

## Department of Art

### Hazardous Materials Orientation and Training

#### Introduction

The Department of Art's Environmental Health and Safety Policies are in effect for each studio area beginning Fall 2003.

1. Faculty are asked to require each undergraduate student to purchase a copy of the Policies at Addam's University Bookstore: the price this year is \$3.95. The Policies will be revised each year, as needed.

2. All students are required to acknowledge in writing receipt of the Policies each year. The Department of Art will keep copies of all the signed acknowledgement forms.

3. ALL art materials, including failed art projects, are assumed to be environmentally hazardous and shall NOT be disposed of in ordinary trash. All art material waste, including wash water (see 7, below) will be collected and stored in appropriate containers by the Department of Art, for pick-up and disposal by the University Office of Safety.

4. Sinks are for hand washing only. **Sinks are not to be used for washing brushes or tools, or the disposal of waste material.**

5. Faculty supervisors are responsible for completing the "Chemical Waste Removal Form" supplied by the Office of Safety for each container of waste that will be collected for disposal. This form must be completed each time there is a new waste container collected for disposal.

6. Faculty supervisors are also responsible for the labeling of hazardous waste containers with the appropriately filled out label—the yellow sticker—from the Office of Safety. These stickers are available through the departmental secretary or by contacting the Office of Safety at 334-5179.

7. New brush and part washing rules are in effect. These rules are distributed along with each area's EHS Policy, and the procedure will be demonstrated at the Department's annual Hazardous Materials Orientation meeting.

<b>I. Required Safe Work Practices</b>	
<b>K</b>	Know your materials and processes <ol style="list-style-type: none"> <li>1. <u>All orders for all materials must include a request, to the manufacturer or supplier, for a current Material Safety Data Sheet (MSDS).</u> One copy of the MSDS must be on file in the master notebook in the Department office; one copy must be placed in your area's MSDS notebook. <b>MSDS may now be acquired from a database (MSDS Online) located on the UNCG Office of Safety website at <a href="http://www.uncg.edu/sft">www.uncg.edu/sft</a>. You must be familiar with the MSDS for the products in use in your area, and have the MSDS notebook readily available.</b> See your Area Supervisor if you have further questions.</li> <li>2. Assume personal responsibility <b>for safety</b>.</li> <li>3. Read all labels <b>prior to use</b>, and follow instructions. Never transfer materials to unlabeled containers.</li> <li>4. See your supervisor if you have any questions.</li> </ol>
<b>N</b>	Never work alone. Never allow a student to work alone. Each studio area shall establish a buddy system, whether a student must work in the presence of another student, a graduate assistant supervisor, or a faculty member. Buddies shall work within the sound of each others' voices, at a minimum.
<b>O</b>	Observe the location and know how to operate emergency equipment in your area. <ol style="list-style-type: none"> <li>1. <b>*Fire Alarm Pull Stations</b></li> <li>2. <b>*Fire Extinguishers P (Pull Pin) A (Aim) S (Squeeze) S (Sweep)</b></li> <li>3. <b>*Emergency Shower and Eye Wash stations</b></li> </ol> <b>*Area around this equipment must be clear of obstructions</b>
<b>W</b>	<b>Wind is your friend.</b> Use appropriate ventilation whenever possible.
<b>S</b>	<b>Save the environment by minimizing waste, and properly disposing of generated waste.</b>

<b>II. *Personal Protective Equipment</b>	
THE UNIVERSITY OF NORTH CAROLINA at GREENSBORO GENERAL PERSONAL PROTECTIVE EQUIPMENT GUIDE	
EQUIPMENT	USE GUIDE
<b>EYE PROTECTION</b>	
<b>Safety Glasses</b> - 100% State funded*, except that employees who wear prescription glasses pay for the cost of the examination. <b><u>*See Note below</u></b>	As required to protect employee from eye hazards, such as, optical radiation or glare when only frontal protection is required. Shaded or special purpose lenses may be required.
<b>Safety Glasses with side shields</b> - 100% State funded except that employees who wear prescription glasses pay for the cost of the examination.	As required to protect employees from flying fragments, objects, large chips, particles, sand, dirt, etc. For severe exposure, add face-shield over safety glasses.
<b>Goggles</b> - 100% State funded	Radiation goggles and hoods for welding, casting, and looking into kilns (IR/UV radiation)
(1) Chemical/Dust Nuisance	As required to protect employees from chemical splashes, mist, sprays, or nuisance dust. For severe exposure, add over goggles.
(2) Welding Goggles - Indirect Ventilation	As required to protect employees against hazards of welding, cutting, and brazing operations.
(3) Cup Goggles - Direct Ventilation	As required to protect employee against eye hazards.
(4) Cup Goggles - Indirect Ventilation	As required to protect employee against eye hazards.

