Risk Assessment & Risk Mitigation Worksheet and Protocol

Updated 1/26/2021.

# Purpose

This worksheet is designed to identify risks and risk mitigations associated with hazards such as infectious or potentially infectious materials, chemicals, as well as other physical hazards in the clinical laboratory setting. This assessment should be completed by the Supervisor and laboratory staff who regularly perform the work being assessed.

The final document must be reviewed at least annually by the Supervisor and updated in the event of changes including but not limited to identification of new biological hazards or risks, change in work process or flow, new equipment, changes to personnel training requirements, new work area, if mitigation strategies change, and as new information becomes available.

The information in this risk assessment is based on known risks to healthy workers. Anyone with a compromised immune system may be at higher risk and should consult with an occupational health care provider for additional precautions.

# Instructions

If you have any questions or need assistance completing this worksheet, please feel free to contact the Biosafety Officer at the North Carolina State Laboratory of Public Health.

Pathogen Safety Data Sheets (PSDS) can provide you with information to assist in completing this section of the risk assessment. You can find these at <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment.html>

1. Name of Agent – List scientific and any common names for biological agent and/or diseases.
2. Characteristics – Diagnostic characteristics for agent
	1. Example - Gram negative non-motile coccobacillus, non-sporing, aerobic, requires cystine for growth, grows well on Legionella media and slowly on enriched (Columbia base) blood agar.
3. Classification of agent – check box that describes what type of organism the agent represents.
4. Risk Group - Classification that describe the relative hazard posed by infectious agents in the laboratory.
	1. **Risk Group 1 (RG1)** - Agents that are not associated with disease in healthy adult humans. This group includes a list of animal viral etiologic agents in common use. These agents represent no or little risk to an individual and no or little risk to the community.
	2. **Risk Group 2 (RG2)** - Agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available. These agents represent a moderate risk to an individual but a low risk to the community.
	3. **Risk Group 3 (RG3)** - Agents that are associated with serious or lethal human disease for which preventive or therapeutic interventions may be available. These agents represent a high risk to an individual but a low risk to the community.
	4. **Risk Group 4 (RG4)** - Agents that are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available. These agents represent a high risk to the individual and a high risk to the community.
5. Containment or biosafety level (BSL) – Defined in the [Biosafety in Microbiological and Biomedical Laboratories (BMBL)](https://www.cdc.gov/biosafety/publications/bmbl5/BMBL5_sect_IV.pdf). All higher biosafety levels have additional requirements over and above the lower levels.
	1. **BSL1** - Suitable for work involving well-characterized agents not known to consistently cause disease in immunocompetent adult humans, and present minimal potential hazard to laboratory personnel and the environment.
	2. **BSL2** - Suitable for work involving agents that pose moderate hazards to personnel and the environment. It differs from BSL-1 in that: 1) laboratory personnel have specific training in handling pathogenic agents and are supervised by scientists competent in handling infectious agents and associated procedures; 2) access to the laboratory is restricted when work is being conducted; and 3) all procedures in which infectious aerosols or splashes may be created are conducted in biosafety cabinets (BSC) or other physical containment equipment.
	3. **BSL3** - Biosafety Level 3 is applicable to clinical, diagnostic, teaching, research, or production facilities where work is performed with indigenous or exotic agents that may cause serious or potentially lethal disease through the inhalation route of exposure. All procedures involving the manipulation of infectious materials must be conducted within a BSC or other physical containment devices.
	4. **BSL4 -** Required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease that is frequently fatal, for which there are no vaccines or treatments, or a related agent with unknown risk of transmission.
6. Pathogenicity – Describe typical and atypical disease course
7. Infectious to humans – Indicate whether agent is infectious in humans
8. Routes of laboratory transmission – Describe how infection could occur in your laboratory. For instance, an animal bite is unlikely in a clinical diagnostic laboratory where there is no exposure to animals. Be sure to include ingestion if it is a route of transmission. While unlikely that someone would eat a culture, indirect exposure to the mouth via contaminated gloves is a possibility.
9. Infectious dose and incubation period – See PSDS if possible; the CDC website is another resource.
10. Risk to pregnant women/fetus - See PSDS if possible; the CDC website is another resource.
11. Source/Specimen – list the types of specimens and the source of specimens that are handled in your lab during a diagnostic test associated with the agent (i.e. sputum, oropharyngeal swab, etc.)
12. Reportable symptoms – List all signs and symptoms that laboratorians with exposure risk should be aware of and are instructed to report if they experience any following known or suspected exposure to the agent.

