

# *Chem241 - AD*

## **Introduction to organic laboratory techniques**

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# *Set up office hours*

Office hours: Wed 5:30 – 6:30 PM  
Or by appointments

# *Prepare for organic laboratory*



## A DAY IN THE LIFE OF A CHEMIST

Median Wage  
\$74,470 per year

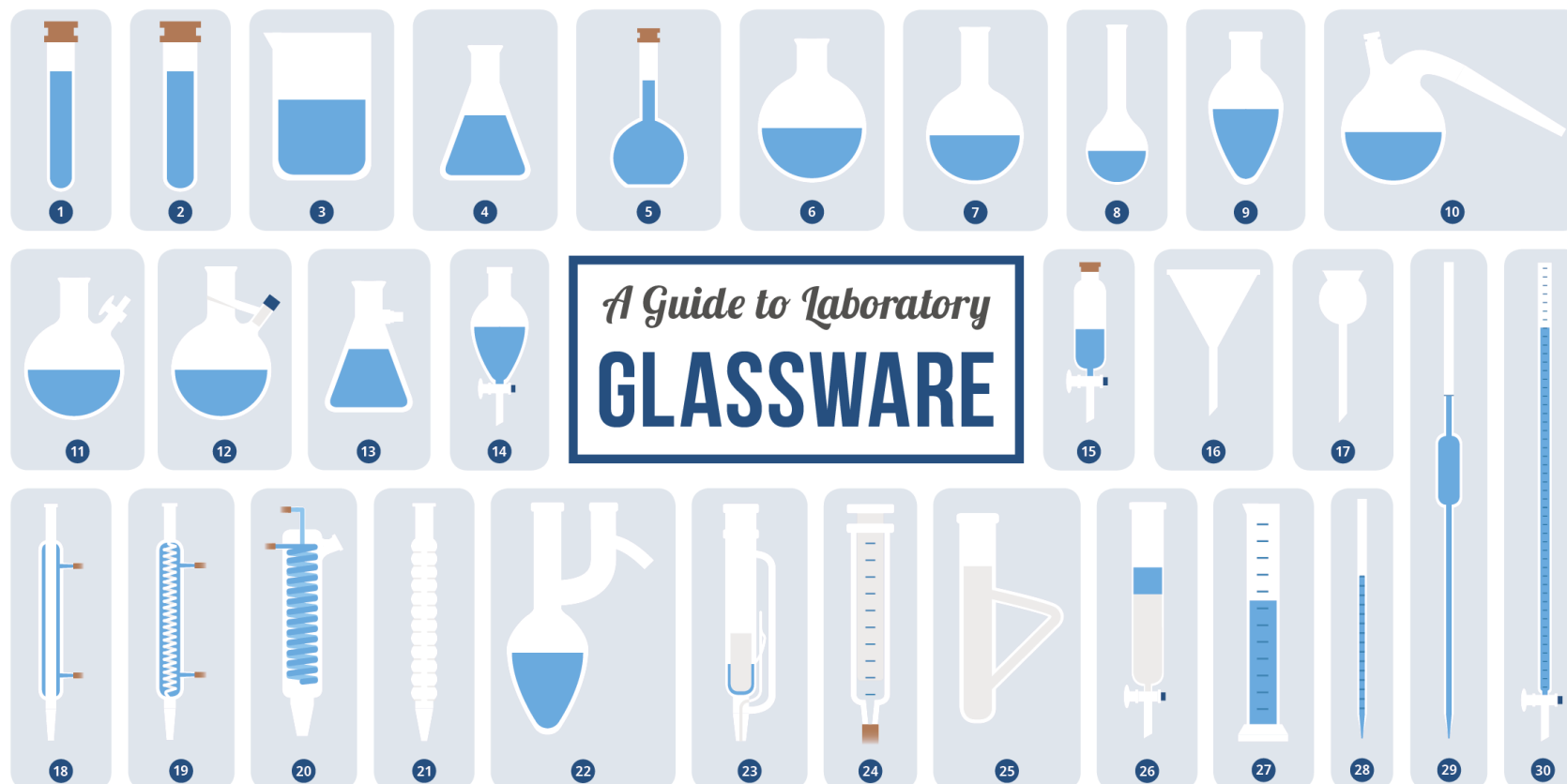
Perform complex research projects

Analyze various substances

Present findings to engineers, scientists, & other colleagues

# *Glassware*





- |                            |                        |                      |                         |                      |                          |
|----------------------------|------------------------|----------------------|-------------------------|----------------------|--------------------------|
| 1 Test tube                | 6 Round-bottomed flask | 11 Schlenk flask     | 16 Filter funnel        | 21 Distilling column | 26 Chromatography column |
| 2 Boiling Tube             | 7 Florence flask       | 12 Straus flask      | 17 Thistle funnel       | 22 Claisen flask     | 27 Graduated cylinder    |
| 3 Beaker                   | 8 Kjeldahl Flask       | 13 Buchner Flask     | 18 Liebig condenser     | 23 Soxhlet extractor | 28 Graduated pipette     |
| 4 Conical/Erlenmeyer flask | 9 Pear-shaped flask    | 14 Separating funnel | 19 Graham condenser     | 24 Gas syringe       | 29 Volumetric pipette    |
| 5 Volumetric flask         | 10 Retort flask        | 15 Dropping funnel   | 20 Friedrichs condenser | 25 Thiele tube       | 30 Burette               |

