CHEMICAL HYGIENE TRAINING

PRESENTED BY
THE ECU OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY
ECU CHEMICAL HYGIENE PLAN
UPDATED 2016

- SCOPE
- RESPONSIBILITIES
- TRAINING
- STANDARD OPERATING PROCEDURES
- CHEMICAL MANAGEMENT
- MEDICAL CONSULTATION
OSHA HAZARD COMMUNICATION STANDARD 2012

• MAJOR CHANGES INCLUDE:
  • HAZARD CLASSIFICATION
  • LABELS
  • SAFETY DATA SHEETS
  • INFORMATION AND TRAINING
RESPONSIBILITIES

CHANCELLOR, VICE CHANCELLORS, DEANS, AND DEPARTMENT HEADS

- Maintain responsibility for financial, political and planning support to assure resources are available to implement safety procedures in the labs.

ENVIRONMENTAL SAFETY COMMITTEE

- Composed of representatives of the faculty and staff who use or serve the labs.
- Reviews the chemical hygiene plan as needed and assists in its implementation.
EH&S RESPONSIBILITIES

- Review the ECU Chemical Hygiene Plan annually
- Provide initial lab safety training
- Maintain the master chemical inventory
- Assist with locating safety data sheets
- Provide monitoring where chemical exposure is suspected or as required by regulation
- Inspect labs and chemical fume hoods at least annually
- Coordinate medical surveillance and follow-up medical care
- Review lab safety plans for grant and research work
- Coordinate removal and proper disposal of hazardous waste
  - Biohazard and radioactive waste is disposed through prospective health
RESPONSIBILITIES

PRINCIPAL INVESTIGATOR/LAB SUPERVISOR

- Keep a current copy of the CHP and assure lab personnel comply with the CHP
- Create lab safety plans to supplement
- Train or arrange for training of lab workers
- Maintain training records
- Secure hazardous materials when not in use
- Correct deficiencies identified on inspection report and forward action plan to EH&S
- Assure all primary and secondary containers are properly labeled and stored according to compatibility
- Maintain a current chemical inventory and forward a copy to EH&S annually
- Assure that engineering controls are functioning properly or tagged out of service
- Assure interim inspections are completed
RESPONSIBILITIES

PRINCIPAL INVESTIGATOR/LAB SUPERVISOR

- Arrange for monitoring when required by a specific standard, exposure is anticipated or suspected.
- Arrange for medical surveillance where required through EH&S.
- Determine lab specific personal protective equipment needs, document on lab safety plan and forward to EH&S.
- Provide necessary personal protective equipment at no charge to employees.
- Submit all grants involving the use of hazardous chemicals to EH&S for review.
- Post designated use areas for any carcinogen, reproductive toxin or acutely toxic chemical used in the lab. Document in lab safety plans and include in lab specific training.
- Ensure the availability of an SDS for each chemical listed on the lab chemical inventory; archive old MSDS.
RESPONSIBILITIES

PRINCIPAL INVESTIGATOR/LAB SUPERVISOR

- Collect, store and dispose of chemical waste properly through the ECU hazardous waste disposal system
- Initiate medical services and follow-up of any exposure incident in the lab through EH&S
- Post and maintain a current emergency information near the phone and on the door of the lab
- Contact EH&S for lab start-up instructions and inspection prior to beginning work in the lab
- Complete lab close-out process when leaving the university and schedule final inspection with EH&S
- Include chemical hygiene and lab safety compliance in employee annual work plans for performance review
- Implement and enforce the use of safety procedures, including personal protective equipment, engineering controls, or work practices
RESPONSIBILITIES

LAB USER

- Read and follow the guidelines in the chemical hygiene plan and your lab safety plans
- Participate in initial and refresher training
- Do not remove or deface labels on chemical containers
- Immediately label secondary containers
- Use prudent practices and prescribed hazard control measures
- Report accidents or hazardous conditions to your lab supervisor
- Request training when unsure about a procedure or material
- Use the resources available to access chemical information
- Perform only authorized work, preparations and experiments in the lab
RESPONSIBILITIES

OPEN/SHARED LAB USER

• IDENTIFY THE INDIVIDUAL TO SERVE AS LAB REPRESENTATIVE/PERSON OF CONTACT.