<b>WELDING HELMET</b> - 100% State funded	As required to protect employee against eye hazards of welding, cutting, and brazing operations.
<b>FACE SHIELD</b> - 100% State funded	As required to protect employee's eyes and face.
<b>HARD HAT</b> - 100% State funded	As required to protect employee's head against impact and falling or flying objects. Class A - used in construction and general industry where there is no exposure to high voltage, electrical shock or burns. Class B - use to protect the head against high voltage electricity. Reference: ANSI-Z89.1-1986.
<b>HARD HAT LINERS</b> - 100% State funded	As required to protect employee against the cold weather if hard had is worn.
<b>RESPIRATORS</b> - 100% State funded People who wear <u>Air Purifying Cartridge Respirators</u> must receive an annual pulmonary function test, be trained annually, and be fit-tested every 6 months! Procedures are specified in UNCG's Safety and Health Policy Manual, section 0080. Read it!—there's a copy in Room 162. For any respirator with a cartridge filter for fumes or vapors, cartridge selection is critical: be sure to match the appropriate cartridge to the contaminant.	As required to protect employee from airborne contaminants. <u>Dust---</u> <u>Only</u> sufficient for nuisance dusts, <u>not</u> for wax vapors/fumes. Should have one strap only, and should not be marked with a "TC#." 2 straps and a TC# makes the item a respirator. <u>Air Purifying Cartridge---</u> Must be in Respiratory Program a.) Vapor- a full-face mask is the best type, one that covers the nose and mouth is second-best. Beards are not allowed for a tight fitting negative pressure respirator. If you have a beard, you must use a positive air purifying respirator (PAPR). b.) Fume- For use with metals c.) Toxic Gases- Air-supplied or SCUBA-type recommended
<b>GLOVES</b> - 100% State funded	As required to protect employee from physical, biological, chemical, radiation, or electrical hazards. Glove used for electrical protection must be marked as to class of equipment and whether or not they are ozone-resistant, and shall meet the (ASTM) D 120-87 Specification for Rubber Insulating Gloves. <u>Gloves for solvent protection</u> — Be sure the glove is the correct type for the solvent in use (nitrile rubber is resistant to most, but not all, solvents) — solvent-proof barrier creams can be worn under gloves.
<b>COVERALLS OR APRONS</b>	
<b>Canvas</b> - 100% State funded	As required to protect employee from contact with hazardous substances when canvas provides adequate protection.
<b>Non-Porous (Plastic/rubber)</b> - 100% State funded	As required to protect employee from contact with hazardous substance when plastic or rubber is needed to provide adequate protection.
<b>Leather or Other Flame Resistant Material</b> - 100% State funded	As required to protect employee from hazardous substance when leather is needed to provide adequate protection and when leather or other flame-resistant material is required to protect employee from fire hazards.
<b>BODY PROTECTION</b> - 100% State funded Personal protective footies, vests, aprons, coats, pants,	As required to protect employee against biological, radiation, physical, or chemical hazards. Base selection on information in the workplace hazards

coveralls, and suits in a range of suitable materials and sizes.	control program. Reference: Appropriate OSHA-NC standard(s) on purchase request.
<b>FOOT PROTECTION</b>	
<b>Safety Shoes</b> - State funds one pair per year, cost not to exceed dollar amount established by the Office of State Budget and Management (\$70.00). Employee may purchase and be reimbursed on From BD-403 or agency may supply under the rules and regulations of State Purchase and Contract Division.	As required to protect employee working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole or where protection is needed against electrical hazards. As required to protect employees from solid objects weightin 15 lb. Or greater that (1) are handled routinely each work period (more than once per eight hours) by the employee or other employees, or (2) can fall on the exposed employee's toes from a height exceeding one foot. In general, does not apply to office employees. Protective footwear purchased shall comply with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear.)
<b>Rubber and Specialized Safety Boots</b> - 100% State Funded	As required to keep employee's feet dry when employee routinely works in wet locations such as flooded ditches and to protect from electrical hazards or other hazards requiring specialized safety boots.
<b>SAFETY BELTS, HARNESSSES and LIFE-LINES</b> - 100% State Funded	As required to protect employees from falling while working at elevated (10 ft. or greater) locations not protected by standard guardrails or safety nets or as required when working in confined spaces.
<b>SAFETY NETS</b> - 100% State Funded	As required to protect employees working over 25 feet above ground or water surface where other protective devices are impractical and conventional fall protection system cannot practically be made use of.
<b>EAR PROTECTION</b> - 100% State Funded	As required to protect employee against hearing loss due to noise.
<b>LIFE RING</b> - 100% State Funded	As required to protect employee from drowning
<b>PERSONAL PROTECTION</b>	<ol style="list-style-type: none"> <li>1. Long hair — cut hair or use a hair net to keep away from machinery and flames</li> <li>2. Long sleeves</li> <li>3. Tight fitting clothing</li> <li>4. Remove jewelry</li> </ol>
*Also consult Departmental Personal Protective Equipment Needs Assessment forms	