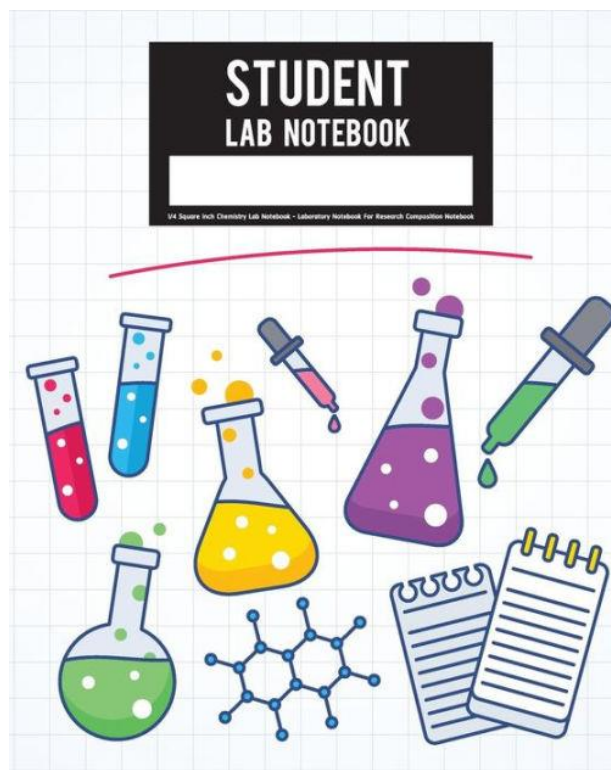


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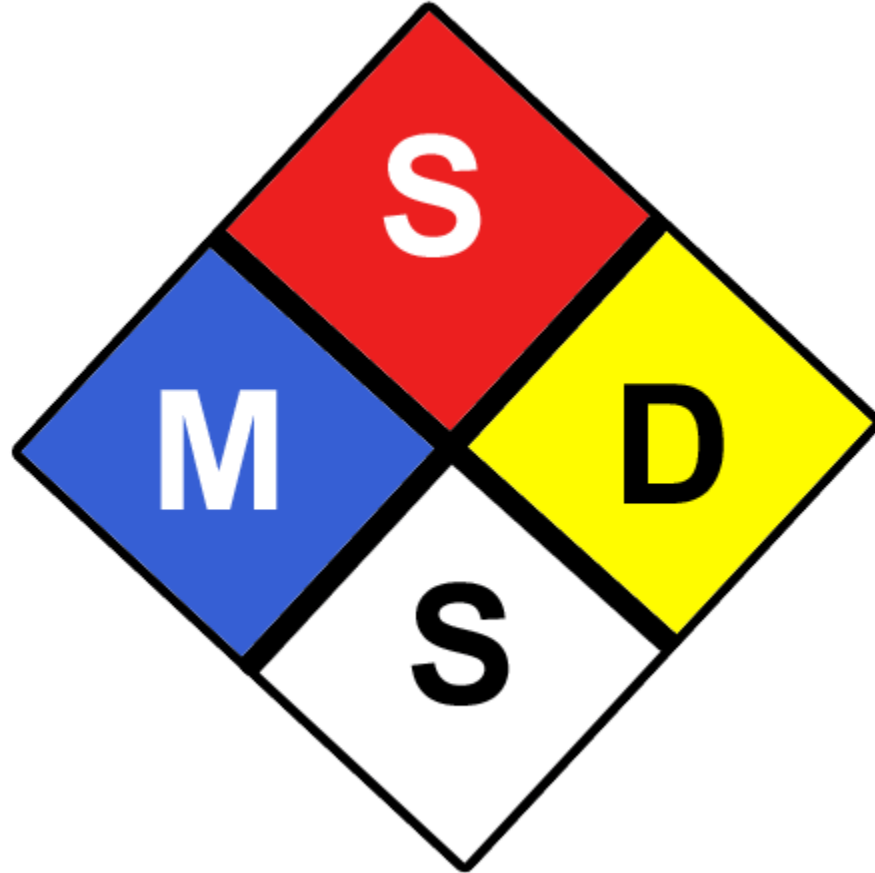
<https://www.compoundchem.com/2015/03/17/glassware/>

# *Lab notebook*



[https://bd3fe99d-5d75-4781-8757-74b6c56ff5f7.filesusr.com/ugd/a342ec\\_ef5b1b4fa5014c918997dadd98ea60a0.pdf](https://bd3fe99d-5d75-4781-8757-74b6c56ff5f7.filesusr.com/ugd/a342ec_ef5b1b4fa5014c918997dadd98ea60a0.pdf)

# *MSDS*



<https://www.airgas.com/msds/001062.pdf>

# Chemical disposal

## How to Properly Dispose of Chemical Waste

### Aqueous Waste (<40% Organic Chemicals)



1. **Acidic** (pH < 4)
2. **Neutral** (pH ~4-10)
3. **Basic** (pH > 10)

#### A Note on Labeling:

- Indicate the content in the disposal container
- Write out all chemical names
- If the content is a mixture of chemicals, indicate the major components and list the most hazardous component(s)

### Organic (>40% Organic Chemicals)



1. **Non-chlorinated**  
(e.g. THF, ethyl acetate, hexanes, toluene, methanol, etc.)
2. **Chlorinated**  
(e.g. DCM, chloroform, chlorobenzene, etc.)
3. **Chemicals in a commercial bottle**  
Undamaged bottle:  
Dispose in original bottle (no label necessary)

Damaged bottle:  
Arrange disposal with Chem Stores