• IDENTIFY RESPONSIBILITY FOR BENCHES AND STORAGE AREAS.

• ALL LABORATORY USERS MUST RECEIVE LAB SPECIFIC TRAINING THAT INCLUDES ALL LAB SAFETY PLANS, CHEMICAL STORAGE AND HAZARDOUS WASTE AREAS.

• IDENTIFY AND TRAIN ALL LABORATORY USERS REGARDING PROCEDURES FOR SHARED CHEMICALS AND EQUIPMENT.

• MAINTAIN CHEMICAL STORAGE AND LABELING REQUIREMENTS.

• MAINTAIN GOOD HOUSEKEEPING AND PERSONAL DILIGENCE TO PREVENT EXPOSURES AND CONTAMINATION.

• IMMEDIATELY REPORT ANY HAZARDOUS CONDITION TO THE IMMEDIATE SUPERVISOR AND/OR LAB REPRESENTATIVE.

• MAINTAIN RESPONSIBILITIES AND REQUIREMENTS AS LISTED IN THE CHP BASED ON USER STATUS.
TRAINING

- **CHEMICAL HYGIENE/LAB SAFETY TRAINING** IS REQUIRED FOR EACH NEW INDIVIDUAL BEFORE BEGINNING WORK IN THE LAB.

- CHP IS REVIEWED ANNUALLY, WITH PROGRAM REVISION EVERY 3 YEARS THAT REQUIRES RETRAINING.

- **LABORATORY SPECIFIC TRAINING**
  - PROVIDED BY LAB SUPERVISOR
  - INCLUDES CONTENT OF LAB SAFETY PLANS
  - DOCUMENT AND KEEP ON FILE FOR REVIEW
PROVIDED INFORMATION

• OCCUPATIONAL EXPOSURE TO HAZARDOUS CHEMICALS IN LABORATORIES (OSHA LAB STANDARD, 29 CFR 1910.1450)
• ECU CHEMICAL HYGIENE PLAN
• PERMISSIBLE EXPOSURE LIMITS FOR OSHA REGULATED SUBSTANCES, OR RECOMMENDED EXPOSURE LEVELS FOR OTHER HAZARDOUS CHEMICALS WHERE THERE IS NO APPLICABLE STANDARD
• SIGNS/SYMPTOMS ASSOCIATED WITH EXPOSURES
• KNOWN REFERENCE MATERIALS ON HAZARDS, SAFE HANDLING, STORAGE AND DISPOSAL

INFORMATION LOCATED ON CONTAINER LABELS, SDS’S, EH&S WEBSITE
TYPES OF HAZARDS

- CHEMICAL AND PHYSICAL HAZARDS – EH&S

- RADIATION AND BIOLOGICAL SAFETY – PROSPECTIVE HEALTH

- EMPLOYEE HEALTH – PROSPECTIVE HEALTH

- ANIMAL HANDLING – COMPARATIVE MEDICINE
<table>
<thead>
<tr>
<th>HEALTH HAZARDS</th>
<th>PHYSICAL HAZARDS</th>
</tr>
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<tbody>
<tr>
<td>• ACUTE TOXICITY</td>
<td>• EXPLOSIVE</td>
</tr>
<tr>
<td>• CARCINOGENICITY</td>
<td>• FLAMMABLE</td>
</tr>
<tr>
<td>• REPRODUCTIVE TOXICITY</td>
<td>• GASES UNDER PRESSURE</td>
</tr>
<tr>
<td>• SKIN CORROSION/IRRITATION</td>
<td>• PYROPHORIC</td>
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<tr>
<td>• RESPIRATORY OR SKIN SENSITIZATION</td>
<td>• SELF-REACTIVE</td>
</tr>
<tr>
<td>• ASPIRATION TOXICITY</td>
<td>• WATER REACTIVE</td>
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<tr>
<td>• TARGET ORGAN SYSTEMIC TOXICITY</td>
<td>• OXIDIZER</td>
</tr>
<tr>
<td></td>
<td>• ORGANIC PEROXIDE</td>
</tr>
<tr>
<td></td>
<td>• CORROSIVE TO METALS</td>
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</tbody>
</table>

❖ Hazardous to Aquatic Environment
EFFECTS OF EXPOSURE

- **ACUTE** - Direct threat that shows up almost immediately after exposure such as burns from contact with a corrosive chemical.