## Procedural Risks

1. Method of laboratory analysis – Describe all tests and assays used in your lab for manipulating diagnostic specimens received.
2. Is there an SOP that includes safety measures in place in the lab for each method of analysis?
3. Manipulation of sharps – Sharps have the potential to cause puncture, cut, or scrape wounds. Indicate which types of sharps are used to manipulate the agent being assessed.
4. Manipulation of specimens/cultures –
	* 1. Spill potential
		2. Volume of single specimen indicates average volume of a specimen (i.e. 2 ml of serum)
		3. # specimens – on average how many specimens would a laboratorian manipulate at one time (i.e. 5 serum samples)
		4. Total spill volume is calculated by multiplying volume of specimen x # of specimens manipulated.
5. Severity of consequences of a LAI
	1. Complete for all possible outcomes – i.e. untreated Brucella may be relapsing so it would be both an acute and chronic infection risk.

## Other Hazards

Use this section to document if other physical or chemical hazards are present while performing this risk assessment. Be sure to include the specific hazards, likelihood, consequence, risk level and risk mitigation in the Pre-Analytical, Analytical or Post-Analytical tables. If you have checked off that hazardous chemicals are present (this includes reagents from kits), complete the Chemical Identification and Chemical Controls and Mitigation Sections.

Chemical Hazards Instructions

1. Chemical Identification
Any chemical that is used in a procedure or assay should be considered for its risk. The chemical’s safety data sheet (SDS) is a good reference to determine its hazardous characteristics.

Some resources to consider for help in characterizing chemicals besides the SDS include:

* Centers for Disease Control and Prevention (CDC) NIOSH Pocket Guide to Chemical Hazards: <http://www.cdc.gov/niosh/npg/>
* United States Department of Labor Occupational Safety & Health Administration (OSHA) Occupational Chemical Database: <https://www.osha.gov/chemicaldata/>
* Canadian Centre for Occupational Health and Safety Chemical Hazards Database: <http://www.ccohs.ca/topics/hazards/chemical/chemicals/>
1. Chemical Name/Chemical mixture – list the name of the chemical being used and/or the components of the mixture/kit. You can find this information in the SDS in Section 1 and Section 3.
2. List the concentration of the chemicals you listed in column 1. This information can also be found in Section 3 of the chemical’s SDS.
3. List the hazardous characteristics of the chemical you are identifying. This information can be found in section 2 of the SDS. HINT: look for pictograms as these will be your visual cues as to if that chemical is hazardous. If the chemical is not considered hazardous write non-hazardous and you do not need identify the chemical further.
4. Check off route of exposure. This information can be found in section 11 of the SDS.
5. List severity of exposure/hazard class. This information can be found in section 11 of the SDS.
6. Check yes or no to confirm if SDS is present.

## Risk Determination

In this section you will use the Risk Matrix, Hierarchy of Controls, and the information that you identified in the Agent and Procedural sections to assess the level of risk for all tasks associated with manipulation of specimens containing the biological agent. Tasks are broken down into three areas: pre-analytical, analytical, and post-analytical. Examples of each are described below:

* **Pre-analytical** – Specimen receipt/collection, transport of specimen to lab
* **Analytical** – Handling specimen, gram stain, centrifuging, culture, biochemical tests
* **Post-analytical** - Removal of PPE, decontamination, waste disposal
1. **Activity/Practice/Procedure** – List the activity, test, or procedure that presents risk to laboratorians (i.e. Specimen is received in laboratory)
2. **Potential hazard** – list all potential hazards associated with that activity or procedure (i.e. specimen dropped during transport)
3. **Likelihood** – Refer to Risk Matrix
4. **Consequence** – Refer to Risk Matrix
5. **Risk Rating** – Where likelihood and consequence intersect on matrix (i.e. if Likelihood = Likely and Consequence = Moderate the risk rating would be HIGH.
6. **Control/Protection** - List controls/protections in each category (engineering, administrative and PPE). According to the Hierarchy of Controls engineering controls should be used before administrative or PPE controls.
7. **Additional Information** - List any additional notes or recommendations

## Controls and Mitigations

This section details controls that are to be used to mitigate risks associated with the biological and chemical hazards in the laboratory.

# Additional Instructions

# Once completed, the risk assessment and mitigation/control measures should be read by and trained to all staff who work in an area where the biological agent may be present including laboratorian and support staff. Complete the Documentation of Risk Assessment and Risk Mitigation section of this document and keep with this document in the laboratory.