### Solid Waste

#### 1. **Lightly Contaminated**

- No visible loose powders
- Collect in unlabeled green pails
- Empty into the solid waste drums on the 7<sup>th</sup> floor

#### Examples:

Gloves, Kimwipes, paper towels, empty vials/centrifuge tubes, etc.



#### 2. **Chemical**

- Loose powders
- Heavily contaminated solid materials

#### Examples:

Used filter paper, unwanted samples, heavily contaminated gloves/kimwipes/paper towels, etc.



#### 3. **Silica gel**

- Dispose in separate container
- May not be combined with other types of chemical wastes



#### 4. **Chemicals in a commercial bottle**

#### Undamaged bottle:

Dispose in original bottle (no label necessary)

#### Damaged bottle:

Place in secondary container with a waste label



### Special Cases

#### 1. **Sharps**

(e.g. needles, razor blades, etc.)



#### 2. **Inorganic Oxidizing**

- Place in a container with a disposal label



#### Examples:

Peroxides, chromates, etc.

#### 3. **Violently Reactive**

- Contact Ken Greaves and Mike Dymarski

#### Examples:

LAH, nBu-Li, HF, Piranha, etc.

#### 4. **Mercury Thermometers**

- Labeled separate puncture resistant container



#### 5. **Any uranium, thorium or mercury containing compounds**

- Contact Ken Greaves and Mike Dymarski