GUIDELINES FOR THE USE OF MPTP IN ANIMAL RESEARCH

1. PURPOSE

This document describes the guidelines for the use of MPTP (1-methyl-4phenyl-1,2,3,6-tetrahydropyridine) in animal research.

2. SCOPE

This guideline applies to all research personnel or others at Western University and affiliated institutions who are working with, or could potentially be exposed to MPTP.

3. INTRODUCTION

Routes of exposure include inhalation, ingestion, accidental injection and dermal absorption (See 6.1). MPTP is a highly neurotoxic agent that is commonly used in Parkinson's Disease (PD) research due to its ability to induce Parkinsonism in experimental animals. No occupational exposure limit has been established for MPTP, therefore, the following instructions shall be adhered to when handling MPTP and animals administered MPTP. MPTP is excreted in the feces and urine of animals after administration, consequently, these instructions **MUST** be followed when handling animals and bedding for **three (3) days** after the final administration.

4. EXPOSURE CONTROLS

4.1. Use of MPTP **MUST** be described in the Animal Use Subcommittee (AUS) approved Animal Use Protocol (AUP).

4.2. Laboratory workers **MUST** receive specific training regarding the proper handling of MPTP, documented in their laboratory safety manual.

4.3. Pregnant or breastfeeding women, or either gender trying to conceive should consult institutional specific Occupational Health (See 5.6.2) prior to handling MPTP or animals that have been administered MPTP.

4.4. Any handling of MPTP, including weighing, solution preparation, and drawing doses **MUST** be done in certified Chemical Fume Hood. Minimum Personal Protective Equipment (PPE) that **MUST** be worn when handling MPTP:

- 4.4.1. Double Nitrile Rubber (0.11mm) Gloves
  - 4.4.1.1. Gloves **MUST** be long enough so that there is no skin exposed between the glove and sleeve
- 4.4.2. Canadian Standards Association (CSA) Approved Safety Glasses
- 4.4.3. Lab Coat, Tyvek™ or Back-Closure Gown

4.5. Minimum PPE that **MUST** be worn when administering or handling animals that have been administered MPTP:

- 4.5.1. Double Nitrile Rubber (0.11mm) Gloves
  - 4.5.1.1. Gloves **MUST** be long enough so that there is no skin exposed between the glove and sleeve
- 4.5.2. CSA Approved Safety Glasses
- 4.5.3. Lab Coat, Tyvek™ or Back-Closure Gown
- 4.5.4. Individually Fit-tested NIOSH-Approved N-95 Respirator

4.6. All administrations, cage manipulations, and handling of animals that have been administered MPTP **MUST** be performed in a certified Biological Safety Cabinet (BSC) for **three days (72 hours)** after the final administration.

5. PROCEDURES

5.1. All procedures **MUST** be completed while wearing the appropriate PPE stated above.

5.2. Conducting animal work in a BSC:

- 5.2.1. A layer of towels moistened with appropriate disinfectant (See 5.3) **MUST** be placed on the work surface of the BSC prior to opening cages and handling animals that have been exposed to MPTP.

5.2.2. The BSC **MUST** be wiped down with paper towel moistened with disinfectant (See 5.3) at the end of each use. After wiping with disinfectant, BSC **MUST** be wiped with alcohol to prevent corrosion of BSC.

5.3. Areas where MPTP is prepared and/or administered **MUST** be cleaned and decontaminated immediately following each procedure. Spills or surfaces potentially contaminated with MPTP should be routinely cleaned with the appropriate solution:

5.3.1. Clidox - 1:5:1 Solution (base : water : activator) - Fume Hood or BSC

5.3.2. Bleach Solution (1:10 Dilution) - Floor & Cage Dunking

5.4. Animal husbandry:

5.4.1. Cages of animals treated with MPTP **MUST** be clearly labeled with Hazardous Chemical Cage Card including:

5.4.1.1. "MPTP"

5.4.1.2. Date of MPTP administration

5.4.1.3. Contact Name and Numbers (Both Laboratory & After Hours)

5.4.2. Animal cages should not be changed for a minimum of **three (3) days** after the final MPTP administration.

5.4.3. On the first cage change following MPTP administration, the cage bedding is considered contaminated and **MUST** be changed in the following manner:

5.4.3.1. Within the BSC, empty & scrape out the dirty bedding from **one cage at a time** from up to 14 cages into a garbage bag or labeled hazardous waste bag and placed in container for disposal according to institutional specific hazardous waste program (See 5.5)

5.4.3.2. When finished dumping & scraping up to 14 cages seal the bag and wipe the outside of bag with the appropriate disinfectant (see 5.3).

5.4.3.3. Dirty Water – dispose of directly down the sink drain. It does NOT need to be treated.

5.4.3.4. Once removed from the BSC the cages, bottles, sipper tubes and other housing supplies are to be dunked in an appropriate disinfectant (see 5.3) and placed on the cart for transport to cage wash area.

5.4.3.5. After this first cage change, new cages can be handled using universal laboratory precautions & PPE.

5.5. Laboratory Waste & Carcass Disposal:

5.5.1. Items contaminated or potentially contaminated with MPTP and infected carcasses **MUST** be double bagged, labeled as Hazardous Waste and placed in specified containers for removal by institutional specific hazardous waste management program. Western's Hazardous Material Management Handbook , LHSC Waste Management Program, St. Joseph's Waste Management Program

5.6. Emergency Procedures:

5.6.1. In the case of an exposure to eyes or skin, flush the area for 15 to 20 minutes with running water.

5.6.2. During Business Hours bring the MSDS (See 6.1) to Institutional specific Occupational Health:

5.6.2.1. UWO Workplace Health UCC25 Ext. 82047 Follow MPTP Post-exposure Medical Protocol

5.6.2.2. Hospital Occupational Health & Safety Services; VH-Ext. 52286, UH-Ext 33201, or SJHC Ext. 64332

5.6.3. After Business Hours bring the MSDS (See 6.1) to the nearest Hospital Emergency Department

5.6.4. Inform supervisor, who shall complete an Accident/Incident Reporting & Investigation Form Western's Form, LHSC's AEMs reports (Intranet only), St. Joseph's Form (See OHSS Office for the form)

6. RESOURCES & RELATED DOCUMENTS

6.1. For current MSDS, search Product # 199915 on Sigma-Aldrich Website Hyperlink

6.2. ACVS Chemical SOP SAF-003 Hyperlink

6.3. UWO procedures for working with MPTP in a Laboratory

6.4. Przedborski et al. (2001) The parkinsonian toxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP): a technical review of its utility and safety. *Journal of Neurochemistry* 76, 1265-1274.