- **CHRONIC** - Usually result from repeated exposure that occurs over months or years and includes cancer and some allergic reactions.
ROUTES OF EXPOSURE

- INHALATION
- ABSORPTION
- INGESTION
- INJECTION

The most likely target depends upon the characteristics of the material being used.
ROUTES OF EXPOSURE
INHALATION

- PRIMARY ROUTE OF ENTRY
- AIRBORNE CONTAMINANTS SUCH AS GASES, VAPORS AND PARTICULATE MATTER THAT ENTER DIRECTLY INTO LUNGS.
- CHEMICAL FUME HOOD IS THE PRIMARY CONTROL AVAILABLE.
- RESPIRATORY PROTECTION OR SPECIALIZED EXHAUST MAY BE NECESSARY WHERE A FUME HOOD CANNOT BE USED.
ROUTES OF EXPOSURE ABSORPTION

- CAN OCCUR VERY QUICKLY THROUGH CUTS OR ABRASIONS ON THE SKIN.
- DEPENDING ON THE CHARACTERISTICS OF THE CONTAMINANT, ABSORPTION MAY OCCUR THROUGH INTACT SKIN (EXAMPLE: PHENOL)
- MUCOUS MEMBRANES AND EYE TISSUE ARE PARTICULARLY VULNERABLE
- BARRIER PROTECTION (SUCH AS GLOVES) AND PERSONAL HYGIENE ARE THE PRIMARY CONTROL MEASURES.
ROUTES OF EXPOSURE

INGESTION

- INCLUDES DIRECT TASTING OF CHEMICALS.
- MORE OFTEN OCCURS WHEN CONTAMINATED ITEMS ARE PLACED IN THE MOUTH.
- PURPOSE FOR BANNING FOOD, DRINK, TOBACCO, AND COSMETICS IN THE LAB.
- PERSONAL HYGIENE, LABELING AND HOUSEKEEPING ARE VERY IMPORTANT TO INGESTION HAZARD CONTROL.
ROUTES OF EXPOSURE
INJECTION

- INCLUDES ALL PUNCTURE WOUNDS.
- EXAMPLES: NEEDLE STICKS, GLASS SHARDS OR CAPILLARY TUBES PUNCTURING SKIN
- DIFFICULT TO PROTECT AGAINST
- USE CAREFULLY PLANNED PROCEDURES AND PERSONAL DILIGENCE, INCLUDING NEEDLE BLOCKS.
STANDARD OPERATING PROCEDURES

- PERSONAL PROTECTION
- LABORATORY PRACTICE
- PERSONAL SAFETY
- LABORATORY CONTROLS
- LAB SPECIFIC INFORMATION SHOULD BE IDENTIFIED IN LAB SAFETY PLANS AVAILABLE ON EH&S WEBSITE
ALL LAB USERS, INCLUDING VISITORS, MUST WEAR ANSI APPROVED EYE PROTECTION WHEN POTENTIAL EXISTS FOR EYE INJURY

CONTACTS MAY BE WORN IN THE LAB UNDER APPROPRIATE EYE PROTECTION

FACE SHIELDS AND/OR STANDING GUARDS MUST BE AVAILABLE FOR FACE OR NECK PROTECTION. FACE SHIELDS DO NOT REPLACE THE NEED FOR EYE PROTECTION
PROTECTIVE CLOTHING

- Closed toed shoes of non-woven material with non-slip soles
- Clothing that covers arms and legs, no shorts
- Lab coats with closed fasteners
- Non-flammable, non-porous aprons when using corrosives
- Remove before leaving the lab
- Launder separately
GLOVES

