Liquid nitrogen is a cryogenic liquid that can be found in many laboratories and is used in a multitude of ways.

Nitrogen is a clear, odorless, abundant gas that mainly exists in a gaseous state. In research, it is often used in a liquid state for its cryogenic properties. Liquid nitrogen will rapidly boil and evaporate upon exposure to room temperature. From the liquid to gaseous state, liquid nitrogen has an expansion ratio of 1:680 liters, meaning that for every liter of liquid nitrogen, it will become 680 liters of nitrogen gas. For this reason, liquid nitrogen is characterized as a simple asphyxiant because it will easily displace the oxygen in an area.

Normal oxygen content is between 21.5-19.5%. An oxygen deficiency is an atmosphere with less than 19.5% oxygen. Listed below are the health effects in an oxygen depleted atmosphere:

- **19.5-15%**: Decreases ability to work strenuously and may impair coordination and induce coronary, pulmonary, or circulatory problems.
- **15-12%**: Respiration deepens, increased pulse rate, and impaired coordination/perception/judgment.
- **10-8%**: Mental failure, nausea, fainting.
- **8-6%**: May be fatal in as few as 6 minutes.
- **6-4%**: Coma in 40 seconds respiration ceases.

**Oxygen deficient atmospheres are an invisible danger -- they have no warning properties!**

The risk of an oxygen depleted atmosphere can exist when both dispensing liquid nitrogen to a Dewar, as well as when attached to a manifold system or other equipment.

All liquid nitrogen tanks have a Pressure Relief Device (PRD), a safety feature to prevent over pressurization. Liquid nitrogen is often delivered in 160 Liters containers. Due to this large quantity along with the large expansion ratio, if the pressure relief device is ever activated, the entire tank can be released, which can displace the oxygen in a very large area.

For this reason we STRONGLY advise the placement of oxygen sensors in areas where multiple tank of liquid nitrogen are present, or small rooms with a single tank. There are several types of sensors available. Please contact EH&S for a site visit and consultation for evaluation, selection, and placement of oxygen sensors. A hazard warning sign for locations having liquid nitrogen and an oxygen sensor is available at [http://www.safety.rochester.edu/labsafety/signage/liquidnitrogen.html](http://www.safety.rochester.edu/labsafety/signage/liquidnitrogen.html). We are here to help!

As always, if any cylinder is suspected of leaking, evacuate the room and contact EH&S through Public Safety (x13). For those emergencies at off-site locations, not serviced by the University’s Public Safety Department, contact Monroe County Emergency Services at 9-1-1.
Safety Data Sheets are now available to the University of Rochester community through CHEMATIX.

Log into Chematix [https://www.rochester.chematix.com/Chematix/] with your University Net ID and password. On the landing page, click the button labeled “Safety Data Sheet Search Through MSDSonline” to navigate to The University’s account with MSDSonline. You’ll find the button below “Continue with UR Credentials”. Search the MSDSonline library using the product name, manufacturer, CAS number, or product code to find the corresponding SDS.

Reminder to Close out Inspection Deficiencies Using CHEMATIX!

Labs with unresolved inspection findings will be reported per the UR Chemical Hygiene Program. It is important to resolve your inspection deficiencies using CHEMATIX ASAP! Review the Chemical Hygiene Program and instructions for resolving your inspection deficiencies using CHEMATIX at [http://www.safety.rochester.edu/labsafety/chematix/pdf.InspectDeficiencies.pdf]. Contact your EH&S Inspector (Liz Carroll, Carolyn Place, or Mary Jo Valenti) if you have any questions.

From the UR Chemical Hygiene Program:

“The expectation of the lab inspection program is to maintain a high level of safety in University laboratories. Non-correction of identified problems could place those in the lab at risk of exposure or injury.

Those problems which are not corrected as well as those problems that recur will be reported to the PI/supervisor, the LSO/Lab Manager, as well as the department chair/unit head. An unannounced repeat inspection may take place approximately 30 days after the inspection report is issued. Any remaining issues noted during this repeat inspection will then be reported electronically to the PI/supervisor, LSO/Lab Manager, the Department Chair/Unit Head, as well as the applicable Dean for action.”

CHEMATIX Waste Tip

To ensure chemicals which have been inventoried and which are being disposed of in their original container (e.g., expired or partially used containers) are automatically removed from your inventory, use the inventory barcode to identify the container when completing a waste card. See screenshot on next page.