**NOTE: “100% State Funded” means that the State of North Carolina will supply this equipment to employees. Students are NOT employees.**

<b>III. Introduction to Chemical and Physical Hazards and Types of Hazards<sup>1, 2, 3</sup></b>	
Area/Process:	<b>Foundry</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
Welding UV and IR radiation	1, 2, 5, 6
Welding sparks and gases (carbon monoxide, nitrogen dioxide, ozone)	1, 2, 6, 7
Wax emissions: acrolein, formaldehyde and other low molecular weight gasses; paraffin fumes are unhealthy and also pose an explosion hazard	1, 2, 5, 6
Metal fumes and dusts and wood dusts. Wood dust is OSHA regulated: some dusts are carcinogens. There are MSDSs for wood!	1, 2, 5, 6
Heavy equipment and cutting tools	2, 4, 6
High heat and molten metal	1, 2, 6
Overhead hazards (crane)	2, 4
Compressed air and gases (oxygen, acetylene)	1, 2, 3, 5, 6, 7
Various gases	1, 2, 3, 5, 6, 7
Patina chemicals	1, 2, 3, 5, 6, 7
Acids	1, 2, 3, 5, 7
Solvents (aromatic and aliphatic hydrocarbons), and chlorinated hydrocarbons used as metal degreasers	1, 2, 3, 5, 6, 7
Corrosives	1, 2, 3, 5, 7
Resins:	<u>Epoxy</u> - 1, 2, 3, 5, 7 <u>Polyurethane</u> 1, 2, 3, 5, 7 <u>Vinyl</u> 1, 2, 3, 5, 7 <u>Polystyrene</u> 1, 2, 3, 5, 7 <u>RTV silicone</u> 1, 2, 3, 5, 7 <u>Polyesters</u> 1, 2, 3, 5, 7 <u>Acrylics</u> 1, 2, 3, 5, 7
Grinding, degreasing, cleaning, filing, sandblasting, and polishing operations	1, 2, 4, 6
Sharp and/or heavy tools	2, 3
Noise	2
Vibration	2
Adhesives	1, 2, 5, 7
Cast-making materials (plaster [calcium sulfate], cristobalite [silica], phenol-formaldehyde or urea formaldehyde resins, or polyurethane foam or styrofoam)	1, 2, 3, 5, 7
Dust	1, 2, 6, 7
Forging (carbon monoxide, IR)	1, 2, 5
(1 – Ventilation) (2 – PPE (see table)) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

## III. Introduction to Chemical and Physical Hazards, continued

Area/Process:	<b>Photography</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
Dry and wet chemicals in stock or dilution  Note: Sulfites release SO <sub>2</sub> upon mixture with water. SO <sub>2</sub> mixed with acetic acid gas may cause respiratory diseases or allergies  <b>Note: In-line silver reclamation unit</b>	<u>Developer (hydroquinone, monoethyl <i>p</i>-aminophenol sulfate [“Metol”])</u> 1, 2, 3, 5 <u>Stop Bath (acetic acid, potassium chrome alum)</u> 1, 2, 3, 5 <u>Fix (sodium sulfite, acetic acid, sodium thiosulfate [“hypo”])</u> 1, 2, 3, 5 <u>Intensifiers/Bleaches (potassium dichromate, hydrochloric acid, potassium chlorochromate)</u> 1, 2, 3, 5 <u>Reducer (potassium ferricyanide — avoid heat, acids, UV)</u> 1, 2, 3, 5 <u>Toner (selenium, uranium, liver of sulfur, gold, platinum, oxalic acid)</u> 1, 2, 3, 5 <u>Hardeners/Stabilizers (formaldehyde or chlorinated hydrocarbons)</u> 1, 2, 3, 5
(1 – Ventilation) (2 – PPE (see table) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

