

Title: Glassware Cleaning		Copy No: ##
SOP No.: 3.02/2.6/S	Effective Date: June 18, 2013	Location: ###

QSM Approval: _____

Glassware Cleaning

1. Introduction

All glassware used in the analysis of toxic organic compounds at the trace and ultra-trace level must be scrupulously cleaned as soon as possible after use to ensure the removal of all traces of contamination that may interfere with the consistency and accuracy of analytical results.

A dishwashing system is used for cleaning the glassware. It consists of a laboratory dishwasher located in room 167, and a water purification system located in room 168 that is designed to supply laboratories ultrapure deionized (DI) water with a resistivity of > 18 MΩ·cm. (Type 1 ASTM/CAP/CLSI specifications). (Refer to SOP 19.04/1.0/S for procedures on operation and maintenance).

2. Examine for damaged glassware

Inspect glassware before each wash and use. Any cracked or broken glassware is to be discarded in a glass disposal container.

3. Operation and Maintenance of the dishwashing system

3.1 Prior to starting the dishwashing system:

- 3.1.1 Ensure the DI water tank in room 168 is full.
- 3.1.2 Check the DI water systems performance by viewing the reading on the resistivity meter in room 168. Water resistivity reading should be in the range of 18.0±0.5 MΩ cm. If the resistivity value is less than 17.5 MΩ cm, do not start the washer. Immediately, notify the supervisors of all laboratories that use the DI water.
- 3.1.3 Ensure there is an adequate supply of salt, soap and acid solution in the dishwasher and the tubing is correctly positioned.
- 3.1.4 Clean screens inside the washer, as dirt and glass shards will damage the washer.

3.2 Load the washer using appropriate racks.

3.3 Only pre-rinsed glassware should be placed in the washer. (See section 4)

3.4 Select the appropriate wash cycle.

3.5 Start washer and listen to ensure glassware is not flying around inside.

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Title: Glassware Cleaning		Copy No: ##
SOP No.: 3.02/2.6/S	Effective Date: June 18, 2013	Location: ###

4. Glassware Washing Procedure

4.1 Prevent Cross-Contamination

The following glassware cleaning procedures are specified to each of the following AAQS laboratories, caution must be taken to avoid cross-contamination:

- Lab 136 – HPLC
- Lab 139 – Organic
- Lab 152 – Ultra Trace
- Lab 171 – Instrumentation

- 4.1.1 Glassware from labs 136, 139, 152 are not to be washed together due to the variation of contamination levels anticipated from each laboratory.
- 4.1.2 Glassware from lab 152 is further segregated into low-level and high-level glassware, which is not to be combined.

4.2 Organic Lab 139 or Instrumentation Lab 171

- 4.2.1 Remove any stoppers or plugs which may be in the glassware.
- 4.2.2 Pre-rinse all used glassware in the lab with at least 3 rinses of last solvent used.
- 4.2.3 Allow to air-dry in the fume hood or rinse with acetone (or methanol).
- 4.2.4 Heavily stained glassware is first soaked in Labware cleaning solution (1:20 dilution, Sparkleen; DI water) for several hours followed by gentle scrubbing of the inner surface with a brush and rinsing with tap water. Do not scratch the inner surface of the glassware as this will create active sites for contaminants.
- 4.2.5 Transfer the pre-rinsed glassware to room 167 in designated bin for Lab 139 and 171.
- 4.2.6 Load the pre-rinsed glassware in the washer and wash them with wash cycle #5. (See Appendix A for details)
- 4.2.7 Remove the glassware from the washer and rinse them in the fumehood with at least 3 times approximately 10mL of 1) DI water; 2) Acetone; 3) Hexane
- 4.2.8 The washer should be empty at the end of the day. No clean glassware is to be left in the washer overnight.