If you don’t reference the inventory barcode (starts with URC or #), then you will have to manually remove the container from your inventory. See instructions for “Removing an Item from your Inventory” [http://www.safety.rochester.edu/labsafety/chematix/pdf/RemoveItem.pdf].

This does not apply if you are wasting a portion of the chemical and keeping the reminder for future use. In this case, the container must not be removed from your inventory until it is empty.

Questions can be directed to questions@safety.rochester.edu or to Environmental Compliance (275-2056).

EH&S/Environmental Compliance (Hazardous Waste) reports that all chemical hazardous waste must now be disposed of through CHEMATIX. Hazardous Waste, tagged with the 3-part waste tags, will NOT be accepted.
**Add CHEMATIX inventory barcode in this column.**
On October 1st, NIH announced that October is 2015’s National Biosafety Stewardship Month. First started in 2014, the purpose of National Biosafety Stewardship Month is to reinforce attention towards current biosafety practices, policies, and procedures. Here at the UR, we are doing many of the things NIH asks institutions to review this year: training, engagement, and transparency.

Some highlights:

Training (e.g. incorporating biosafety into your lab’s regular procedures). For training, if there is anything you’d like to see either in Laboratory Safety Training or on EH&S’s website, please let us know!

Engagement (e.g. non-punitive incident reporting systems to develop lessons learned and mitigate risks) – in addition to the Employee Incident Report form, EH&S also has a new Near Miss Report form to report unplanned events that don’t result in injury, illness, or damage but have the potential to do so, and can be confidential upon request

A set of FAQs on NBSM have been developed and is available on the OSP website. Additionally, a notice of NBSM has been published in the NIH Guide to Grants and Contracts. Questions about NBSM can be directed to the NIH Office of Science Policy, SciencePolicy@od.nih.gov.

October is Breast Cancer Awareness Month, which is an annual campaign to increase awareness of the disease. While most people are aware of breast cancer, many forget to take the steps to have a plan to detect the disease in its early stages and encourage others to do the same. We have made a lot of progress but still have a long way to go and need your help!

Breast cancer is the second most common kind of cancer in women. About 1 in 8 women born today in the United States will get breast cancer at some point. The good news is that many women can survive breast cancer if it’s found and treated early. A mammogram – the screening test for breast cancer – can help find breast cancer early when it’s easier to treat.

National Breast Cancer Awareness Month is a chance to raise awareness about the importance of early detection of breast cancer. Make a difference! Spread the word about mammograms and encourage communities, organizations, families, and individuals to get involved.

Men can develop breast cancer too—see this link for more information on facts and symptoms http://www.medicinenet.com/male_breast_cancer/article.htm#male_breast_cancer_facts
Autumn Health and Safety Tips

Fall into good habits this autumn! Follow the tips below from the CDC to help you and your family stay safe and healthy.

http://www.cdc.gov/family/autumn/

Take steps to prevent the Flu.
The single best way to protect against the flu is to get vaccinated each year in the fall. Cover your nose and mouth with a tissue when you cough or sneeze. Wash your hands often. Stay home if you get sick.

Flu Season Is Around the Corner
Seasonal Flu Vaccination
Take 3 Actions to Fight the Flu

Get smart about antibiotics.
Antibiotics can cure bacterial infections, but not viral infections. The common cold and the flu are viral infections, so avoid using antibiotics if you have one of these. Using antibiotics when they are not needed causes some bacteria to become resistant to the antibiotic, and therefore stronger and harder to kill. See your doctor or nurse to find out if your illness is bacterial or viral. Get Smart: Know When Antibiotics Work

Have a safe and healthy Halloween.
Make Halloween festivities fun, safe, and healthy for trick-or-treaters and party guests.

Halloween Health and Safety Tips
Halloween Health-e-Cards
Halloween Scramble: Activity Sheet for Kids

Test and replace batteries.
Check or replace carbon monoxide batteries twice a year: when you change the time on your clocks each spring and fall. Replace smoke alarm alkaline batteries at least once a year. Test alarms every month to ensure they work properly.

Carbon Monoxide Poisoning Prevention
Fire Deaths and Injuries: Fact Sheet

Wash your hands.
Keeping hands clean is one of the most important steps you can take to avoid getting sick and spreading germs to others. It’s best to wash your hands with soap and clean running water for 20 seconds. If that’s not possible, use alcohol-based hand rubs.

Clean Hands Save Lives
Wash Your Hands