

Protocol for changing liquid nitrogen tanks

1. The cryo storage units will sound an alarm when the attached dewar is empty.
2. The alarm can be temporarily silenced by pressing the "mute" button. But this is only temporary, and it will eventually be necessary to change the tank. The unit will survive without new nitrogen for a day or so, but you undoubtedly will not want to endure the alarm for that long!
3. To change the tank, follow the following steps:
 - a. Ensure that the tank is actually empty. The cryo unit assumes that the tank is empty if a "fill cycle" takes too long, but sometimes the larger cryo units simply take a long time to fill and the empty tank alarm is false. You can tell that the tank is empty from the gauge, and by testing the weight of the tank by carefully tipping it to the side.
 - b. Wear **eye** protection before proceeding to the next step.
 - c. Close the valve on the empty tank.
 - d. Using a wrench, detach the tube from the valve. Make sure that you detach the tube, not part of the valve! Note: one of the valves is different from the other, and you need to use 2 wrenches to remove it.
 - e. Locate a new (full) tank. You will likely need to take one from the landing at the top of the stairs. Before moving tanks, **open the gate** (the lock takes a 1-10 key) and block the stairs. This is to prevent a tank falling down the stairs, exploding, and killing you. You'll also need to detach the chain barrier.
 - f. Before proceeding, make sure that the pressure of the tank is between 20 and 40 pounds per square inch (psi). Sometimes the vendor supplies a "high pressure" tank which will damage the cryo unit.
 - g. Exchange the new and old (empty) tank. Remember to close the gate when done and attach all safety chains.
 - h. Attach the tube to the LIQUID port (not the use or gas or any other port). This is extremely important!
 - i. Open the valve most of the way (be gentle, don't jam it in the open position).
 - j. If everything is OK, nitrogen should start feeding into the tank. If it doesn't, press "fill"---this will start the flow of nitrogen and also ensure that you hooked everything up correctly.