**Standard Operating Procedure (SOP)**

**Diphtheria Toxin (DT)**

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| **Principal Investigator (PI) Name:** Enter PI Name | **Date:** Click or tap to enter a date. |
| --- | --- |
| **Storage Location(s) of Diphtheria Toxin:***[Building(s)/Room Number(s); Refrigerator/Freezer*]Click or tap here to enter text. |
| **Diphtheria Work Location(s):***[Building(s)/Room Number(s)]*Click or tap here to enter text. |

# **Purpose**

This document provides a comprehensive source for all matters covering the use of Diphtheria Toxin (DT) handled in the laboratory(ies) listed above. Specifically, it describes the procedures to be used to ensure a safe working environment while working with DT. This SOP must be reviewed annually by the Principal Investigator (PI) for changes or corrections to ensure that it is accurate. **The PI is required to provide lab specific information, where indicated in yellow, throughout the SOP.**

# **Background and Hazard Information**

Diphtheria toxin (DT) is a biological toxin secreted by the bacterium *Corynebacterium diphtheriae* and is a potent lethal toxin in humans. The estimated lethal dose (LD50) for humans is 100 ng/kg (approximately 6-10 micrograms per adult human). DT is a single polypeptide chain consisting of two subunits, known as A and B. The N-terminal (A) subunit carries the catalytic domain, whereas the C-terminal (B) subunit comprises the receptor binding and transmembrane domains. The toxin binds to a cell-surface receptor to gain entry into the cell. Once inside the cell, DT inhibits protein synthesis by catalyzing ADP-ribosylation of eukaryotic elongation factor II, resulting in death of the cell. The toxin can cause myositis, arrhythmias, neuropathy, paralysis, kidney failure and even death. Symptoms of exposure include skin irritation, respiratory irritation, fever and headache. Do not breathe dust, aerosol, fume or vapors of DT powder or solutions. DT may cause death if ingested.

Accidental inoculation with the toxin leads to invasion of cells over a course of hours. The inflammatory response in the body to remove these dead cells takes days to weeks, and is the cause of illness and potentially death as a result of DT inoculation. During this time, monitoring and supportive care is the main source of treatment. For diphtheria patients, the risk of complications increases with each day/hour as toxin is absorbed, therefore personnel who have been accidentally inoculated with DT must seek medical assistance as soon as possible.

Note: The [diphtheria antitoxin (DAT)](https://www.cdc.gov/diphtheria/dat.html) is not licensed for use in the United States and therefore a stock of DAT is not maintained at any of the WSU-approved Occupational Health Clinics. The CDC may grant emergency use of DAT as an investigational new drug.

High Risk Diphtheria Toxin work is defined as the following:

* Work with DT in powder form
* Diluting and/or aliquoting concentrated stock solutions (concentrations of ≥ 1 mg/mL).
* Working with a needle/syringe or other sharps with ≥ 2 microgram of toxin per sharps device.
* Working without sharps with tubes containing ≥ 20 micrograms of toxin per tube.

# **Routes of Potential Exposure**

SUBCUTANEOUS – Needlestick or other sharps injuries that would allow entry of the toxin into the blood.

ORAL – Ingestion due to aerosol generation or when working with powered DT. May be fatal if ingested.

INHALATION – Due to aerosol generation or when working with powered DT.

DERMAL – Direct contact with skin.

EYE – From splashes or aerosol generation or when working with powered DT.

# **Prophylaxis and Treatment**

Diphtheria toxoid (inactivated toxin) is used for vaccination, typically as part of the DTaP vaccination received during childhood. Adults should receive a Td booster immunization every 10 years ([per CDC vaccination recommendations](https://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm)). Lab personnel who will be working with DT and have not been vaccinated against the toxin (or have not received a booster within the last 10 years) must be offered the diphtheria toxoid vaccination at no cost to the personnel. If personnel working with DT request to be vaccinated, contact the OEHS Occupational Health Nurse (7-1200) to receive a referral to a WSU approved medical provider for the vaccine. Lab personnel have the right to decline the vaccination, which must be documented on the DT Vaccination Declination Form (last page of this document).