4.3 HPLC Lab 136 or Ultra-Trace Lab 152

- 4.3.1 Remove any stoppers or plugs which may be in the glassware.
- 4.3.2 Pre-rinse all used glassware in the lab with at least 3 rinses each of: 1) Hexane; 2) Acetone

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---	--------------------------------

Title: Glassware Cleaning		Copy No: ##
SOP No.: 3.02/2.6/S	Effective Date: June 18, 2013	Location: ###

- 4.3.3 Heavily stained glassware is first soaked in Labware cleaning solution (1:20 dilution, Sparkleen: DI water) for several hours followed by gentle scrubbing of the inner surface with a brush and rinsing with tap water. Do not scratch the inner surface of the glassware as this will create active sites for contaminants.
- 4.3.4 Transfer the pre-rinsed glassware to room 167 in the designated bin for Lab 136 or 152.
- 4.3.5 Load the pre-rinsed glassware in the washer and wash them with wash cycle #5. (See Appendix A for details)
- 4.3.6 Remove the glassware from the washer and rinse them in the fumehood with at least 3 times approximately 10mL of: 1) DI Water; 2) Acetone; 3) Hexane; 4) Dichloromethane
- 4.3.7 The washer should be empty at the end of the day. No clean glassware is to be left in the washer overnight.

5. Proper Drying and Handling

- 5.1 All glassware is air dried in a contaminant-free area or in the oven with the fan on.
- 5.2 Glassware for the HPLC and UTL are covered in hexane and DCM rinsed aluminum foil and transported to the appropriate laboratory
**Note: aluminum foil is to be reused as much as is practical before discarding.*

6. Housekeeping of Room 167

- 6.1 Teflon solvent bottles in the fumehood are to be refilled immediately after use.
- 6.2 Verify and replenish the supply of salt, soap and acid solution in the dishwasher before operation.
- 6.3 Solvent bottles stored under the fumehood must be replenished when inventory falls below one full bottle of each of the required solvents.
- 6.4 Non-chlorinated solvent disposal is segregated from chlorinated solvent disposal. Do not add dichloromethane into the non-chlorinated disposal container.

7. Revisions

- Oct 2003: Section 2.9 modified
 Header changed to reflect ETC address change
 2.9.1 changed to "Turn the dial to the desired length of time on the timer (typically 8 minutes)."

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- 2.9.2 changed to “Open the valve to either the water storage tank in room 168 or the storage tank for the dishwasher. The solenoid switch for the dishwasher tank must also be turned on at this time, if required.”
- Nov 2005: Section 2.9.2 – Deleted reference to the water storage tank in room 168
Rephrased section 3.2
- May 2008: Lead Reviewers: Jennifer Verner and Gary Poole
Section 3.2: Changed program 5 to 6
Section 3.3.5: Added information for newer dishwasher
Section 4.1: Removed Lab 136 from heading
Section 4.2: Added Lab 136 to heading
Section 4.6: new section, renumber 4.7 to 4.9 to reflect addition of 4.6
- May 2011: Section 1: Added reference to SOP19.04/1.0/S
Section 2: Deleted Caution paragraph
Section 3: Changed Lancer Model
Section 3.1: Changed to Program 5
Section 3.3.1: Updated information on using water system
- April 2013 Whole document reformatted
Added Section 2: Examine for damaged glassware
Section 3: Revised operation and maintenance of the dishwashing system
Section 4 : modified to include lab 171
Section 4.2.7 and 4.3.6: Added “at least” 3 times and “approximately”
Added sections 4.2.1, 4.3.1, 4.2.8 and 4.3.7
Added title to Section 5: for proper drying and handling
Added title to Section 6: for housekeeping of Room 167
Added Section 6.2
Moved Lancer Washer operating procedures to Appendix A
Removed revision record 2001 and older

Lead Reviewer: Alison Walkey
Title: Organic Laboratory Technologist

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Title: Supervisor, Organic Laboratory

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Page:
4 of 5

Title: Glassware Cleaning		Copy No: ##
SOP No.: 3.02/2.6/S	Effective Date: June 18, 2013	Location: ###

Appendix A

Lancer Washer Model 1300LX – operating procedures

The Lancer washers have different programs that can be used. Glassware from the Lab 136, 139, 152 and 171 must be washed using Wash Cycle # 5. This program is as follows:

- 1) Prewash glassware with deionized water archived from last rinse of previous load for 4 minutes at 40°C.
- 2) Wash with Lancerclean® soap/water for 4 minutes at 85°C.
- 3) Rinse for 4 minutes with cold water.
- 4) Rinse for 2 minutes with water acidified with 20% acetic acid.
- 5) Rinse for 4 minutes with cold water.
- 6) Rinse with cold deionized water for 1 minute.
- 7) Rinse with deionized water for 4 minutes at 50°C.
- 8) Cycle time is approximately 70 minutes.

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