**Labconco Freeze Dryer**

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| Potential Hazards while performing these activities | |
| COLD HAZARD | This equipment contains freezer units which may cause cold related injuries. |
| SLIP HAZARD | Liquids from this unit may fall on the floor, causing slippery conditions. |
| VACUUM HAZARD | This unit operates at negative pressure and can create a vacuum hazard if improperly used. |
| ELECTRICAL HAZARD | This equipment contains liquid near electrical connections. |

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| Preventions to reduce exposure to hazards: | |
| Eye Protection | Wear safety glasses with side shields while operating. |
| Protective Gloves | Wear appropriate gloves for chemical usage. |
| Non-slip, closed shoes | Wear non-slip, closed toed shoes to avoid slipping. |
| Read Guide | Become familiar with this guide before operating.  The operating manual is also available for reference. |

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| **Note**:  For specialty applications of manual mode consult the instrument user manual. If you have additional questions about the operation of this equipment contact the LSM. |

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| Setup Steps | Pictures |
| 1. Place samples in -80 C freezer for the desired amount of time. The sample container should be 2 to 3 times larger than the samples. Seal top of vessel with perforated parafilm to allow solvent to be removed from sample during freeze-drying. Meanwhile get the freeze dryer ready for operation. |  |
| 1. Check that the collector chamber is clean and dry. Replace lid |  |
| 1. Make sure that the sample valves are positioned to the vent position (Bevel points upwards) |  |
| 1. Power up the freeze dryer, the power switch is on the left-hand side of the cabinet. The alarm will beep a few times and stop. If it continues call the LSM. |  |
| 1. To run in auto mode, press the panel button labeled REFRIDGERATION AUTO. This will initiate refrigeration and once -40oC is reached the vacuum will start. When the system vacuum level is at ~ 0.14 mBar, samples can be added. |  |
| Operation | Pictures |
| 1. Glass vacuum containers, adapters and filter paper are available in the lab glassware cabinet. Be sure to place a filter paper in the top of the sample container lid first. Then connect the pre-frozen sample to a sample valve on the manifold. Turn the plastic knob to the vacuum position. The bevel points towards the sample port (facing down) |  |
| 1. Before adding a second sample, allow the vacuum level to return to ~ 0.14 mBar |  |
| 1. To remove a sample, turn the plastic knob on the sample valve to the vent position (Bevel points up). This will close the valve and vent the sample container |  |
| Shut-down Procedure | Pictures |
| 1. Release system vacuum by turning the plastic knob to the vacuum position (this is the open position with bevel facing down) |  |
| 1. Press the vacuum button on the control panel to turn the vacuum off then press the refrigeration button next to the illuminated LED to turn off the refrigeration system. | C:\Users\rmc\Pictures\Capture.PNG |
| 1. Turn off the Main power switch on the left-hand side of the cabinet. |  |
| 1. Place a suitable collection container below the drain spout. Open the valve on the drain and allow excess water to drain. |  |
| 1. Add a small amount of warm water to melt ice around coils. Once it has melted enough, the ice can be manually removed. [Important Note: The water should not cover more than the bottom 2 coils otherwise water may drain into vacuum pump]   Flush collector chamber with water (see note above) and wipe dry. |  |