR 1910, NIH rDNA Guidelines, and BMBL 5<sup>th</sup> edition</p> <p>(Modified: 09/22/2008)</p>	
<p>Biohazardous sharps were not being appropriately managed.</p>	<p>BS-9</p>	<p>Biological Safety</p>	<p>All sharps from biological research laboratories are placed in leak-proof, puncture-proof containers. Signs of improper sharps management include overfilled containers (e.g., bouquet effect of pipettes for example), sharps in regular trash, disposal of intact chemical bottles and other non-sharp items in sharps containers and the inability to close the sharps container lid. Disposal of biological liquids and chemically contaminated liquids found in biological sharps container is also evidence of improper sharps management.</p> <p>To dispose of empty and intact chemical bottles, deface or remove label and place in a cardboard box for pickup. The box should be taped shut and labeled as “clean, unbroken glass bottles – trash” to be removed by custodial staff. Contact EHS for information regarding disposal of acutely hazardous chemical containers.</p> <p><u>Reference:</u> 105 CMR 480</p>	<p style="text-align: right;">*</p>

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			(Modified: 09/22/2008)	
Biowaste was not being appropriately managed.	BS-10	Biological Safety	<p>Wastes from biological laboratories must be properly handled and disposed of using appropriate methods. At MIT, biowaste is divided into three categories: solid, liquid, and sharps waste.</p> <p>Solid waste includes non-sharp/non-liquid items including but not limited to Petri dishes, tissue culture flasks, contaminated gloves, etc. These items must be disposed of in a sturdy, leak-proof container with a lid that is clearly marked or identified on all sides with large visible universal biohazard symbols. The containers should be lined with clear autoclave bags. When full, the autoclave bags should be tagged with an autoclave tag. The autoclave bags should be removed when full, autoclaved, and then disposed of in the regular trash. Deficiencies include use of a red biohazard bag, no universal biohazard labels, containers without lids, overflowing, smelly, or untagged treated waste.</p> <p>Liquid waste includes liquid cultures, media, and any other biologically contaminated liquid. These materials must be inactivated by adding a disinfectant such as bleach (final concentration &gt;10% v/v) or Wescodyne (&gt;1%) and poured down the drain after 20 minutes contact time with appropriate concentration of the disinfectant. Deficiencies include waste not processed in a timely manner; evidence may include films or growth of other contaminants within waste container etc.</p> <p>Biosharps waste-please refer to guidance for BS-9</p> <p>For more information on biowaste, please consult the Biosafety Program or visit the Biosafety Program web page at <a href="http://web.mit.edu/environment/ehs/biosafety.html">http://web.mit.edu/environment/ehs/biosafety.html</a></p> <p><u>Reference:</u> Massachusetts State Sanitary Code 105CMR 480.</p> <p>(Modified: 09/22/2008)</p>	*
Autoclave waste treatment was not being recorded properly in logbook.	BS-11	Biological Safety	<p>All biologically contaminated solid waste must be autoclaved prior to disposal in regular trash. At MIT, researchers must maintain a logbook where information such as date, name, autoclave tag number, run temperature and time are recorded. This logbook must be kept for 3 years.</p> <p><u>Reference:</u> Massachusetts State Sanitary Code 105CMR48</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			(Modified: 09/22/2008)	
Needles and/or syringe stocks were not secured.	BS-12	Biological Safety	All syringes and needles must be kept in a locked cabinet, drawer, or closet to minimize theft.  (Modified: 09/22/2008)	
There was no current Exposure Control Plan (ECP) where applicable.	BS-13	Biological Safety	A current Exposure Control Plan (ECP) is required in all areas where there is an occupational risk of exposure to human blood, body fluids, and/or human cell lines, or other human-derived materials.  The ECP should be kept in a location that is available and known to all personnel. The ECP is submitted to, and reviewed by, the Biosafety Program annually.  Each specific ECP is the responsibility of the PI or area supervisor (in non-lab spaces).  <u>Reference:</u> The OSHA Bloodborne Pathogen Standard (BBP), OSHA 29 CFR 1910.1030.  (Modified: 09/22/2008)	*
Biological Level (BL1, BL2, BL2+, etc.) not posted.	BS-14	Biological Safety	All laboratories that use biological materials/agents are required to have a sign posted on entrance doors indicating the appropriate biological level. Signs are available from the Biosafety Program.  <u>References:</u> NIH rDNA Guidelines, and BMBL 5 <sup>th</sup> edition  (Modified: 09/22/2008)	*
Other Biological Safety Finding (see details):	BS-99	Biological Safety	See finding details or ask your EHS DLC Coordinator for more information.  (Modified: 09/22/2008)	