Vaccination does not completely eliminate the risks associated with exposure to DT. Therefore, lab personnel who have been exposed to DT must immediately seek medical evaluation. See the Emergency Procedures section of this SOP for more information on responding to and reporting DT exposures.

# **Study Objectives**

Conduct a hazard assessment to identify proper use and handling techniques, storage, and safety concerns specific to your laboratory procedures. Provide below an overview of the biological work you will perform as part of this project. Focus your discussion on the use of DT and the hazards/risks associated with the experiment (e.g., needle-sticks, handling of agent, routes of transmission, etc.).

Click or tap here to enter text.

# **Selection and Purchase**

Whenever possible, do not work with DT in solid or powder form. If it is necessary to purchase it in powder or solid form, purchase pre-weighed toxin in the minimum quantity needed to perform the work.

Provide below purchase information regarding the DT to be used by the lab. Include a link to the product specific Safety Data Sheet (SDS).

| **Supplier and Product Name** | **Amount per Vial** | **Lyophilized Powder or Solution of DT** | **Product Specific SDS****(Web Page Link)** |
| --- | --- | --- | --- |
| Supplier Name | Purchase Amount | Choose an item. | SDS web page link |
| Supplier Name | Purchase Amount | Choose an item. | SDS web page link |
| Supplier Name | Purchase Amount | Choose an item. | SDS web page link |

# **Ventilation and Engineering Controls**

* Work with DT must be done in either a chemical fume hood (CFH) or Class II biosafety cabinet (BSC), whenever possible. This includes opening shipment packages. DO NOT OPEN A VIAL OF POWDERED DT OUTSIDE OF A CFH/BSC.
	+ Each person working with DT should review how to safely use the selected ventilation control device ([CFH use](https://research.wayne.edu/oehs/chemical/fume-hood), [Working Safely in a BSC](https://research.wayne.edu/oehs/bio-safety/cabinets#generalsuggest)).
	+ The user should verify the CFH or BSC has been certified by OEHS within the last 12 months.
	+ The user should verify the inward airflow before initiating work.
	+ The user should conduct work within the operationally effective zone of the CFH or BSC.
* If the ventilation control device is a shared resource, it is recommended that a sign-up calendar be implemented.
* Use a spill tray or plastic-backed absorbent material inside the CFH/BSC.
* The interior of the BSC or CFH should be decontaminated periodically, at the end of the experiment or, at a minimum, the end of each day it is used. Decontaminate using **freshly prepared 1% sodium hypochlorite with 30-minute contact time**, followed by a water rinse. Allow the blower to run for a minimum of ten minutes to purge any aerosols from inside the ventilation control device before shutting off the blower.
* Until thoroughly decontaminated, the CFH or BSC should be posted to indicate that toxins remain in use, and access should remain restricted.
* In-line HEPA filters are required if vacuum lines are used with toxin.
* If centrifuging materials containing toxin, centrifuge safety cups or sealed rotors must be used and the outside surfaces routinely decontaminated. Open the sealed cups or rotors inside a CFH or BSC.
* Use disposable plasticware whenever possible and dispose into a biohazard bin after use. Avoid the use of glass, such as pipettes or syringes.
* Use safety engineered syringes, needles, and sharps to help protect against puncture or cut hazards. Examples of safety engineered devices include sliding sleeve syringes and protective sheath/retractable needles (e.g., BD safety-lok syringes and BD safety glide needles).
* For DT supplied in septum sealed vials, use a hands-free device to stabilize the vial to avoid an accidental needle stick when resuspending.

Describe below which ventilation control device(s) will be used and for what procedure(s). Include the location of each ventilation control device and the certification date.

| **Ventilation Control Device (CFH or BSC)** | **Building Name** | **Room Number** | **Date of Certification** | **Work Performed in This Location** |
| --- | --- | --- | --- | --- |
| Ventilation Control Device | Building Name | Room Number | Certification Date | Click or tap here to enter text. |
| Ventilation Control Device | Building Name | Room Number | Certification Date | Click or tap here to enter text. |
| Ventilation Control Device | Building Name | Room Number | Certification Date | Click or tap here to enter text. |
| Ventilation Control Device | Building Name | Room Number | Certification Date | Click or tap here to enter text. |

Also describe any other engineering controls to be employed and when they should be used. Consider controls including safety engineered sharps and needles.