This document should be reviewed at least annually and after any incidents or near misses by the Supervisor or designee. Additional reviews and updates should take place in the event of changes including but not limited to: identification of new biological hazards or risks (i.e. antibiotic resistance), change in work process or flow, new equipment, personnel training requirements, new work area, if mitigation strategies change, and as new information becomes available.

The information in this risk assessment is based on known risks to healthy workers. Anyone with a compromised immune system may be at higher risk and should be encouraged to consult with an occupational health care provider to determine if additional precautions are necessary.

Change the header section of the Risk Assessment and Risk Mitigation Worksheet to reflect the Institution, Laboratory and Authors.

Final versions should be kept in a place where all staff have access to read it.

# Worksheet Template

# Biological Agent Information

|  |  |
| --- | --- |
| **Name of Agent:** |  |
| **Characteristics:** |  |
| **Fungi** [ ]  | **Bacteria** [ ]  | **Nucleic Acid** [ ]  | **Toxin** [ ]  | **Virus** [ ]  | **Other** [ ]  |
| **Risk Group:** | **Risk Group 1**[ ]  | **Risk Group 2**[ ]  | **Risk Group 3**[ ]  | **Not applicable**[ ]  |
| **Containment Level:** | **BSL1** [ ]  | **BSL2** [ ]  | **BSL3** [ ]  |
| **Pathogenicity:** |  |
| **Infectious to humans?** | **Yes** [ ]  | **No** [ ]  |
| **Possible routes of laboratory transmission** |
| **Ingestion** [ ]  | **Inhalation** [ ]  | **Percutaneous** [ ]  | **Mucous membrane** [ ]  | **Other** [ ]  |
| **Transmitted by aerosol:** | **Yes** [ ]  | **No** [ ]  |
| **Infectious dose:** |  |
| **Incubation period:** |  |
| **Risk to pregnant women and/or fetus:** | **Yes** [ ]  | **No** [ ]  |
| **Source(s)/Specimen(s):** |  |
| **Reportable symptoms:**  |  |

# Procedural Risks

|  |  |
| --- | --- |
| **Method(s) of laboratory analysis:** |  |
| **Standard Operating procedure available for each method of analysis:** | **Yes** [ ]  | **No** [ ]  |

|  |
| --- |
| **Manipulation of Sharps** |
| **Manipulation of sharps- If no sharps are used, proceed to next section Yes** [ ]  |
| **Pipette tips** [ ]  | **Blood smears** [ ]  | **Expelling air from tubes/bottles** [ ]  |
| **Scalpels** [ ]  | **Use of glass** [ ]  | **Remove needs from syringe** [ ]  |
| **Aspirating fluids** [ ]  | **Serological pipettes** [ ]  |  **Necropsy** [ ]  |
| **Other (please describe):** |

|  |
| --- |
| **Manipulation of Specimens/Cultures** |
| **Are all needles and loops single use/disposable? Yes** [ ]  **No** [ ]  |
| **Does opening of samples/specimens occur in BSC? Yes** [ ]  **No** [ ]  |
| **Spill potential** | **Volume of single specimen:**  | **# specimens opened/manipulated at one time:** **Total spill volume: volume x specimen #** |
| **Pipette specimen** [ ]  | **Pour off specimen** [ ]  | **Remove swabs from media** [ ]  |
| **Setting up cultures** [ ]  | **Shaking/mixing:** [ ]  | **Streaking plates** [ ]  |
| **Flame loop** [ ] **Bacticinerator** [ ]  | **Cool loop in culture media** [ ]  | **Grinding/Blending** [ ]  |
| **Sonicate** [ ]  | **Vortex** [ ]  | **Vacuum** [ ]  |
| **Centrifugation** [ ] **Are safety cups/rotors in use? Yes** [ ]  **No** [ ]  | **Package infectious shipments Yes** [ ]  |
| **Preparing isolates for automated identification/susceptibility testing** [ ] **List preparation steps, what containment is used and what automated process is used:** |
| **Prepare smears** [ ]  | **Stain slides** [ ]  | **Heat fix slide** [ ]  | **Wet prep** [ ]  |
| **Slide agglutination** [ ]  | **Biochemical tests (list tests and where performed** [ ]  |