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Radioactive Material Inventory and/or Use Logs were not up to date.	RS-1	Radiation Safety	<p>Maintenance of the records is a requirement of the authorization that permits the use of these radioactive materials.</p> <p>All sources of radioactive material are inventoried when delivered to the laboratory. The inventory and use records track the receipt, use and user of the material.</p> <p>The state of Massachusetts Radiation Control Program requires that all sources of radiation are controlled and accounted for.</p> <p>Reference: Massachusetts Department of Public Health 105 CMR 120 (Modified: 09/22/2008)</p>	
Radioactive Material waste inventory cards were improperly filled out.	RS-2	Radiation Safety	<p>All radioactive waste disposal must be recorded by user at the time of disposal.</p> <p>The state of Massachusetts Radiation Control Program requires that all sources of radiation are controlled and accounted for.</p> <p>Reference: Appendix 3 of the MIT Required Procedures for Radiation Protection Manual.</p> <p>Reference: Massachusetts Department of Public Health 105CMR120 (Modified: 09/22/2008)</p>	*
Stock radioactive material was not secure.	RS-3	Radiation Safety	<p>All stock radioactive materials must be secured from unauthorized removal or access. Examples are a lock box, locked refrigerator or with an authorized user of radioactive material.</p> <p>The State of Massachusetts Radiation Control Program states that the licensee shall maintain constant surveillance and use devices or administrative procedures to prevent unauthorized use of licensed radioactive material that is in an unrestricted area and that is not in storage.</p> <p>Reference: Massachusetts Department of Public Health 105CMR120 (Modified: 09/22/2008)</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Survey meter was out of calibration or not working.	RS-4	Radiation Safety	<p>All survey meters must be calibrated and in proper working condition. The yellow sticker indicates the calibration date and due date for the next calibration. The RPP calibrates the meter twice a year. Meters with low voltage batteries may under respond or even not respond to radiation.</p> <p>The State of Massachusetts Radiation Control Program requires that the survey meter must be working and calibrated annually.</p> <p><u>Reference:</u> Massachusetts Department of Public Health 105CMR120</p> <p>(Modified: 09/22/2008)</p>	*
Radioactive Material sign not posted.	RS-5	Radiation Safety	<p>Radioactive Materials Caution Signs are posted at doorways by RPP. Radioactive material users label their own areas, equipment and containers.</p> <p>Contact RPP if a sign is missing or radioactive material is used in a non posted room.</p> <p>(Modified: 09/22/2008)</p>	
Other Radiation Safety Finding (see details):	RS-99	Radiation Safety	<p>See finding details or ask your EHS DLC Coordinator for more information.</p> <p>(Modified: 09/22/2008)</p>	
Area was not posted with the appropriate 3b/4 laser sign.	LS-1	Laser Safety	<p>A laser warning sign is posted by RPP where class 3b or class 4 open beam lasers are used. Requirements are described in the Laser Safety Manual. Signs are available from the Radiation Protection Program.</p> <p>(Modified: 09/22/2008)</p>	