Additional engineering controls

# **Administrative Controls**

* All high risk operations (see definition above under Background and Hazard Information) should be conducted with two knowledgeable individuals present. Each must be familiar with the applicable procedures, maintain visual contact with the other, and be ready to assist in the event of an accident.
* Access to areas where DT is actively being used or stored must be limited to persons meeting the following qualifications:
	+ Have read and signed this SOP.
	+ Have been trained and are knowledgeable on the safe use of DT.
	+ Have provided documentation of either receiving the Diphtheria toxin vaccination/booster within the last 10 years or have submitted the completed DT Vaccination Declination Form (last page of this document).
* Signs shall be posted on the room door and ventilation device [CFH/BSC] when toxins are in use, stating: “Toxins in Use. Authorized Personnel Only”. Include on the sign(s) the name and contact information of the responsible individual(s).
* Avoid weighing powdered DT. Avoid opening a vial of powdered DT. Instead, reconstitute a whole vial of lyophilized DT, inserting a needle through the vial septum in order to add liquid.
* Verify your experimental set-up and procedure prior to use. Conduct a dry run if possible.
* Before starting work, ensure a sharps container and **freshly prepared 1% sodium hypochlorite** is next to the DT work area.
* Use the smallest practical quantities for the work being done.
* All procedures should be performed carefully to minimize the creation of splashes or aerosols.
* Change gloves at least every 2 hours, or immediately after contamination or signs of damage, and wash hands at time of glove change.
* Do not touch door handles or sink faucet handles with potentially contaminated gloved hands.
* Containers of DT should be removed from the ventilation control device only after the exterior of the closed primary container has been decontaminated with **freshly prepared 1% sodium hypochlorite for 30 minutes** and placed in a clean secondary container.
* Wipe down the surface of all equipment used in manipulations (pipettors, etc.) with **freshly prepared 1% sodium hypochlorite and allow a contact time of 30 minutes** before removing from the CFH or BSC. All waste and disposable items should be left in the CFH/BSC until properly decontaminated or contained.
* Remove and decontaminate reusable PPE by autoclaving. Disposable PPE should be placed in a biohazard bin.
* A hand-washing sink must be readily available to all locations where DT is being used. Wash hands with soap and water before leaving the work area.
* An emergency shower and eyewash station or eyewash/drench hose combination unit is recommended in locations where DT is being used.

Describe below any additional administrative controls that will be employed:

Additional administrative controls

# **Personal Protective Equipment**

In addition to proper street clothing (long pants or equivalent that cover legs and ankles, close-toed non-perforated shoes that completely cover the feet), wear the following Personal Protective Equipment (PPE) when performing lab operations/tasks involving DT:

* Safety glasses (If splash potential exists, use goggles + face shield instead)
* Disposable lab coat or gown.
* Nitrile gloves, double-gloved.
* For work done outside of a CFH/BSC that may generate aerosols or work with open containers of powdered DT inside an CFH/BSC, an N95 respirator is required. Use of an N95 respirator requires fit testing and training. Contact OEHS (7-1200) to schedule completion of training/fit testing.
	+ Describe activities when an N95 respirator will be required (if applicable).

Click or tap here to enter text.

Describe any additional PPE that will be used and when it will be required.

Click or tap here to enter text.

# **Preparation**

**(If starting with lyophilized powder, complete the next paragraph.)**

**Reconstitution and aliquoting for storage**:

NOTE: In our lab, name and/or name. are the only individuals to perform this task.

While working in a CFH or BSC, a vial of DT will be resuspended to a concentration solution by injecting sterile water, buffer, or solvent into the vial through the rubber septum. After adding the liquid, the rubber septum will be carefully removed using forceps and a pipet will be used for additional mixing and to aliquot the DT solution into microcentrifuge tubes. This solution will be stored in aliquots of volume and stored at temperature and location. The box for storage of DT is labeled with “diphtheria toxin” hazard warning sign and with contact information for the responsible individual.

