Winery Safety: A Crush Course

Dr. Christian E. BUTZKE
Associate Professor of Enology
Department of Food Science

butzke@purdue.edu  (765) 494-6500  FS Room 1261
Emergency Procedures
Confined Space and CO₂
Lockout Procedures
Ladders/Forklifts
Personal Protection
Chemicals
Compressed Gases
EMERGENCY PROCEDURES:
A. In case of an emergency, call: 9-9-1-1
B. Procedures in case of fire (or explosion)
C. Fire protection
D. Reporting accidents

CONFINED SPACE SAFETY:
A. Entry permits
B. Tank entry
C. Press entry

LOCKOUT PROCEDURES:
A. Tanks
B. Destemmer-crusher
C. Bottling line

LADDER SAFETY
A. General
B. Placement
C. Securing
D. Use

PERSONAL PROTECTION
A. Eye protection
B. Respiratory protection
C. Skin and body protection
D. Hearing protection
E. Safe lifting and back injury prevention

CHEMICAL ANALYSIS, HANDLING, STORAGE AND DISPOSAL
A. Chemical hygiene plan (Right-to-Know)
B. Chemical analysis methods
C. Stability test methods
D. Material safety data sheets (MSDS)

COMPRESSED GASES, HANDLING AND STORAGE
Winery Safety: A Crush Course

- Emergency Procedures
- Confined Space and CO₂
- Lockout Procedures
- Ladders
- Personal Protection
- Chemicals
- Compressed Gases
Emergency Procedures

- Leave the area of immediate danger.
- Be sure that all other people are out.
- Close the doors.
- Activate the nearest building fire alarm.
- Dial (9-) 9-1-1
- Stand by to advise the Fire Department when they arrive.

The Fire Department should be advised if chemicals used in the winery are involved in the fire and of the location of the Material Safety Data Sheets (MSDS).
When wines are too “hot” ...
Fire Safety

Pure Alcohol

- Flash point: 52 °F
- Boiling point: 172 °F
- Autoignition: 792 °F
- Vapor Density: 1.6 = heavier than air!
- Flammable limits in air:
  - 3% (60 g/m³)
  - 19% (370 g/m³)
Fire Safety
San Francisco April 18, 1906
Winery Safety: A Crush Course

- Emergency Procedures
- Confined Space and CO₂
- Lockout Procedures
- Ladders
- Personal Protection
- Chemicals
- Compressed Gases
Confined Space and CO$_2$

Carbon Dioxide CO$_2$

- 10% CO$_2$ in air $\Rightarrow$ unconsciousness
- $<19.5\%$ oxygen $=$ oxygen-deficient
- $<18\%$ oxygen $\Rightarrow$ unconsciousness

- Vapor Density: 1.5 = heavier than air

- Normal air: 20.9% O$_2$ and 0.03% CO$_2$
Confined Space and CO$_2$

Must

CO$_2$

55 x
Confined Space

Labels on EVERY Tank + Press
Confined Space
Confined Space
Confined Space
Confined Space

- Label space with warning signs
- Measure carbon dioxide and oxygen
- Lock-out mechanical equipment
- Sign/time/date entry permit forms
- Maintain proper ventilation
- Never enter alone w/out outside guards
- Wear safety harness on lifeline
- Do not climb in to rescue
Both manholes are fully open.

A box fan has been placed over the top manhole and is turned on to ventilate the tank by blowing air INTO it and OUT the bottom manhole. The fan has been running for at least five minutes prior to tank entry.

The tank shall only be entered and exited through the bottom manhole.

The person entering the tank is wearing a safety harness and lanyard/lifeline connected to it.

Two people are present in the immediate outside area of the tank to pull the person inside to safety if necessary.

No second person is allowed to enter the tank even in case of an emergency.
...AND NEVER, REPEAT NEVER, ENTER A CONFINED SPACE ALONE!

$\text{CO}_2 + \text{O}_2$

Harness + Lifeline
Say NO to Crack!
No SCUBA in the Chamburcin!
Press = Confined Space
Winery Safety: A *Crush* Course

- Emergency Procedures
- Confined Space and CO$_2$
- Lockout Procedures
- Ladders
- Personal Protection
- Chemicals
- Compressed Gases
Lockout Procedures
Lockout Procedures
Winery Safety: A Crush Course

- Emergency Procedures
- Confined Space and CO₂
- Lockout Procedures
- Ladder/Forklift
- Personal Protection
- Chemicals
- Compressed Gases
Ladders

unsecured
Ladders secured
Winery Safety: A Crush Course

- Emergency Procedures
- Confined Space and CO₂
- Lockout Procedures
- Ladders
- Personal Protection
- Chemicals
- Compressed Gases
Eye Protection

WEAR YOUR SAFETY GOGGLES
Emergency shut-off
Destemmer-Crusher
Repetitive Motion Disorders
Personal Protection

Thanks for OSHA!
Fork Lift Safety
“Move the chardonnay out and bring the pinot noir in . . . and don’t forget to cleanse the pallet.”
Personal Protection

Employee Training

Winery Employee Training Checklist

SAKONNET VINEYARDS

Winery Safety Plan

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Job Title:</th>
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</table>