|  |
| --- |
| **Severity of Consequences Should a Laboratory Acquired Infection (LAI) occur** |
| **Carrier**[ ]  | **Asymptomatic infection**[ ]  | **Acute infection**[ ]  | **Chronic infection**[ ]  |
| **Illness**[ ]  | **Disease**[ ]  | **Toxicity, oncogenicity, allergenicity**[ ]  | **Death**[ ]  |
| **Is infection spread person-to-person? Yes** [ ]  **No** [ ]  |

|  |
| --- |
| **Other Hazards** |
| **Heat/burn** [ ]  | **Cold** [ ]  | **Excessive noise** [ ]  |
| **Hazardous chemicals** [ ]  | **Allergens** [ ]  | **Steam** [ ]  |
| **Repetitive movement** [ ]  | **Heavy lifting >30 pounds** [ ]  | **Reaching** [ ]  |
| **Slip/trip/fall** [ ]  | **Pinch/crush/scrape** [ ]  | **Explosion** [ ]  |

# Chemical Identification

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Chemical Name/****Chemical Mixture** | **Conc. of Chemical(s)** | **Hazardous Characteristics** | **Route of Exposure** | **Risk to Pregnant Woman and/or Fetus** | **Severity of Exposure/****Hazard Class** | **SDS Present in the Lab?** |
|  |  |  | [ ]  **Inhalation**[ ]  **Eye** [ ]  **Injection**[ ]  **Skin**[ ]  **Ingestion**[ ]  **Other:** | Choose an item. |  | Choose an item. |
|  |  |  | [ ]  **Inhalation**[ ]  **Eye** [ ]  **Injection**[ ]  **Skin**[ ]  **Ingestion**[ ]  **Other:** | Choose an item. |  | Choose an item. |
|  |  |  | [ ]  **Inhalation**[ ]  **Eye** [ ]  **Injection**[ ]  **Skin**[ ]  **Ingestion**[ ]  **Other:** | Choose an item. |  | Choose an item. |
| **Chemical Name/****Chemical Mixture** | **Description of work/activities/use:** | **What are the storage requirements?** | **What are the waste/disposal requirements?** | **What are the hazard control requirements?** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Figure 1**

|  |  |
| --- | --- |
| **RISK MATRIX** | **Consequence** |
| **Minimal:** **Requires reporting and follow up action** | **Minor:****Potential first-aid injury** | **Moderate:****Injury or exposure** | **Major:****Serious injury; non-permanent disability** | **Severe:****Fatality or injury or illness with permanent disability** |
| **Likelihood** | **Rare: Possible in extraordinary circumstances** | **LOW** | **LOW** | **LOW** | **LOW** | **MEDIUM** |
| **Unlikely: Event would require multiple systems and/or control failures** | **LOW** | **LOW** | **MEDIUM** | **MEDIUM** | **HIGH** |
| **Possible: Possible when additional factors are present.** | **LOW** | **MEDIUM** | **HIGH** | **HIGH** | **HIGH** |
| **Likely: Such an event is known to have occurred; a credible scenario.** | **LOW** | **MEDIUM** | **HIGH** | **HIGH** | **EXTREME** |
| **Highly Likely: Expected to occur in most circumstances.** | **MEDIUM** | **HIGH** | **HIGH** | **EXTREME** | **EXTREME** |

|  |
| --- |
| **Actions Required Based on Risk Matrix** |
| **Estimated Risk Level** | **Description of Estimated Risk Level** | **Actions** |
| **LOW** | **If the incident were to occur, there would be little likelihood that an injury would result.** | **Continue the activity with existing controls in place.** |
| **MEDIUM** | **There is some chance that an injury or exposure requiring first aid would result.** | **Additional controls are recommended.** |
| **HIGH** | **The incident would likely require medical attention.** | **Controls will need to be in place before activity is undertaken.** |
| **EXTREME** | **The incident would likely lead to a permanent, debilitating injury or death.** | **Consider alternatives to performing the activity. Significant control measures will need to be implemented to ensure safety.** |

**Figure 2**

|  |
| --- |
| **Hierarchy of Control Measures** |
| **Most Effective (High Level)****Least Effective (Low Level)** | **Engineering/Design Controls** | **Elimination: physically remove the hazard from the activity** |
| **Substitution: replace the hazard with a less dangerous one** |
| **Redesign: make equipment or processes safer** |
| **Isolation: isolate people from the hazard** |
| **Administrative Controls** | **Administration: putting rules, signage, or training in place to make the workplace safer** |
| **Personal Protective Equipment (PPE)** | **PPE: protective clothing and equipment** |

# References

Biosafety in Microbiological and Biomedical Laboratories (BMBL). U.S. Department of Health and Human Services, Public Health Service and Centers for Disease Control and Prevention and National Institutes of Health. 5th Edition. L.C. Chosewood & D.E. Wilson (Eds.). Washington, D.C. U.S. Government Printing Office. December 2009.