- Compatible with materials used
- Remove gloves and wash hands before leaving
- Inspect before use
- Clean or discard immediately after use
- Do not use latex gloves for chemical protection
RESPIRATORY PROTECTION

- USE APPROVED THROUGH EH&S
- MUST BE PART OF THE ECU RESPIRATORY PROTECTION PROGRAM
  - MEDICAL CLEARANCE
  - TRAINING
  - ANNUAL FIT TEST
- RESPIRATORS RETURNED TO EH&S WHEN PROJECT IS COMPLETE
PERSONAL HYGIENE

- No food or beverages
- No smoking
- Do not apply cosmetics
- Do not consume lab ice or deionized water

- Wash Hands/Arms Before Leaving Lab
- Never Pipette by Mouth
- Do Not Smell or Taste Chemicals
- Constrain Long Hair/Loose Clothing
TRANSPORTING CHEMICALS

- CAP ALL CONTAINERS
- TIGHTLY SEALED, INSIDE SECONDARY CONTAINMENT
- USE FREIGHT ELEVATOR
- GROUND METAL CONTAINERS WHEN DISPENSING FLAMMABLE LIQUIDS

DO NOT REMOVE CHEMICAL CONTAINERS FROM UNIVERSITY BUILDINGS
SHIPPING HAZARDOUS MATERIALS

- **MUST COMPLY WITH DOT AND IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION) REGULATIONS**

- **PERSONNEL WHO DIRECTLY AFFECT HAZARDOUS MATERIAL TRANSPORTATION MUST RECEIVE GENERAL AWARENESS, FUNCTION-SPECIFIC, SAFETY AND SECURITY AWARENESS TRAINING.**

- **COVERED ACTIVITIES INCLUDE:**
  - LOADING/UNLOADING HAZARDOUS MATERIALS
  - PREPARING HAZARDOUS MATERIALS FOR SHIPMENT (PACKAGING/LABELING)
  - SHIPPING SPECIMENS/SAMPLES IN DRY ICE, LIQUID NITROGEN OR OTHER HAZARDOUS PRESERVATIVE

- **TRAINING IS PROVIDED BY PROSPECTIVE HEALTH AND MUST BE TAKEN EVERY 2 YEARS.**

- **RESEARCHERS COMING TO OR LEAVING THE UNIVERSITY MUST NOT BRING OR TAKE ANY CHEMICALS, BIOLOGICALS OR RADIOACTIVE MATERIALS.**
SHIPPING HAZARDOUS MATERIALS

• SECURITY PLANS AND ADDITIONAL IN-DEPTH SECURITY TRAINING ARE REQUIRED WHEN SHIPPING CERTAIN TYPES OR QUANTITIES OF HAZARDOUS MATERIALS.

• NONCOMPLIANCE CAN RESULT IN SIGNIFICANT FINES AND PENALTIES FOR THE INDIVIDUAL AND THE UNIVERSITY

• FOR ADDITIONAL INFORMATION OR QUESTIONS REGARDING HAZARDOUS MATERIAL TRANSPORTATION AND SECURITY, PLEASE CONTACT:
  • BIOLOGICAL/INFECTIOUS MATERIALS: PROSPECTIVE HEALTH/BIOLOGICAL SAFETY
  • RADIOACTIVE MATERIALS: PROSPECTIVE HEALTH/RADIATION SAFETY
  • CHEMICALS: ENVIRONMENTAL HEALTH
HAZARDOUS MATERIAL SECURITY AWARENESS

SECURITY RISKS

- HAZARDOUS MATERIALS ARE ESSENTIAL PRODUCTS TO CONDUCT RESEARCH BUT IN THE WRONG HANDS CAN ALSO POSE A THREAT TO SECURITY.

- ALL HAZARDOUS MATERIALS ARE POTENTIAL TARGETS FOR SABOTAGE AND THEFT BUT OF PARTICULAR CONCERN ARE FLAMMABLES, EXPLOSIVES, CORROSIVES, REACTIVE SUBSTANCES, TOXIC SUBSTANCES, RADIOACTIVE MATERIALS AND INFECTIOUS AGENTS.