<table>
<thead>
<tr>
<th>Plan Item</th>
<th></th>
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<tbody>
<tr>
<td>Emergency Procedures</td>
<td>✓</td>
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<tr>
<td>Confined Space Safety</td>
<td></td>
</tr>
<tr>
<td>Lockout Procedures</td>
<td></td>
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<tr>
<td>Ladder Safety</td>
<td></td>
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<tr>
<td>Personal Protection</td>
<td></td>
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<tr>
<td>Chemicals (incl. Right-To-Know/MSDS use)</td>
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<tr>
<td>Compressed Gases, Handling and Storage</td>
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<table>
<thead>
<tr>
<th>Date of Training</th>
<th>Employee Signature</th>
<th>Trained by:</th>
</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
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*
Personal Protection

WARNING: THIS WINE, CONSUMED IN MODERATE AMOUNTS, COULD RESULT IN AN AURA OF WELL-BEING WHICH MAY LEAD TO PREGNANCY.

owner

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Winery Safety: A Crush Course

- Emergency Procedures
- Confined Space and CO₂
- Lockout Procedures
- Ladders
- Personal Protection
- Chemicals
- Compressed Gases
1% Copper Sulfate
10% Copper Sulfate

COPPER SULFATE 0.2%-10%
MSDS Number: CS054—— Effective date 01/01/04

1. Product Identification

Synonyms: Copper (II) Sulfate Pentahydrate (1:1:5); blue vitriol; Sulfuric acid copper (2+) salt (1:1), Pentahydrate
CAS No.: 7758-98-7 (Anhydrous) 7758-99-8 (Pentahydrate)
Molecular Weight: 249.63
Chemical Formula: CuSO₄·5H₂O in HzO

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Percent</th>
<th>Hazardous</th>
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<tbody>
<tr>
<td>Copper Sulfate</td>
<td>7758-98-7</td>
<td>0.2-10%</td>
<td>Yes</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>98-99.8%</td>
<td>No</td>
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</tbody>
</table>

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED. AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.
Material Safety Data Sheets

- Ascorbic Acid
- Bentonite
- Bi-Brite
- Buffer pH 4
- Buffer pH 7
- Citric Acid
- Copper Sulfate
- Cupric Sulfate
- Enoferm Alpha
- Ethyl Alcohol
- Hydrochloric Acid
- Instant Dry Yeast
- Iodine
- Potassium Bitartrate
- Potassium Carbonate
- Potassium Hydrogen Phthalate
- Potassium Metabisulfide
- Potassium Sorbate
- Reagent Alcohol
- Sanitary Spray Lube
- Sodium Thiosulfate
- Starch Indicator
- Sulfuric Acid
- Tartaric Acid
- ZEP I-DINE
- ZEP MW Grease
- ZEP Super Penetrant
- ZEP Trifoam

Right-to-Know
Winery Safety: A Crush Course

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Compressed Gases

- Chained to wall
- Chained to cart
- Move unchained only with cap on
Ozone

- Colorless toxic gas
- Very powerful oxidizing agent
- Irritant via inhalation and to skin/eyes
- Odor threshold 0.02 - 0.1 ppm
- Half life: "20 minutes" only in water but **3 days in air**
- Vapor density: 1.6 = heavier than air
- Solubility in water: 10 mg/L @ 32°F
- 1 to 5 mg/L against wine microbes?
Terms such as "energized oxygen" or "fresh air smell" suggest that ozone is a healthy kind of oxygen.

Ozone is a toxic gas with vastly different chemical and toxicological properties from oxygen.
RECOMMENDED RESPIRATOR:
When working with this chemical, wear a NIOSH-approved full face positive pressure supplied-air respirator or a self-contained breathing apparatus (SCBA).
Ozone
High concentrations of ozone can cause:

- Shortness of breath
- Coughing
- Wheezing
- Headaches
- Nausea
- Eye and throat irritation
- Lung damage
- Reduced athletic performance
- Weakened immune system
What is the American Conference of Governmental Industrial Hygienists' (ACGIH) recommended exposure limit for ozone?

TIME-WEIGHTED AVERAGE (TLV-TWA):

- Heavy work 0.05 ppm 0.10 mg/m³
- Moderate work 0.08 ppm 0.16 mg/m³
- Light work 0.10 ppm 0.20 mg/m³
The National Institute of Occupational Safety and Health (NIOSH) recommends an upper limit of 0.10 ppm NOT to be exceeded at ANY time.
Canadian Centre for Occupational Health and Safety (CCOHS)

Is the odor of ozone reliable as a warning?

NOT RELIABLE - variations in the detection range reported and olfactory fatigue occurs.

www.ccohs.ca/oshanswers/chemicals/chem_profiles/ozone/
Ozone

What ozone levels are considered by the U.S. Environmental Protection Agency (EPA) to be "unhealthful" and to exceed the National Ambient Air Quality Standard?

- 0.125 ppm for 1 hour
- 0.085 ppm for 8 hours
Ozone

Materials damaged by ozone:
- Rubber
- Cotton
- Nylon
- Dyes & paint
1:30 pm:
The Joy of MLF:
How to Git-R-Done!

Elliecoccus Butz
Enology Specialist
Department of Food Science
embutz@purdue.edu  (765) 494-6704  FS Room 1257