Risk Assessment Best Practices. Association of Public Health Laboratories. Available: <https://www.aphl.org/programs/preparedness/Documents/APHL%20Risk%20Assessment%20Best%20Practices%20and%20Examples.pdf>. Accessed September 14, 2017.

Laboratory Safety Guidance. Occupational Safety and Health Administration. U.S. Department of Labor. OSHA-3404-11R. 2011. Available: <https://www.osha.gov/Publications/laboratory/OSHA3404laboratory-safety-guidance.pdf>. Accessed September 20, 2017.

Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline – Fourth Edition. CLSI document M29-A4. Volume 34, Number 8. Clinical and Laboratory Standards Institute. 2014

| 1. **PRE-ANALYTICAL EXPOSURE RISK**
 |
| --- |
| **ACTIVITY/PRACTICE/****PROCEDURE** | **POTENTIAL****HAZARD** | **LIKELIHOOD** | **CONSEQUENCE** | **RISK****LEVEL** | **CONTROL/PROTECTION** | **ADDITIONAL INFORMATION** |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |

| 1. **ANALYTICAL EXPOSURE RISK**
 |
| --- |
| **ACTIVITY/PRACTICE/****PROCEDURE** | **POTENTIAL****HAZARD** | **LIKELIHOOD** | **CONSEQUENCE** | **RISK LEVEL** | **CONTROL/PROTECTION** | **ADDITIONAL INFORMATION** |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |

|  |
| --- |
| 1. **POST-ANALYTICAL EXPOSURE RISK**
 |
| **ACTIVITY/PRACTICE/****PROCEDURE** | **POTENTIAL****HAZARD** | **LIKELIHOOD** | **HAZARD SEVERITY** | **RISK****LEVEL** | **CONTROL/PROTECTION** | **ADDITIONAL INFORMATION** |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |
|  |  | **Choose an item.** | **Choose an item.** | **Choose an item.** | **Engineering:****Administrative:****PPE:** |  |

# Biohazard Controls and Mitigations

## Engineering Controls

|  |  |
| --- | --- |
| **Biological Safety Cabinet in Lab** [ ]  | **Class II** [ ]  **Other** [ ]  |
| **Safety shield for benchtop processes** | **Yes** [ ]  **No ☐**  |
| **Restricted access to lab during infectious/ potentially infectious work** | **Yes** [ ]  **No ☐** |
| **Centrifuges have biocontainment features** | **Yes** [ ]  **No ☐** |
| **Single pass airflow** | **Yes** [ ]  **No ☐** |
| **Lab exhaust HEPA filtered** | **Yes** [ ]  **No ☐** |
| **Is an autoclave available in lab?** | **Yes** [ ]  | **No ☐** |
| **If not, describe how materials are prepared, labeled, and stored for disposal and how waste is disposed of:** |
| **Describe disinfection and disposal of liquid media, cultures and biological fluids** |  |
| **Describe disinfection and disposal of solid wastes including solid media** |  |
| **Describe disinfection and disposal of sharps** |  |
| **Describe decontamination and disposal of mixed wastes (biological and chemical)** |  |

## Administrative Controls

|  |  |  |
| --- | --- | --- |
| **Vaccine available:** | **Yes** [ ]  | **No** [ ]  |
| **Immunization(s) required (list):** | **Yes** [ ]  | **No** [ ]  | **Recommended** [ ]  |
| **Medical monitoring required (i.e. titer, TB test, etc.) (list)**  | **Yes** [ ]  | **No** [ ]  |
| **Enrollment in respiratory protection plan** | **Yes** [ ]  | **No** [ ]  |
| **Initial and annual biosafety training**  | **Yes** [ ]  | **No** [ ]  |
| **Biosafety cabinet training** | **Yes** [ ]  | **No** [ ]  |
| **Enhanced training required****Describe:** | **Yes** [ ]  | **No** [ ]  |
| **Personnel read exposure control plan** | **Yes** [ ]  | **No** [ ]  |
| **Lab has proper entry/exit procedures posted for PPE and work flow?** | **Yes** [ ]  | **No** [ ]  |
| **Spill procedures and biological spill kit available in lab and personnel receive training** | **Yes** [ ]  | **No** [ ]  |