- MEASURES MUST BE TAKEN TO SECURE HAZARDOUS MATERIALS AND RECOGNIZE/RESPOND TO SECURITY THREATS.
HAZARDOUS MATERIAL SECURITY AWARENESS
MEASURES TO ENHANCE SECURITY

- Identify and assess vulnerabilities
- Share information only on a need-to-know basis.
- Someone you hire may pose a security risk. Conduct thorough background checks.
- Maintain updated and accurate inventories.
- Conduct regular inspections and report missing material.
- Secure hazardous materials in appropriate cabinets.
- Lock doors and limit access to authorized personnel.
HAZARDOUS MATERIAL SECURITY AWARENESS RECOGNITION/RESPONSE TO SECURITY RISKS

- Be aware of surroundings and report suspicious activity.

- Do not stereotype a terrorist or potential perpetrator. Individuals may not fit preconceived picture of a criminal.

- Most terrorist threats are external but could also include internal threats such as disgruntled employees.

- Take all threats seriously and report them to your supervisor and ECU police.
NEW LABELS FROM MANUFACTURER

- LABELS ARE REQUIRED TO HAVE:
  - PRODUCT IDENTIFIER
  - SUPPLIER INFORMATION
  - SIGNAL WORDS
  - PICTOGRAMS
  - HAZARD STATEMENT
  - PRECAUTIONARY STATEMENT
NEW LABELS FROM MANUFACTURER

SIGNAL WORD

- USED TO INDICATE THE RELATIVE SEVERITY OF THE HAZARD
- ALERT READER TO A POTENTIAL HAZARD ON THE LABEL

- "DANGER": MORE SEVERE HAZARDS
- "WARNING": LESS SEVERE HAZARDS
NEW LABELS FROM MANUFACTURER

PICTOGRAM

- EACH PICTOGRAM CONSISTS OF A SYMBOL ON A WHITE BACKGROUND FRAMED WITHIN A RED BORDER AND REPRESENTS A DISTINCT HAZARD.
- THE PICTOGRAM ON THE LABEL IS DETERMINED BY THE CHEMICAL HAZARD CLASSIFICATION.
- NINE TOTAL PICTOGRAMS. EIGHT MANDATORY PICTOGRAMS ARE DESIGNATED.
## HCS Pictograms and Hazards

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flame</th>
<th>Exclamation Mark</th>
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<tbody>
<tr>
<td>Carcinogen</td>
<td>Flammables</td>
<td>Irritant (skin and eye)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Pyrophorics</td>
<td>Skin Sensitizer</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Self-Heating</td>
<td>Acute Toxicity (harmful)</td>
</tr>
<tr>
<td>Respiratory Sensitizer</td>
<td>Emits Flammable Gas</td>
<td>Narcotic Effects</td>
</tr>
<tr>
<td>Target Organ Toxicity</td>
<td>Self-Reactives</td>
<td>Respiratory Tract Irritant</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Organic Peroxides</td>
<td>Hazardous to Ozone Layer (Non-Mandatory)</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Gas Cylinder</th>
<th>Corrosion</th>
<th>Exploding Bomb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases Under Pressure</td>
<td>Skin Corrosion/Burns</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>Eye Damage</td>
<td>Self-Reactives</td>
</tr>
<tr>
<td></td>
<td>Corrosive to Metals</td>
<td>Organic Peroxides</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Flame Over Circle</th>
<th>Environment</th>
<th>Skull and Crossbones</th>
</tr>
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<tbody>
<tr>
<td>Oxidizers</td>
<td>Aquatic Toxicity</td>
<td>Acute Toxicity (fatal or toxic)</td>
</tr>
<tr>
<td></td>
<td>(Non-Mandatory)</td>
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</tbody>
</table>
NEW LABELS FROM MANUFACTURER

HAZARD STATEMENT

• DESCRIBES THE NATURE AND DEGREE OF THE HAZARDS OF A CHEMICAL

• EXAMPLES:
  • FATAL IF SWALLOWED (SIGNAL WORD: DANGER)
  • HARMFUL IF SWALLOWED (SIGNAL WORD: WARNING)
NEW LABELS FROM MANUFACTURER