**(If starting with a purchased solution of DT and if aliquoting this solution, complete the next paragraph.)**

**Aliquoting for storage:**

NOTE: In our lab, name and/or name. are the only individuals to perform this task.

While working in a CFH or BSC, the vial of DT solution (concentration) will be divided into aliquots of volume and stored at temperature and location. The box for storage of DT is labeled with “diphtheria toxin” hazard warning sign and with contact information for the responsible individual.

**Describe subsequent dilutions for use:**

Click or tap here to enter text.

# **Storage Requirements**

* Store DT in a shatter-proof, leak-proof, secure secondary container, ideally a lockbox tethered to the refrigerator or freezer. Only personnel who have been trained in the safe use of the toxin will have access to the storage container. The secondary container must be labeled with toxin name, hazard warnings, and contact information of trained, responsible laboratory staff.
* The refrigerator or freezer must be in a secure location (e.g., locked room with limited access). The refrigerator or freezer should be labeled with hazard warnings and contact information of trained, responsible laboratory staff.
* A log sheet shall be placed near the storage area where users will be required to fill out each time an aliquot is used/generated/or disposed of. The log shall be completed using an ink pen. A Toxin User Log can be found at: <https://research.wayne.edu/oehs/bio-safety/toxin_userlog_73021.doc>

Describe below the DT storage area(s) (freezer or refrigerator), building/room location(s), and how the toxin will be secured for restricted access.

| **4°C Fridge, -20° Freezer, or -80° Freezer** | **Building/Room Location** | **How Will the Toxin be Secured?** |
| --- | --- | --- |
| Choose an item. | Building & room # | Click or tap here to enter text. |
| Choose an item. | Building & room # | Click or tap here to enter text. |
| Choose an item. | Building & room # | Click or tap here to enter text. |
| Choose an item. | Building & room # | Click or tap here to enter text. |

# **Special Handling Procedures**

Describe any special handling procedures, such as administering to cells or use of specific equipment, and the safety controls that will be used.

Click or tap here to enter text.

# **Special Handling for Work with Animals (if applicable)**

* Follow procedures for safe use of sharps, and practice doing a “dry run” with less hazardous materials as needed. Use safety engineered needles/sharps whenever possible. A sharps container must be within arms-reach for safe sharps disposal.
* DO NOT RECAP NEEDLES. Never leave an exposed needle tip in the work area. Use a syringe holder to secure a syringe.
* DT exposed animals are considered hazardous for 72 hours post injection and all procedures performed during this time frame must be completed in a CFH or Class II BSC.
* Animals should be anesthetized or placed into a restraining apparatus before being injected with DT. The syringe should be prepared once the animal has been properly restrained and immediately prior to injection.
* The amount of DT in each syringe will be limited to suffice for only one animal injection. A new syringe will be used for each injection of DT.
* Animal cages must be clearly labeled to indicate that the animals have been treated with DT.
* Hands must be washed with soap and water after completion of the injections.
* After procedures are complete, the restraining apparatus and surrounding workstation must be decontaminated using **freshly prepared 1% sodium hypochlorite for 30 minutes**.
* All reusable lab equipment/tools must be either chemically decontaminated or autoclaved (validated).
* Initial animal cage change shall be conducted in a BSC by personnel who are fully trained in handling the toxin.
* Animal carcasses treated with DT must be placed in a red body bag with a label attached that includes the PI name and the hazardous agent.

Describe how animals will be restrained during injections/administration of DT. Describe the safety features that minimize personnel exposure to the needles and/or injection system to be used for administering DT to the animal. List the concentration of DT to be used, amount of DT loaded per syringe, and amount administered per animal. Describe any additional procedures required for safely completing DT work with animals.

Click or tap here to enter text.

# **Transport**

* Transport DT in a minimum of 2 layers of sturdy, leak-proof, non-breakable containers (e.g., plastic container with sealing lid as a secondary container). Line with absorbent material.
* The secondary container must be clearly labeled with the toxin name, PI name, and lab contact information.
* The use of a hand cart is recommended when transporting between buildings and between floors.
* Ideally, syringes should be loaded with DT at the end point location, not prior to transporting.