Area/Process:	<b>Printmaking</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
<u>Solvents (mineral spirits, “lithotine,” “Varsol,” “lacquer thinner”)</u>	1, 2, 3, 5, 6, 7
Acids (nitric, hydrochloric, hydrofluoric, potassium chlorate, iron perchloride)	Be aware of the dangers of other etching materials: ferric chloride, Edinborough etch (ferric chloride plus citric acid equals hydrochloric acid: not a “green” process as claimed), and electrolytic systems. 1, 2, 3, 5, 7
<u>Metal plate counteretches containing acids or vinyl lacquers</u>	1, 2, 3, 5, 7
<u>Dusts (rosin, sawdust)</u>	Aquatint processes using spray paint or a fast bite with ferric nitrate on zinc are toxic. 1, 2, 3, 5, 6
Heavy weights (litho stones)	2, 3

Sharp tools in etching, wood cutting, and engraving	2, 3
Photo processes (carbon arcs producing gases and fumes, KPR Photo-Resist containing ethylene glycol, mono-methylether acetate, toluene, gum bichromate, direct emulsions containing ammonium dichromate, bleaches)	1, 2, 3, 5, 7
(1 – Ventilation) (2 – PPE (see table) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

Area/Process:	<b>Ceramics</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
NOTE: Industrial grade ceramic ores can be contaminated with toxic materials.	
Clays and clay dusts (silicates, crystalline-free silica, talc [asbestos contamination is possible]).	1, 2, 5, 6, 7
Glazes and colorants (free silica [flint, silica, feldspar, talc], alkali oxides, toxic metals [cobalt, copper, lead, barium, lithium, antimony, chromium, manganese, uranium, cadmium, vanadium, nickel], any chromates [lead, zinc, iron], uranium oxide).	1, 2, 5, 7
Firing processes and gases (carbon monoxide, sulfur dioxide, formaldehyde from clays; fluorine, chlorine, sulfur dioxide metal fumes from glazes and colorants)	1, 2, 3, 6
IR radiation	1, 2, 3, 5, 6
OSHA regulated halogens: fluorides in cryolite, fluorspar, etc	1, 2, 3, 5, 7
(1 – Ventilation) (2 – PPE (see table) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

Area/Process:	<b>Painting</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
Toxic inorganic pigments include: lead, lead antimonate, cobaltarsenite, all cadmiums, all chromates, cobalt, zinc, and tin oxides, potassium cobaltinitrite, barium manganate and sulfate, manganese ammonium phosphate, manganese dioxide, manganese silicates, mercuric sulfide, other metals. Some organic pigments are toxic (phthalocyanines which may contain trace hazards).	Pigments in dry form are more than nuisance dusts. Any dust is OSHA regulated if it contains cobalt, antimony, barium, all valence states of chromium, copper, manganese, mercury, molybdenum, nickel, selenium, zinc, and so on. Some of these metals can be used to enhance the color of organic or naked colorants. Pigments in paste form, as paints, are less hazardous unless ingested or absorbed through the skin, but NOTE: Many colorants are untested. Do not use dry colorants without proper training. 1, 2, 3, 5, 6, 7
Solvents (mineral spirits, odorless mineral spirits, gum turpentine, alcohol)	1, 2, 3, 6, 7
Vehicles (only acrylic emulsion vehicles, which may contain ammonia or formaldehyde in very small quantities). Painting mediums recommended to you that may contain other ingredients	1, 2, 5, 7
Varnishes (solvents are the hazard)	1, 2, 5, 7
Fixatives (again, the solvents, especially in spray fixes; but also, resins)	1, 2, 5, 7
Any sprayed materials	1, 2, 6
Felt tip markers (solvents: xylene, alcohol, toluene)	<b>Be aware of ASTM D 4236 labeling requirements, but also be aware that ASTM D 4236 labeling certification is not the same thing as chemical testing. Not all paints have been tested for toxicity. The phrase “non-toxic” is not a legal term.</b>
(1 – Ventilation) (2 – PPE (see table) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