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
A lighted 3b/4 laser warning sign was not installed outside room.	LS-2	Laser Safety	<p>A lighted warning sign is required for an operational, class 3b or class 4, open beam laser system. The lighted warning sign is to be interlocked with the laser system power supply. RPP may allow a non- interlocked, administratively controlled lighted warning sign on a case-by-case evaluation.</p> <p>Lighted warning signs are available from the RPP.</p> <p>(Modified: 09/22/2008)</p>	*
Class 3b/4 laser SOP was not posted.	LS-3	Laser Safety	<p>The required user-written SOP for either the class 3b or class 4 lasers must be posted.</p> <p>Reference: The MIT Laser Safety Manual.</p> <p>(Modified: 09/22/2008)</p>	*
Appropriate eyewear for laser was not available or not intact.	LS-4	Laser Safety	<p>Intact, non-damaged, appropriate laser eyewear must be available for all persons where class 3b or class 4 lasers systems are in use.</p> <p>The Radiation Protection Program can provide guidance on the specific eye protection requirements for the laser system being used. All laser eyewear will have ANSI approved wavelength protection information printed on the eyewear.</p> <p>Reference: Massachusetts Department of Public Health 105 CMR 121 Regulations for the Control of Lasers regulates the use of the laser systems, devices or equipment to control the hazards of laser rays or beams. The MIT Laser Safety Program and the MDPH regulations are based on the requirements set forth in the most recently published version of the ANSI Z136.1 standard.</p> <p>(Modified: 09/22/2008)</p>	*
Class 3b/4 laser was not registered with the Radiation Protection Program (RPP).	LS-5	Laser Safety	<p>RPP places a Laser Registration sticker on devices registered.</p> <p>Requirements for the registration of class 3b and class 4 lasers are described in the MIT Laser Safety Program manual. Registration may be done online at <a href="http://web.mit.edu/environment/ehs/radiation_required.html">http://web.mit.edu/environment/ehs/radiation_required.html</a> .</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p>Reference: Massachusetts Department of Public Health 105 CMR 121 Regulations for the Control of Lasers regulates the use of the laser systems, devices or equipment to control the hazards of laser rays or beams. The MIT Laser Safety Program and the MDPH regulations are based on the requirements set forth in the most recently published version of the ANSI Z136.1 standard.</p> <p>(Modified: 09/22/2008)</p>	
Other Laser Finding (see details)	LS-99	Laser Safety	<p>See finding details or ask your EHS DLC Coordinator for more information.</p> <p>(Modified: 09/22/2008)</p>	
Pressure release valve(s) were obstructed, iced over or poorly located.	CRY-1	Cryogenic Systems	<p>Due to the hazards of pressure buildup due to off-gassing vapors, cryogenic liquids must never be contained in a closed system. Appropriate accommodations must be designed into any system that contains cryogenic liquids in order to allow relief of pressure buildup during the most adverse conditions Pressure relief may be provided by spring-loaded relief devices or by an open passage to the atmosphere. Pressure relief valves must be located away from walkways or places occupied by personnel, or protected so that people are not sprayed by cryogenic liquids in the event that a pressure valve releases. Frangible disks are recommended as additional relief devices when the capacity of the operational relief device is not adequate to take care of unusual or accidental conditions. This is especially true when insulation of the system is dependent upon maintaining a vacuum in any part of the system, including permanently sealed dewars. Users shall not tamper with pressure relief devices.</p> <p>Reference: OSHA 29CFR1910, Subpart H NFPA 45, Fire Protection for Laboratories using Chemicals</p> <p>(Modified: 09/22/2008)</p>	

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Appropriate gloves and face shield were not available at the cryogenic material transfer station.	CRY-2	Cryogenic Systems	<p>Loose fitting thermal gloves, lab coats or other protective clothing, safety glasses and face shields are necessary to protect personnel from the thermal hazards of cryogenics</p> <p>Reference: OSHA 29CFR1910, Subpart H NFPA 45, Fire Protection for Laboratories using Chemicals</p> <p>(Modified: 09/22/2008)</p>	
Oxygen detectors had expired or were not functional.	CRY-3	Cryogenic Systems	<p>Detection and alarm systems can provide a false sense of security if they do not function properly. Most oxygen detectors use a reaction in a fuel cell to determine the partial pressure of oxygen in the air. Because they use fuel as they operate, the detector heads last only 12 to 18 months. When they are spent, the meter output, which is normally around 20.9%, will fall to 4% or less, and any attempt to calibrate the detector will fail. Most importantly, if a detector is present, check that it is set to alarm at 19.5%, that the alarms have not been bypassed or disconnected, and that the heads have not failed...</p> <p>Since not all detectors give an indication of system failure, a program should be implemented for periodic maintenance of all detectors and testing of alarm systems according to the manufacturer's recommendations. Any malfunctions or deficiencies should be addressed immediately.</p> <p>Reference: OSHA 29 CFR 1910, Subpart H NFPA 45, Fire Protection for Laboratories Using Chemicals MIT EHS SOP, Cryogenic Liquids</p> <p>(Modified: 09/22/2008)</p>	*
Other Cryogenics Systems Finding (see details)	CRY-99	Cryogenic Systems	<p>See finding details or ask your EHS DLC Coordinator for more information.</p> <p>(Modified: 09/22/2008)</p>	
Machine guarding was not present or was inadequate.	SS-1	Shop Safety	<p>Wherever possible, guards shall be in place during machine use. Guards must be securely attached to the machine at the point of operation (e.g. where the part or stock) meets the</p>	*