PRECAUTIONARY STATEMENT

- DESCRIBES RECOMMENDED MEASURES TO PREVENT AND MINIMIZE ADVERSE EFFECTS FROM EXPOSURE OR IMPROPER HANDLING AND STORAGE

- ADDRESS THE FOLLOWING AREAS:
  - PREVENTION
  - RESPONSE
  - STORAGE
  - DISPOSAL

- EXAMPLES:
  - KEEP CONTAINER TIGHTLY CLOSED.
  - KEEP AWAY FROM HEAT/SPARKS/OPEN FLAME.
SAMPLE LABEL

Product Identifier

Hazard Pictograms

Signal Word

Danger

Highly flammable liquid and vapor. May cause liver and kidney damage.

Precautionary Statements

Supplemental Information

Directions for Use

First Aid

In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO2) fire extinguisher to extinguish.

If exposed call Poison Center.

If on skin (or hair): Take off immediately any contaminated clothing. Rinse skin with water.

Fill weight: ________  Lot Number: ________

Gross weight: ________  Fill Date: ________

Expiration Date: ________
CHEMICAL LABELS

- Maintain labels on incoming containers
- Replace torn or defaced labels
- Label secondary containers immediately
- Label content for secondary containers
  - Name of hazardous chemical
  - Hazard warning
  - Name of responsible party
  - Date of preparation
  * Expiration date for peroxide formers
<table>
<thead>
<tr>
<th></th>
<th>SAFETY DATA SHEETS (SDS)</th>
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<tbody>
<tr>
<td></td>
<td>(PREVIOUSLY MSDS)</td>
</tr>
<tr>
<td>1</td>
<td>IDENTIFICATION</td>
</tr>
<tr>
<td>2</td>
<td>HAZARD IDENTIFICATION</td>
</tr>
<tr>
<td>3</td>
<td>COMPOSITION/INFORMATION ON INGREDIENTS</td>
</tr>
<tr>
<td>4</td>
<td>FIRST AID MEASURES</td>
</tr>
<tr>
<td>5</td>
<td>FIRE FIGHTING MEASURES</td>
</tr>
<tr>
<td>6</td>
<td>ACCIDENTAL RELEASE MEASURES</td>
</tr>
<tr>
<td>7</td>
<td>HANDLING AND STORAGE</td>
</tr>
<tr>
<td>8</td>
<td>EXPOSURE CONTROL/PPE</td>
</tr>
<tr>
<td>9</td>
<td>PHYSICAL AND CHEMICAL PROPERTIES</td>
</tr>
<tr>
<td>10</td>
<td>STABILITY AND REACTIVITY</td>
</tr>
<tr>
<td>11</td>
<td>TOXICOLOGICAL INFO</td>
</tr>
<tr>
<td>12</td>
<td>ECOLOGICAL INFO</td>
</tr>
<tr>
<td>13</td>
<td>DISPOSAL CONSIDERATION</td>
</tr>
<tr>
<td>14</td>
<td>TRANSPORT INFO</td>
</tr>
<tr>
<td>15</td>
<td>REGULATORY INFO</td>
</tr>
<tr>
<td>16</td>
<td>OTHER INFO</td>
</tr>
</tbody>
</table>

Must be readily accessible to lab users at all time.
Example of New Format SDS

NFPA 704 Placard & Ratings Voluntarily Provided

GHS System and Labels Down in Section 2

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>: Product XYZ</th>
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<tbody>
<tr>
<td>Synonyms</td>
<td>:</td>
</tr>
<tr>
<td>SDS Number</td>
<td>: 888100008809</td>
</tr>
<tr>
<td>Version</td>
<td>: 1.1</td>
</tr>
<tr>
<td>Product Use Description</td>
<td>: Fuel</td>
</tr>
<tr>
<td>Company</td>
<td>:</td>
</tr>
<tr>
<td>Chemtrec (Emergency Contact)</td>
<td>: (800) 424-9300</td>
</tr>
</tbody>
</table>