# Chemical Hazards Controls and Mitigations

## Engineering Controls

|  |  |  |  |
| --- | --- | --- | --- |
| **Chemical Fume Hood**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Certified in past year?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Not used for primary chemical storage?**
 | **Correct** [ ]  | **Incorrect** [ ]  | **NA** [ ]  |
| 1. **Sash Closed when not in use?’**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Baffles/back of fume hood clear from clutter or large objects?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Larger items or equipment raised to allow for air flow towards baffles?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Airfoils clear from clutter?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Safety shield for benchtop processes** | **Yes** [ ]  | **No ☐**  | **NA** [ ]  |
| **Transport containers?** | **Yes** [ ]  | **No ☐** | **NA** [ ]  |
| **Flammable liquids/solids stored: fire rated chemical cabinets?**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Flammable liquids stored: Stored in flammable-rated refrigerators/freezers?** | **Yes** [ ]  | **No** [ ]  | **NA** [x]  |
| **Corrosive liquids/solids stored: In corrosive-rated chemical cabinets?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |

## Administrative Controls

|  |  |  |  |
| --- | --- | --- | --- |
| **All containers are labeled per OSHA HAZCOM Labeling Policies?**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Updated Chemical Inventory Present?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Safety Data Sheet binder accessible to staff?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Chemicals Stored at eye-level?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Acids and Bases Stored?**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **In a cabinet?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Labeled area?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Free from metals?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Incompatible chemicals segregated?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Compressed gas cylinders stored in laboratory?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Exposure Monitoring Required?**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Enrollment in respiratory protection plan** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Initial and annual Chemical Safety Training?**  | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Chemical Fume Hood Training?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Enhanced training required? Describe:** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Personnel read Chemical Hygiene Plan?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Emergency contacts information posted?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **First aid kit maintained?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Spill procedures and chemical spill kit available in lab?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Staff aware of occupational injury procedures?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| **Chemical waste Generated?** | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Disposal plan approved?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **SAA set up properly?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Appropriate/compatible containers used to collect waste?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Hazardous waste labeled with appropriate label, name of chemical(s) and percentages?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **Containers properly sealed in secondary bins?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |
| 1. **In good condition for transport?**
 | **Yes** [ ]  | **No** [ ]  | **NA** [ ]  |

## Personal Protective Equipment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lab Coat** | **Yes** [ ]  | **No** [ ]  | **Other** [ ]  | **Comments:** **\*** |
| **Gloves- # of pairs** | **Yes**[ ]  | **No**[ ]  | **Other** [ ]  | **Comments:** **\*** |
| **Gown** | **Yes** [ ]  | **No** [ ]  | **Other** [ ]  | **Comments:** **\*** |
| **Eye protection** | **Yes**[ ]  | **No**[ ]  | **Other** [ ]  | **Comments:** **\*** |
| **Respiratory Protection** | **Yes**[ ]  | **No**[ ]  | **Other** [ ]  | **Comments:** **\*** |
| **Face shield:** | **Yes**[ ]  | **No**[ ]  | **Other** [ ]  | **Comments:** **\*** |

# Documentation of Risk Assessment and Mitigation

This section provides documentation of risk assessment completion and training. The original form containing signatures should be filed with the Risk Assessment and Mitigation Worksheet in the laboratory.

**Hazards Assessed:** Click or tap here to enter text.

**Date assessment completed:**  Click or tap to enter a date.

|  |
| --- |
| **Procedures/Assays used to manipulate specimens suspected to contain this agent:** |
|  |
|  |
|  |
|  |

**Names of individuals involved in conducting this assessment:**

|  |  |  |
| --- | --- | --- |
| **Name** | **Role** | **Signature** |
|  |  |  |
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**Revisions to this assessment:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision(s) Made** | **Date** | **Reviewed/Trained**  | **New document #** |
| Click or tap here to enter text. | Click or tap to enter a date. | Click or tap to enter a date. | Click or tap here to enter text. |
| Click or tap here to enter text. | Click or tap to enter a date. | Click or tap to enter a date. | Click or tap here to enter text. |
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| Click or tap here to enter text. | Click or tap to enter a date. | Click or tap to enter a date. | Click or tap here to enter text. |

**Individuals who have reviewed this assessment and received training in the risks and mitigations described herein:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Title** | **Date Reviewed** | **Signature** |
|  |  |  |  |
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