Area/Process:	<b>Woodshop</b>
<b>Hazard</b>	<b>*Protective Measures (See Legend/Comments Below)</b>
Woods and their dusts, especially any tropical woods. All wood dust is OSHA regulated, and each kind of wood has an MSDS.	1, 2, 3, 5
Solvents	1, 2, 3, 5, 7



Adhesives	1, 2, 5, 7
Noise	2
Vibration	2
Strippers and finishes (toluene, methyl alcohol, methylene chloride)	1, 2, 3, 5, 6, 7
Wood preservatives (pentachlorophenol, arsenic compounds, creosote)	1, 2, 3, 5, 6, 7
Heavy, sharp tools	2,3
Power tools with sharp blades or rapidly turning parts	2, 3, 4
(1 – Ventilation) (2 – PPE (see table) (3 – Safe Material Storage) (4 – Machine Guarding) (5 – Hazard Communication/Labeling/MSDS) (6 – Fire Hazard) (7 – Environmental/Waste Disposal) *To be used as a guide only – not applicable to all cases. Contact the UNCG Office of Safety for further details.	

#### IV. Emergency Procedures

A. Call for help, but stay with victim. If it is necessary to leave the area to make the call for help, get someone—a graduate assistant supervisor, faculty supervisor, or fellow student—to stay with the victim. You must remain within the sound of your helper's voice. Do not perform first aid unless you have been trained.	
B. Make phone calls	
	1. <b>Call Campus Police FIRST</b> at x 4-4444. They will call 911 and direct EMS or the Fire Department.
	2. Poison Control : 1-800-222-1222 (you will automatically be connected to the nearest Poison Control Center), <b>but only after calling x 4-4444 first.</b>
	3. For minor chemical spills, of less than 10 gal., clean it up yourself. <b>Check MSDS for procedures</b>
	4. For major spills, (i.e., a 55 gallon drum), call x 4-4444 <b>and</b> x 4-4357

#### V. Detection of Chemical Hazards

Look first.	
Odor	<b>But odor, or lack of it, is not always a good indicator. "Odorless" mineral spirits, for instance, can be as harmful as regular mineral spirits and lacks the odor warning. Consult the MSDS for the material and pay attention to the signs and symptoms of overexposure.</b>

#### VI. Location and Availability of Program and Manual

<ol style="list-style-type: none"> <li>1. Material Safety Data Sheet (MSDS) Notebooks in every area: see your supervisor</li> <li>2. Master MSDS Notebook in Room 158A</li> <li>3. The UNCG Safety Manual and MSDSs can be accessed from a campus computer at: "<a href="http://www.uncg.edu/sft/">http://www.uncg.edu/sft/</a>" This site also provides other links to NC government, and the National Fire Protection Association (NFPA) 704 Labeling Information site at Michigan State University.</li> <li>4. UNCG Safety and Health Policy Manual in Room 162 (Jan Combs).</li> </ol>
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#### VII. Labeling Systems

1. No lock-out system used in foundry or woodshop. **Lock out/tag out is required for non-cord plug equipment!**
2. No standardized labeling systems are used in the Department of Art. **NFPA 704 Diamond is suggested (you know, the blue, red, yellow, white diamond).**
3. ***Read all labels and follow all instructions!!***

#### VIII. Web Sites

1. See Arts, Crafts, and Theatre Safety, ACTSNY, at [www.caseweb.com/acts/](http://www.caseweb.com/acts/) , with e-mail at [ACTS@CaseWeb.com](mailto:ACTS@CaseWeb.com), for lots of useful information.
2. US Environmental Protection Agency: [www.epa.gov](http://www.epa.gov)
3. Occupational Safety and Health Administration: [www.osha.gov](http://www.osha.gov) This site also has a link to NC OSHA.

#### FOOTNOTES

<sup>1</sup> Rossol, Monona. *The Artists Complete Health & Safety Guide*, 3<sup>rd</sup> edition, (Allworth Press, 1994). ISBN 0880559188.

<sup>2</sup> McCann, Michael, PhD., *Health Hazards Manual for Artists*, 4th revised edition. Lyons & Burford (New York), 1994. But note: this book is aimed at individual artists, not artists in groups in schools or group studio situations. Some recommendations in this book are illegal for all but single users in home studios not covered by OSHA or EPA regulations. UNCG and its studio areas are OSHA and EPA regulated.

<sup>3</sup> Not all hazardous materials may be covered; some mentioned here may not be used in your area.