|  |  |  |  |
| --- | --- | --- | --- |
| Inspector: |  | Date: |  |
|  |  |  |  |
| Building: |  | Room(s): |  |

**N** = No **Y** = Yes **C** = Corrected **N/A** = Not Applicable

Items marked **“N”** need to be corrected.

**Communication**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| A1 | Is the Chemical Hygiene Plan available? *web access is acceptable* |  |  |  |  |
| A2 | Do workers have all the necessary training? *i.e., CHP, Hazardous Waste, etc.* |  |  |  |  |
| A3 | Are SDS’s available? *web access is acceptable* |  |  |  |  |
| A4 | Are there written procedures for hazardous chemicals or the processes that use them? |  |  |  |  |

**General Safety**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| B1 | Is protective equipment being worn by workers? *i.e. gloves, lab coats, eyewear, etc.* |  |  |  |  |
| B2 | Is electrical wiring safe? *i.e. no exposed wiring, GFCIs in wet areas, no extension cords used for permanent wiring etc.* |  |  |  |  |
| B3 | Are electrical panels closed, not blocked, and combustibles or flammables are not stored nearby? |  |  |  |  |
| B4 | Are refrigerators and freezers used to store chemicals clearly marked with a sign indicating no food storage? |  |  |  |  |
| B5 | Are food products stored and used in chemical areas marked with a label “Not for Human Consumption”? |  |  |  |  |
| B6 | Are moving parts, pinch points and belts guarded? |  |  |  |  |
| B7 | Are fume hoods and biological safety cabinets tested and certified annually? |  |  |  |  |
| B8 | Are ductless fume hoods tested and certified quarterly? |  |  |  |  |
| B9 | Is lighting adequate? *subjective evaluation* |  |  |  |  |

**Chemical Safety**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| C1 | Are incompatible chemicals segregated? |  |  |  |  |
| C2 | Are chemical containers in good condition? |  |  |  |  |
| C4 | No flammable materials are stored in a standard refrigerator? *refrigerator needs to be flammables rated* |  |  |  |  |
| C5 | Flammables are stored in a flammables cabinet? |  |  |  |  |
| C6 | Are peroxide forming chemicals dated and checked at least every six months for peroxides? |  |  |  |  |
| C7 | Are eyewash and safety showers available and inspected where corrosives are used? |  |  |  |  |
| C8 | Are extremely dangerous chemicals and select agents locked up? |  |  |  |  |
| C9 | Is access restricted where extremely dangerous chemicals and select agents are used? |  |  |  |  |

**Gas Cylinders**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| D1 | Are gas cylinders secured to an immovable object with a chain or strap around the top half of cylinder? *chains preferred* |  |  |  |  |
| D2 | Are cylinders capped when "stored" and have a regulator when "in use"? *never a bare valve stem* |  |  |  |  |
| D3 | Do cylinders have labels that are legible and are empty cylinders marked as such? |  |  |  |  |
| D4 | Are oxygen cylinders separated from flammable gas cylinders by 20ft or a half hour fire rated wall? |  |  |  |  |
| D5 | Are gas cylinders stored safely? (i.e.: not near electrical or ignition sources, not under stairs or in enclosed areas etc.) |  |  |  |  |

**Bio Hazards**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| E1 | Is biohazardous waste put in RED biohazard bags and disposed of as regulated biohazard waste? |  |  |  |  |
| E2 | Are contaminated sharps put in a sharps container and are all hypodermic needles regardless of use, being put in the sharps container? |  |  |  |  |
| E3 | Is protective equipment being used such as gloves and eyewear? |  |  |  |  |
| E4 | Are workers washing hands and decontaminating areas after work is complete? |  |  |  |  |
| E5 | Do those who handle human blood or cells have blood borne pathogen training? |  |  |  |  |
| E6 | Is access restricted in biohazard areas by postings or Laboratory Door Signs? |  |  |  |  |

**Radiation**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| F1 | Are radiation use areas marked with postings or stickers? |  |  |  |  |
| F2 | Are radioactive sources stored in a locked and restricted area? |  |  |  |  |

**Lasers**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| G1 | Do class 3A LASERs have correct signage? |  |  |  |  |
| *Class 3B or 4 Lasers* | | | | | |
| G2 | Is correct signage posted? |  |  |  |  |
| G3 | Is proper eyewear available and used? |  |  |  |  |
| G4 | Are those handling LASERs trained? |  |  |  |  |
| G5 | (Class 4 only) - Are interlocks or blocking in place? |  |  |  |  |
| G6 | (Class 4 only) - Are power control cutoffs in place? |  |  |  |  |
| G7 | (Class 4 only) - Are procedures written for use LASERs? |  |  |  |  |