## Comprehensive Inspection Finding Guidance

Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
			<p>blade, drill, or cutter.) Also, don't forget to check for guards covering motors and drive assemblies that run the machines as these are often removed during service or repairs and not reinstalled when the job has been completed. Do a 360 degree walk around each machine to make sure that the front, back and side panels are in place. These panels generally act as guards for any moving parts (pulleys belts, etc.) located inside which drive the machine.</p> <p>Guards are intended to protect the operator as well as bystander(s) from flying particles (e.g. lathes, drill presses, grinders) nip points (e.g. grinders, shears) as well as rotating parts (e.g. belts/motors/pulleys) and cuts from blades (e.g. table saw, band saw, metal shears.)</p> <p>(Modified: 09/22/2008)</p>	
Chemical (product) list was unavailable or incomplete.	SS-2	Shop Safety	<p>There must be a list of chemicals used in the shop.</p> <p>The OSHA Hazard Communication Standards require that those working with potentially hazardous chemicals be informed of the hazards and measures established to protect them from those hazards.</p> <p>(Modified: 09/22/2008)</p>	
MSDSs were not readily accessible.	SS-3 / CS-8	Shop Safety	<p>Persons working in lab or shop should know how to quickly obtain an MSDS for chemicals that are in the lab or shop. In shops, where the number of chemicals is usually limited, it is recommended that the MSDSs be available in a notebook. A computer can be used if all in the shop can access the computer and find the MSDS information readily.</p> <p>(Modified: 09/22/2008)</p>	
Local ventilation was in need of evaluation.	SS-4	Shop Safety	<p>Machining/woodworking equipment may require ventilation. Evidence of inadequate ventilation includes large accumulation of dust on surfaces in area or accumulation of oily residual on surfaces for machining operations. Employees may also complain about breathing fumes/mists or bad odors from the processes they are doing.</p> <p>(Modified: 09/22/2008)</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
There was no current hot work permit, where required.	SS-5	Shop Safety	<p>Fixed locations, where hot work is routinely conducted, must be defined as Designated Hot Work Areas. These areas must be isolated by screens, walls or noncombustible partitions. Areas must be kept free of combustible materials and provided with exhaust ventilation to remove fumes and smoke.</p> <p>Hot Work Permits for Designated Hot Work Areas (such as welding shops,) must be issued, and renewed annually, by the MIT EHS Office.</p> <p><u>Reference:</u> OSHA 29 CFR 1910.251 – 255 527 CMR 39.00 Hot Work Permit SOP, EHS-0058</p> <p>(Modified: 09/22/2008)</p>	*
Stationary power equipment was not secured in place.	SS-6	Shop Safety	<p>Securing a machine is most often done by bolting it to the floor, bench top or wall. Not all machines need to be secured. According to OSHA, if the machine is equipped/constructed with features allowing it to be secured (bolt holes etc.) then it must be fastened to the floor or wall to prevent tipping, walking or creep. This can be interpreted to mean that a machine not equipped in this way is not required to be secured. However, if there is a risk of tipping, an alternate method to secure it may need to be implemented, such as the use of straps or other means.</p> <p>From a practical point of view, the inspections should focus on upright machines to determine if they are secured in some way, as these have the greatest potential to tip-over, especially when loaded with heavy parts or stock. Some typical examples of upright machines include pedestal mounted drill presses, band saws and grinders.</p> <p>(Modified: 09/22/2008)</p>	*
Emergency power cutoff switch not accessible or was not working.	SS-7	Shop Safety	<p>Machines should be equipped with an on/off button or panic button or kill switch within the operator's reach while at the machine. The operator should not have to leave a running machine unattended to turn off the power.</p> <p>(Modified: 09/22/2008)</p>	*

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Finding	Alpha Num Code	Trifold Section	Guidance	Documented Closure Required (*)
Other Shop Safety Finding (see details):	SS-99	Shop Safety	See finding details or ask your EHS DLC Coordinator for more information.  (Modified: 09/22/2008)	