SECTION 2. HAZARDS IDENTIFICATION

| Classifications | : Flammable Liquid – Category 1 or 2 depending on formulation.  
|                 | Aspiration Hazard – Category 1  
|                 | Carcinogenicity – Category 2  
|                 | Specific Target Organ Toxicity (Repeated Exposure) – Category 2  
|                 | Specific Target Organ Toxicity (Single Exposure) – Category 3  
|                 | Skin Irritation – Category 2  
|                 | Eye Irritation – Category 2B  
|                 | Chronic Aquatic Toxicity – Category 2 |

| Pictograms       | : |

| Signal Word      | : Danger |
CHEMICAL PURCHASE

- CHOOSE THE LEAST HAZARDOUS
- PURCHASE THE SMALLEST QUANTITY
  - ORDER ONLY WHAT YOU WILL USE FOR THE SEMESTER/YEAR
- CHECK EH&S WEB PAGE FOR SURPLUS CHEMICALS YOU CAN ACCESS FOR FREE IN THE RECY-CHEM PROGRAM
  - CHEMICAL PURCHASES WITH PERSONAL FUNDS ARE PROHIBITED
RECY-CHEM

- PROGRAM WHICH RECEIVES AND DISTRIBUTES FREE CHEMICALS TO INVESTIGATORS
- CHEMICALS HAVE NOT BEEN OPENED OR USED MAY BE ADDED TO THE RECY-CHEM PROGRAM
- EH&S WILL DETERMINE CHEMICAL VIABILITY, ADD TO THE LIST AND ANNOUNCE AVAILABILITY ON THE WEBSITE
- CALL EH&S FOR DELIVERY OF FREE CHEMICALS
CHEMICAL STORAGE

- CHOOSE THE LEAST HAZARDOUS MATERIAL
- CHEMICAL INVENTORY MUST CORRESPOND WITH WRITTEN LAB MANUAL AND LAB SAFETY PLANS
- MINIMIZE STORAGE
  - ORDER ONLY WHAT YOU WILL USE FOR THE SEMESTER/YEAR
  - ARRANGE FOR DISPOSAL OF OLD, EXPIRED, OR CHEMICALS WITH NO DOCUMENTED USE
  - BE AWARE OF SHELF LIFE AND EXPIRATION DATES
CHEMICAL STORAGE

- STORE CHEMICALS IN COMPATIBLE GROUPS
  - FLAMMABLES, CORROSIVES, TOXICS, ETC.
- SEPARATE GROUPS WITH BARRIERS
  - COMPATIBLE CONTAINER CAPABLE OF HOLDING THE CONTENTS OF THE TWO LARGEST CONTAINERS
- FLAMMABLES CABINETS >10 GAL.
- REFRIGERATORS/FREEZERS FOR STORAGE OF FLAMMABLES MUST BE RATED AS SUCH
- CLOSED CABINETS OR ¾ “LIP
- LIQUIDS, CORROSIVES, FLAMMABLES MUST BE BELOW EYE LEVEL
- CLEAN SPILLS IMMEDIATELY
HOUSEKEEPING

- Keep chemical use areas (countertops) free from contamination
- Close/cap all containers not in use
- Clean drips and spillage off of container exterior
- Maintain the minimum on the work surface

- Maintain clear working aisles surface
- Maintain clear access to fire extinguishers, safety showers and eyewashes
- Label doors that are blocked
- Keep storage off of the floor and out of the halls
COMPRESSED GAS CYLINDERS

- Installed and leak tested by trained lab personnel
- Secured in an upright position with 2 chains
- Capped when not in use
- Use compatible regulator and auxiliary equipment
- Fully labeled with content and status
LABORATORY ACCESS