**Chemical Waste**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| H1 | Are waste containers closed? |  |  |  |  |
| H2 | Are containers labeled appropriately? *the words "Hazardous Waste", identity of the contents, concentrations* |  |  |  |  |
| H3 | Is waste stored at or near the point of generation? *rule of thumb is in the same room* |  |  |  |  |
| H4 | Are those who handle hazardous waste knowledgeable of the regulations? |  |  |  |  |

**Emergency**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| I1 | Is aisle space adequate? *at least 3 ft.* |  |  |  |  |
| I2 | Combustibles not stored near ignition sources or stored within 18 inches of the crown of sprinkler heads? *24 inches below ceiling if no sprinkler* |  |  |  |  |
| I3 | Are spill kits available? |  |  |  |  |
| I4 | Are fire extinguishers available and appropriate for any significant fire risks at that location? |  |  |  |  |

**House Keeping**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Y** | **N** | **C** | **N/A** |
| J1 | Are workspaces clean and tidy? |  |  |  |  |
| I2 | Are floors clean and dry? |  |  |  |  |
| I3 | No heavy equipment or hazardous liquids above eye level? |  |  |  |  |

**Comments**

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**Explanation Sheet**

**Communication**

Chemical Hygiene Plan: A Chemical Hygiene Plan (CHP) is part of the OSHA requirements for laboratories. It must be accessible in all labs either electronically or hard copy.

Training: OSHA requires that any persons that work within a lab must be trained. The EH&S “Chemical Safety for Laboratory Workers” class meets the requirements. This class will be offered at the beginning of the fall and spring semesters or as needed.

SDS: OHSA regulations require that employees have access to Safety Data Sheets. In addition, emergency responders may need a copy of a SDS. SDS’s may be available electronically or hard copy. Below are some guidelines:

* Lab personnel should be able to obtain a SDS quickly (5 minutes is a rule of thumb).
* Have a SDS website booked marked on a computer for quick access (<https://msdsmanagement.msdsonline.com/6a8fd3e4-a326-4a21-82b6-2ed345798984/dashboard/> ).
* Obtain copies of SDS’s for the most hazardous chemicals and chemicals you use frequently.
* If obtaining a SDS requires a logon name and password for a manufacture’s website, post the login information on or near the computer.

Labeling: For safety reasons as well as EPA and OSHA regulations, every container, that appears to have a chemical in it, must be labeled and easily identified by every user within the lab. Below are some guild lines:

* Original manufacturer’s labels are preferred.
* For non-original containers we recommend using the full name.
* We also recommend using right-to-know information when possible.
* Official chemical nomenclature is okay if the laboratory personnel comprehend it.
* Avoid using pictures or structures as labels – only labs that have high level of chemical knowledge should use structures.

Sop’s: Standard Operating Procedures may be developed as a process specific “chemical specific” or “hazard specific” depending on the research group’s needs. In a nutshell, an SOP as it applies to health and safety is a document which incorporates safety measures into a specific operation.

**General Safety**

Protective Equipment: Appropriate Personal Protective Equipment (PPE) must be available, in good condition and used by workers. Workers must also be trained in the proper selection and use of PPE. PPE may include lab coats, gloves, safety glasses, goggles, and face shield.

Wiring: Equipment should be grounded or double insulated and be tested by a third party such as Underwriters Laboratories (UL approved). You must not use equipment that has worn or frayed cords. Extension cords are allowed only for temporary use on portable power equipment. Power strips with fuses are acceptable alternatives to extension cords for long term use. A Ground Fault Circuit Interrupter (GFCI) should be used in all wet areas.

Panels: Electrical panels must be accessible (36 inch clearance) and emergency cutoff switches for equipment should be accessible and labeled.

Food in Refrigerators: Personal food items must not be stored with chemicals or samples in refrigerators. Refrigerators should be labeled specifically for food or chemicals as the only allowed contents.

Guarding: All moving parts on equipment must be properly guarded. Some examples of moving parts that need to be guarded are belts, pinch points, and blades.

