

# LSC Safe Work Procedure

## Assembly and Use of LSC Flammable Liquid Pumps (June, 2014)

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### Background and Scope

In order to safely store the large amounts of flammable liquids that are commonly found in large scientific research facilities like the Life Sciences Centre, the LSC has a state-of-the-art flammable liquids storage room located on the B2-level. The room has a number of safety features including: card access control, vapour mitigating ventilation, explosion-proof lighting and electrical outlets, a static-grounded floor, static-grounded drum storage/spill trays, a flammable liquids spill kit and more.

The LSC has provided two flammable liquid-compatible pumps for authorized LSC personnel to use to safely dispense flammable liquids from their 25-litre drums into smaller containers for laboratory transport and use.



**Two pumps have been provided: one for 100% (99.9%) Ethanol, one for 95% Ethanol.**

Users who do not wish to use these pumps must use their own flammable liquid-compatible (spark-proof) pumps.

Users are not permitted to dispense from 25-litre drums by “tipping and pouring”. In order to be static-grounded, drums must remain in contact with the spill trays’ grounded metal grills (or with the floor). Tipping and pouring not only creates the possibility of static build-up, it also creates ergonomic risks, as well as the risk of spills.

In order to be granted access to the flammable liquids storage room, LSC personnel must have completed, at minimum, the LSC On-line Safety Orientation and the UBC Laboratory Chemical Safety course. When dispensing flammable liquids, users must wear a labcoat and splash goggles. An assortment of these items are provided in the flammables room for the users to wear while dispensing.

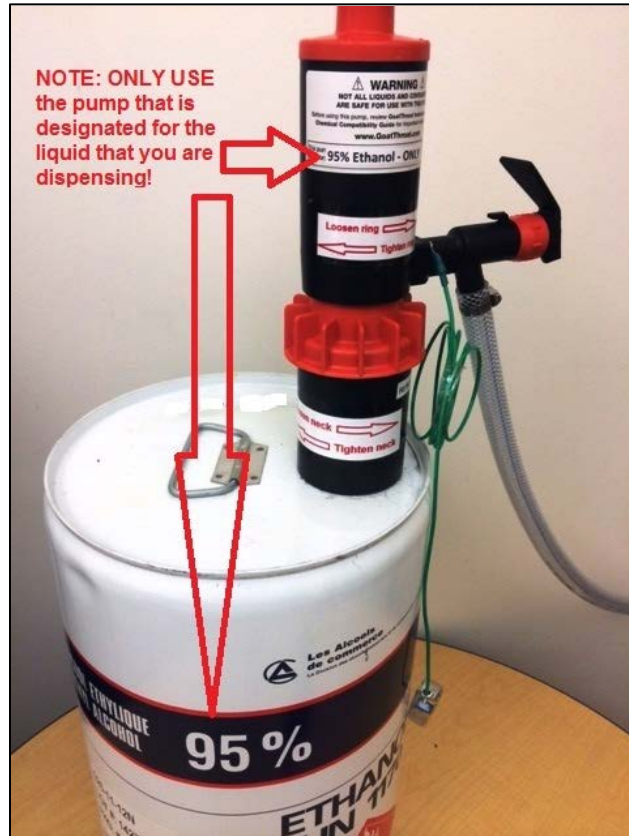
## Pump Assembly

**Step 1: Select appropriate pump (for flammable liquid you are dispensing)**

Select the pump that is designated for the specific type & purity-grade of the flammable liquid you wish to dispense.

The designated liquid for each pump is written on the main body of the pump (see picture below).

Note: It is *essential that only the designated pump be used*, as this will ensure that no experimental contamination issues will occur.



**Step 2: Raise the pour-spout and remove grey cap.**



**Step 3: Place black adaptor neck onto drum.**



**Step 4: Insert black pump tube into drum.**



Note: only use the pump that is designated for the exact flammable liquid you will be dispensing.

## Step 5: Fasten pump assembly to drum.



## Step 6: Attach grounding clamp onto drum lip



After the grounding clamp has been attached to the drum, the pump is ready for use.

# Pump Use and Dispensing

## **Step 1: Don splash goggles and lab coat.**

The use of a pressurized pump creates an eye-splash risk.

## **Step 2: Place an appropriate secondary container\* on the floor.**

Appropriate secondary containers can include: safety cans, plastic “jerry cans” and glass bottles or jugs.

Note: *Glass bottles and jugs MUST be transported in an appropriate secondary container (to prevent dropping, and to contain liquid if dropped).*

## **Step 3: Place grey dispensing hose into secondary container.**



## **Step 4: Close pressure-relief valve (by turning the black knob clockwise all the way).**





**Step 5: Pressurize the pump** - by 'pumping' (lifting and lowering) the pump piston handle 6 or 7 times.



Note: You do not need to greatly pressurize the pump / drum to dispense. The number of 'pump cycles' required will depend on the volume of liquid in the drum.

**Step 6: Dispense flammable liquid** by depressing the black spout-lever.



Note: If the pressure is insufficient to dispense, if liquid does not flow, 'pump' the piston handle a few more times. Do not overpressurize.

Dispense carefully. Do not overfill secondary container, causing a spill.

Clean up small spills with absorbent materials (provided), and place waste into open waste bin.

## **Step 7: Disassembling Pump after dispensing**

- 1. Release pump pressure** - by turning black relief knob counter-clockwise
- 2. Release pump from adaptor neck** - by turning large red ring counter-clockwise
- 3. Remove grounding clamp from drum.**
- 4. Remove pump slowly, allowing fluid in black tube to flow back into drum!**
- 5. Place pump upright between drums in large, grounded spill-catcher tray** – for a minute or so to capture drips.
- 6. Remove black adaptor neck** and cap your drum spout.
- 7. Place pump and adaptor neck back onto the pump holder shelf.**
- 8. Clean up any spills on floor with absorbent material** and dispose of waste into open waste bin.