Describe below where DT will be transported to and from and in what form it will be transported (vial, centrifuge tube, syringe, etc.)

| **From Location (building/room)** | **To Location (building/room)** | **Transported Form** |
| --- | --- | --- |
| enter text. | enter text. | Vial, centrifuge tube, syringe, etc. |
| enter text. | enter text. | Vial, centrifuge tube, syringe, etc. |
| enter text. | enter text. | Vial, centrifuge tube, syringe, etc. |
| enter text. | enter text. | Vial, centrifuge tube, syringe, etc. |

# **Decontamination Procedures**

**NOTE: Undiluted household bleach typically contains 5-6% sodium hypochlorite. If using household bleach, be sure it is diluted properly to a final concentration of 1% sodium hypochlorite (not 1% bleach). Also, undiluted household bleach degrades over time and should be replaced after 1 year.**

* Many disinfecting agents do not inactivate DT (e.g., AccelTB and Peroxigard).
* Any liquid waste DT shall be decontaminated in a CFH or BSC by treating with a final concentration of 1% sodium hypochlorite for a minimum of 30 minutes before disposal as hazardous chemical waste.
* Work space surfaces must be decontaminated with **freshly prepared 1% sodium hypochlorite** **for a minimum of 30 minutes** at least once daily, during the length of the experiment. To prevent corrosion of metal surfaces rinse with water then 70% ethanol after using chlorine-based chemicals.
* Absorbent pads will be replaced daily. The used and contaminated absorbent pads, disposable PPE, etc. will be placed in a hazardous chemical solid waste bin.
* Reusable tools can be decontaminated by soaking in a solution of **freshly prepared 1% sodium hypochlorite** for a minimum of 30 minutes. The surface of the tools must be gently scrubbed if there are significant amounts of organic material on the surfaces. Following this treatment, the tools must be rinsed with water.

# **Waste Disposal**

* Unused DT that is to be disposed, DT solid waste, and materials contaminated with DT must be collected and disposed either in a biohazard bin or as hazardous chemical waste.
* Waste treated with 1% sodium hypochlorite should be collected and disposed of as hazardous chemical waste.
* DT can be inactivated in an autoclave at > 121°C, for 1 hour, only if the autoclave performance is verified and documented on a monthly basis using a heat-resistant biological indicator (BI), such as *Bacillus stearothermophilus*.

Do not dispose of waste by dumping down a drain or discarding in regular trash containers. [Submit requests to OEHS](https://research.wayne.edu/oehs/forms/chem-waste) for waste containers, labels, and waste collection.

# **Spill procedures**

All spills should be reported to the Principal Investigator. For any spills involving broken glass or sharps, use forceps to remove any broken glass or other sharp items and place in a sharps container.

1. **Powder Spills Outside of CFH/BSC or Large Liquid Spills**

For spills or releases that have impacted the environment (via the storm drain, soil, or air outside the building); or that cannot be cleaned up by local personnel due to size of spill or location of spill; or a powder spill outside of a CFC/BSC:

* 1. Call WSU Police (313) 577-2222. Available 24 hours a day, 7 days a week.
	2. Evacuate the spill area
	3. Post someone or mark-off the hazardous area with tape and warning signs to keep other people from entering.
	4. Remain in the vicinity until emergency personnel arrive and provide them with information on the chemicals involved.
1. **Liquid Spills**

In the event of a minor spill or release that can be safely cleaned up by trained, authorized local personnel using readily available equipment (e.g., absorbent materials) and appropriate PPE:

* 1. Alert personnel in the immediate area of spill and restrict access.
	2. Remove any contaminated PPE or clothing. Don fresh PPE.
	3. Personnel cleaning spill must be wearing a lab coat/disposable gown, safety glasses/goggles, and two pairs of nitrile gloves.
	4. Protect floor drains, sinks or other potential avenues of environmental release as much as possible.
	5. Cover spill with absorbent paper towels and apply **freshly prepared 1% sodium hypochlorite**, starting at the perimeter and working towards the center, allowing 30-minute contact time to deactivate DT.
	6. Collect spill cleanup materials using a scoop or other suitable tools and place in a tightly closed hazardous waste container.
	7. Clean the spill area with **freshly prepared 1% sodium hypochlorite allowing 30-minute contact time**, then soap and water.
	8. Place all contaminated materials, including contaminated items such as gloves, in the hazardous chemical waste container.
	9. Wash hands thoroughly after completing any spill cleanup.
	10. Label waste container with completed hazardous waste tag (available from OEHS).
	11. Submit online [waste pickup request](https://research.wayne.edu/oehs/hazardous/chemical-waste.php) to OEHS.
1. **Powder Spills Inside of CFH/ BSC**

To be cleaned by properly protected and trained personnel.

* 1. Alert personnel in the immediate area of spill and restrict access.
	2. Remove any contaminated PPE or clothing. Don fresh PPE.
	3. Personnel cleaning spill must be wearing a lab coat/disposable gown, safety glasses/goggles, and two pairs of nitrile gloves.
	4. Dampen absorbent material and gently place over the powder, to avoid raising dust.
	5. Apply to absorbent material **freshly prepared 1% sodium hypochlorite**, starting at the perimeter and working towards the center, **allowing 30-minute contact time to deactivate DT**.
	6. Collect spill cleanup materials using a scoop or other suitable tools and place in a tightly closed hazardous waste container.
	7. Clean the spill area with **freshly prepared 1% sodium hypochlorite** **allowing 30-minute contact time**, then soap and water.
	8. Allow CFH/BSC to run for at least 10 minutes before resuming work or turning off.
	9. Place all contaminated materials, including contaminated items such as gloves, in the hazardous chemical waste container.
	10. Wash hands thoroughly after completing any spill cleanup.
	11. Label waste container with completed hazardous waste tag (available from OEHS).
	12. Submit online [waste pickup request](https://research.wayne.edu/oehs/hazardous/chemical-waste.php) to OEHS.

# **Emergency Procedures**

**\*\*If medical attention required, call WSU police (313-577-2222) immediately\*\***

* **Eyewash and Safety Shower** – An ANSI approved eyewash station and safety shower must be easily accessed, and available within 10 seconds travel time (~55 ft.) for emergency use. Instruct personnel on the locations of eyewashes and safety showers, and how to activate them, prior to an emergency. **NOTE**: The eyewash must be flushed on a weekly basis and documented using the [Emergency Eyewash Maintenance Log](https://research.wayne.edu/oehs/docs/eyewash-log-sheet.doc), which must be posted near the eyewash.
* **Sink** – A sink for handwashing must be available and accessible within the room(s) where DT work will be performed.
1. **Injuries and Exposures**

In case of an injury or exposure, a secondary person should be available to secure the DT or the area and to contact emergency personnel. Bring copies of the Safety Data Sheet for DT and this SOP to the occupational health clinic or hospital. After receiving treatment for injuries and exposures, call OEHS (313) 577-1200, to report the exposure and complete [Report of Injury](https://risk.wayne.edu/files/rofi.pdf) form.

* 1. **For oral (mouth) exposure or if DT has been swallowed and if the person is conscious.**
		1. Wash out mouth with water for at least 5 minutes.
		2. Call WSU Police (313) 577-2222.
	2. **For inhalation exposure.**
		1. Move the exposed individual from the area to fresh air.
		2. If breathing becomes difficult call WSU Police (313) 577-2222.
	3. **Eye contact or dermal exposure.**
		1. Remove any contaminated clothing.
		2. Flush with copious amounts of water for at least 15 minutes using an eyewash/safety shower.
		3. Call WSU Police (313) 577-2222.
	4. **Needlestick or sharps injury involving DT.**
		1. Halt all work and immediately wash the wound with soap and water for at least 15 minutes.
		2. Call WSU Police (313) 577-2222.
1. **Authorized Occupational Health Clinic and Emergency Rooms**

For injuries and exposures that are not considered serious or a medical emergency, visit:

Henry Ford Occupational Health – Harbortown

3300 East Jefferson, Suite 100

Detroit MI 48207

(313) 656-1618

Monday – Friday 8:00 AM to 6:30 PM

If Henry Ford Occupational Health Center is closed or for serious injuries, visit:

Henry Ford Hospital – Emergency Room

2799 W. Grand Blvd.

Detroit MI 48202

(313) 916-8742

OR

Detroit Receiving Hospital - Emergency Room

4201 St. Antoine St, Detroit, MI 48201

Phone: (313) 745-3000

# **Minimum Training Requirements**

1. **General Training:**
* Laboratory Safety Training (general lab and chemical safety issues).
	+ Online through the [Collaborative Institutional Training Initiative (CITI)](https://about.citiprogram.org/en/homepage/).
* Biosafety/BBP Training
	+ Online through the [Collaborative Institutional Training Initiative (CITI)](https://about.citiprogram.org/en/homepage/).
* Hazard Communication
	+ Online through the [Collaborative Institutional Training Initiative (CITI)](https://about.citiprogram.org/en/homepage/).
* [Laboratory-Specific Safety Training](https://research.wayne.edu/oehs/docs/lab-safety-training-checklist.doc)
1. **Laboratory Specific Safety Training:**
* Review of Safety Data Sheet for DT.
* Review of this SOP.
* Review [WSU Hazardous Waste Management](https://research.wayne.edu/oehs/hazardous/chemical-waste) guidelines.

# **References**

* [CDC/NIH: *Biosafety in Microbiological and Biomedical Laboratories, 5th Edition*](https://www.cdc.gov/labs/BMBL.html). Pages 137-138.
* CDC: [Diphtheria](https://www.cdc.gov/diphtheria/).
* Canadian Government Pathogen Safety Data Sheet: [*Corynebacterium diphtheria*](https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/corynebacterium-diphtheriae.html).
* Johnson B, Mastnjak R, Resnick IG. 2001. Safety and Health Considerations for Working with Biological Toxins. Applied Biosafety. 6 (3): 117-135.
* [OEHS chemical spill response guidelines](http://research.wayne.edu/oehs/chemical/spills)
* [WSU Chemical Hygiene Plan](http://research.wayne.edu/oehs/pdf/chemical-hygiene-plan.pdf)
* [American Chemical Society (ACS) guide for chemical spill response](https://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/publications/guide-for-chemical-spill-response.html)

# **Laboratory Personnel Review**

Prior to initiating work, lab personnel using DT must complete the table below.

**Acknowledgement**

We, the undersigned, understand that DT is toxic to humans. Furthermore, we have read and understood this SOP and the associated hazards; have completed the minimum training requirements for work with DT; and have been provided lab specific training regarding DT.

| **Name** | **Signature** | **Date** | **DTaP Vaccine Received in Last 10 years?****(Yes/No)** | **If DTaP Vaccine Offered, indicate if declined****(or Not Applicable)** |
| --- | --- | --- | --- | --- |
| Name |  |   |   |   |
| Name |  |   |   |   |
| Name |  |   |   |   |
| Name |  |   |   |   |
| Name |  |   |   |   |
| Name |  |   |   |   |
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| Name |  |   |   |   |
| Name |  |   |   |   |
| Name |  |   |   |   |

**WAYNE STATE UNIVERSITY**

**DIPHTHERIA TOXIN VACCINE DECLINATION**

I understand that due to my occupational use of Diphtheria Toxin I may be at risk of serious health complications due to potential exposure. I have been given the opportunity to be vaccinated with Diphtheria Toxin vaccine, at no charge to myself; however, I decline the Diphtheria Toxin vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of Diphtheria Toxin health complications, potentially including death. If in the future I continue to have occupational exposure to Diphtheria Toxin, and I want to be vaccinated with the Diphtheria Toxin vaccine, I can receive the vaccination at no charge to me.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name (print): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Department: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: If you are declining vaccination because you have previously received vaccination elsewhere, complete the following information:

Facility where you were vaccinated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date you received vaccination: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Month / Year)

**Copies of this form must be distributed to:**

1. Employee
2. Employee's Department
3. WSU Office of Environmental Health & Safety

5425 Woodward, Suite 300

Detroit, MI 48202