Hoods / BSC: Chemical fume hoods, ductless fume hoods and Bio-Safety Cabinets (BSC) should only be used for the work that they are designed. Hoods are designed to protect workers from harmful chemicals. Ductless fume hoods have very limited use. Most BSC’s are not designed for chemical use. Alcohol for disinfection should have only limited use in BSC’s.

Lighting: Work areas should always have adequate lighting.

**Chemical Safety**

Segregation: Chemicals must be segregated, by the hazards they present, to avoid incompatible materials being stored together. Storing chemicals by hazard class in different cabinets or in different secondary containment is recommended.

Container Integrity: Containers that are in good condition are not leaking, do not have broken caps, and are not rusting.

Flammables in Fridge: Flammable liquids (flashpoint below 100 deg. F) should not be stored in regular refrigerators because of the risk of explosion (this includes walk in units). Flammable liquids may be stored in flammable or explosion rated refrigerators.

Flammable Cabinet: Large volumes of flammable liquids must be stored in flammable rated cabinets. As a general guide, rooms with more than 10 gallons of flammable liquids use a flammable rated storage cabinet.

Peroxide Forming: All peroxide forming chemicals should be marked with the date received, date opened, and date last tested for peroxides, along with the results of the test on the container. Peroxide formers should be tested every 6 months. Some examples of peroxide forming chemicals are: Tetrahydrofuran (THF), Dioxane, Diethyl ether, and ethers in generals.

Eyewash/Safety Shower: An eyewash station is required where corrosive or other chemicals that are injurious to the eye are used. We recommend that eyewash stations be flushed weekly. Contact EH&S for assistance if you need an emergency wash facility in your area.

Extremely Dangerous: Extremely dangerous chemicals or agents are Cyanides and Arsenics.

**Gas Cylinders**

The allowed statuses for compressed gas cylinders are:

* ‘In-Use’ – Cylinders that are being used with in a 24 hour period or are attached to an instrument or apparatus
* ‘Stored’ – Cylinders that are not currently being used (this includes ‘Full’ and Empty’ cylinders)

Secured: Cylinders must be secured to a sturdy object to prevent toppling. A chain (preferred) or strap should be tight enough and strong enough to secure the cylinder. Placement of the strap should be in the upper half of the cylinder but not around the cap or valve. A cylinder chained on a cylinder cart is acceptable, but not as safe as if it were chained to an immobile object.

Cap/Regulator: Cylinders that are ‘In-Use’ must have a regulator attached. Cylinders that are not attached to a piece of equipment or apparatus must be capped. Cylinders must be capped during transport.

Tags: At a minimum, empty containers need to be tagged or labeled ‘Empty’ or stored in a posted area for empty cylinders. It is recommended that cylinders be tagged ‘Full’, ‘In-Use’, or ‘Empty’. Gas vendors are usually willing to provide tags at no charge to customers.

Segregation/Storage: Flammable gasses and oxidizing gases must be separated by an acceptable fire barrier. This separation could be a fire rated wall or a minimum 20 foot space between the types of cylinders. Flammable gases or oxygen should not be stored near a source of ignition such as electrical panels or open flames.

**Bio Hazards**

Disposal: All potentially infectious waste must be disposed of as medical waste.

No Food, Drink, Etc.: No food or drink is allowed in any room working with identified biohazard materials. Cosmetics must not be applied within a bio-hazard use room.

Hand Washing/Decon: Work groups should have protocols that require people washing hands before leaving the work space and after handling bio-hazardous materials. The protocol should also require decontamination of work surfaces when bio-hazardous work is complete.

Training: Personnel that work with bio-hazardous materials should be trained in the specific hazards of the materials that they handle. “Bloodborne Pathogen” training is required for anyone working with any human or primate tissues or blood. Work groups should have SOPs developed for each process that includes bio-hazardous materials.

Restricted Access: Bio-hazard warning signs must me posted at the entrance of the room. Workers should restrict access for other people when infectious materials are being processed.

**Radiation**

Area/Rooms Marked:All rooms must be posted at the entrance to identify radiation use. All areas where radioactive materials are stored must be posted. All areas of potential exposure must be marked.

Stocks Locked: All radioactive materials are required to be locked up if no one is in the room.

**LASERs**

There are 7different classes of LASERs. Class one LASERs ae not harmful and are considered “eye safe”; there are no requirements for them. Classes 2 and 3A have a minimum requirement for a label that includes:

* “LASER Radiation”
* Class of the LASER
* 'M' designation: "Do not stare at beam or view directly with optical instruments"

3A LASER: Door should be labeled with the same info as the LASER label.

"Avoid Direct Eye Exposure"

3B or 4 LASERs

Sign/Indicators: The LASER and room/area must be labeled with ‘Caution or Danger” and the same information as the LASER label. Unprotected persons must be restricted from entering the area when LASERs are in use. A lighted sign indicating that the LASER is in operation must be used.

Eye Protection: Proper eye protection must be used. Proper eyewear must have appropriate wavelength attenuation and optical density for the wavelength and power for the LASER. We look to see that:

1. The LASER beam path is above or below eye level for both siting and standing operators,
2. optical instruments for looking into LASER beams have an adequate protective filter in place, and
3. that specular (mirror like) surfaces are not in the vicinity of the LASER beam path.

Training: Users of class 3B and 4 LASERs must be trained in LASER safety and be authorized to work with each LASER present.

Interlock/Blocking: LASER interlocks must not be overridden. LASER areas must be designed to contain the beam at all times. This includes preventing the beam from exiting the area through windows and doors. We recommend that you enclose as much of the beam path as practical, terminate primary and secondary beams at the end of their useful paths, and use low power setting, beam shutters and LASER output filters to reduce the hazard level of the beam when possible.

Power Cutoffs: Only persons who are trained in LASER safety and authorized to operate the LASER may have access to an operable LASER. A keyed switch should be used if an untrained person may gain access to the LASER area. The LASER power cut off must be well labeled.

SOP’s” The work group must have Standard Operating Procedures to ensure safe use of the LASER.

**Chemical Waste**

Close: Hazardous Waste containers must be kept closed with a tight sealing lid. For containers attached to equipment, bottles still need to be closed when not in process.

Labeling: Hazardous Waste is required to be labeled “Hazardous Waste” or the chemical contents. Using a EH&S Hazardous Waste label is recommended.

Point of Generation: Hazardous Waste must be stored in the area where it was generated. A rule of thumb is ‘in the same room’.

Training: Every person who handles Hazardous Waste must know their role in making sure that the waste is handled properly. EH&S provides a “Chemical Waste Disposal” class that covers these requirements.

**Emergency**

Aisle Space: Fire code requires a minimum of 36 inches of aisle space. Spaces between work benches should not be cluttered with storage of materials and/or equipment. Personnel should be able to move through a space without knocking things over or tripping on bottles, boxes, wires or equipment. Bottles, boxes, wires or equipment should not be stored under fire curtains.

Combustibles: Combustibles (materials that burn easily) must not be stored within 2 feet of the ceiling in a non-sprinklered room, if the room is sprinklered not within 18 inches of the crown of the sprinkler head. Combustible materials such as wood, paper, oil, boxes should not be stored near a source of ignition including electrical panels, sparking equipment, and open flames.

Door Signage: Each room should have the hazard identification sign (Laboratory Door Sign) on the door indicating the primary hazard in the room. The Laboratory Door Sign is a hazard assessment signage program. This system is to alert people entering a space of the hazards and is used in emergency response. Update Laboratory Door Signs at least annually. The signs may be posted on every door, or on the main entry door to a suite.

Emergency Proc.: Work areas should have written procedures in case of an emergency such as spills, exposures (bio, rad, HF, cyanide etc.) and other hazards (cryogenics, high voltage, etc.). Emergency phone numbers should be posted by telephones. Personnel should be familiar with emergency information such as locations and use of spill kits and first aid kits.

Spill Kit: Workers should be prepared for small spills. A well prepared spill kit will manage these spills quickly and safely. The rule of thumb for safety on spill cleanup is: if you do not feel comfortable doing it, or you do not have the necessary materials or protective equipment, evacuate the area and call your emergency number for help.

Fire Extinguisher: All workers must have access to a fire extinguisher (within 75 feet). The extinguisher needs to have a current inspection, and needs to be appropriate for the fire risks present.

**Housekeeping**

Clean Work Space: Clutter and messy workspaces can lead to safety issues and can attract attention when regulators visit. Workspaces should be kept orderly and all chemical spills must be cleaned up.

Clean Floor: Floors should be kept clean and free from debris. Hazardous materials should not be stored in floor spaces where they can be easily knocked over.

Overhead Storage: Hazardous chemicals should not be stored above eye level. Heavier equipment and heavy boxes that are stored overhead are dangerous.