- **NO CHILDREN ALLOWED**
- ACCOMPANY ALL VISITORS AND PROVIDE NECESSARY TRAINING
  - HEALTH SCIENCES CAMPUS: VISITOR’S POLICY
  - EAST CAMPUS: DEPARTMENT CHAIR APPROVAL
- LOCK LAB DOORS WHEN UNOCCUPIED
- LAB STAFF THAT ARE OR MIGHT BE PREGNANT SHOULD CONSULT THEIR PERSONAL PHYSICIAN AND PROVIDE THEM WITH A COPY OF THEIR LAB’S CHEMICAL INVENTORY AND LAB SAFETY PLANS
- ADMINISTRATIVE, CLERICAL AND OTHER NON-LAB PERSONNEL MAY NOT MAINTAIN WORKSTATIONS IN A LAB
PERSONAL SAFETY

- Do not remove lab equipment and chemical containers from university buildings.
- Chemical moves between buildings must be coordinated with EH&S.
- No horseplay.
- Limit lab work after business hours.

- Don’t work alone without supervisor’s permission and a safety plan.
- Unattended operations require:
  - Permission
  - Fail-safe plan
  - Emergency instructions
  - Lights on
EYEWAsh AND SAFETY SHOWERS

- Must meet ANSI requirements
- 15 minutes of clear, running water
- Operate eyewash weekly
- If used seek medical attention
- Maintain clear access
FIRE EXTINGUISHERS

- ONLY TRAINED INDIVIDUALS MAY USE
- PASS METHOD: PULL, AIM, SQUEEZE, SWEEP
- ALL USES MUST BE REPORTED TO FACILITIES SERVICES
- INSPECTED MONTHLY BY FACILITIES SERVICES
VENTILATION

- DO NOT BLOCK AIR SUPPLY OR RETURN GRILLS
- DO NOT REMOVE CEILING TILES
- USE TOXIC OR ODOROUS CHEMICALS IN FUME HOODS
- CANOPY HOODS FOR HEAT REMOVAL ONLY
- LOCAL EXHAUST FOR POINT SOURCE CONTROL
CHEMICAL FUME HOOD

- Use for all operations where odoriferous, volatile, toxic or harmful release possible
- Assure hood is properly functioning
- Reduce turbulence:
  - Work at least 6 inches into the hood
  - Elevate large apparatus 2 inches
  - Maintain sash height at or below posted level
- Do not use the hood for storage
ANNUAL HOOD TESTING

- EH&S TESTS CHEMICAL HOODS
- RSO TESTS RADIATION HOODS
- BSO CERTIFIES BIOSAFETY CABINETS
- SPECIALIZED EXHAUST UNITS
- NEW INSTALLATIONS MUST BE REVIEWED BY EH&S
  - DUCTLESS OR RECIRCULATING FUME HOODS ARE PROHIBITED
HOOD TESTING

HOODS ARE TESTED WITH DRY ICE & FACE VELOCITY IS MEASURED

- A sticker will be placed indicating maximum sash height
- A tell tale will be attached to the hood
- Hoods that do not pass will be posted out of service
HAZARDOUS WASTE MANAGEMENT

- EPA (ENVIRONMENTAL PROTECTION AGENCY): IDENTIFICATION, STORAGE, & DISPOSAL OF HAZARDOUS WASTE UNDER RCRA (RESOURCE CONSERVATION & RECOVERY ACT).

- DOT (DEPARTMENT OF TRANSPORTATION): IDENTIFICATION, PACKAGING, AND TRANSPORTATION OF HAZARDOUS MATERIAL.
CHEMICAL WASTE MANAGEMENT

- “HAZARDOUS MATERIAL” IS ANY LIQUID, SOLID, OR GAS HAVING PROPERTIES REQUIRING SPECIAL HANDLING DUE TO HAZARDOUS CHEMICAL CHARACTERISTICS.

- “HAZARDOUS WASTE” IS A USED OR DISCARDED HAZARDOUS MATERIAL. “DISCARDED” INCLUDES ABANDONED, RECYCLED, OR INHERENTLY WASTE-LIKE MATERIALS.
YOU MIGHT HAVE A HAZARDOUS WASTE IF ....

- THE COMPOUND OR SOLUTION IS:
  - IGNITABLE
  - CORROSIVE
  - REACTIVE
  - TOXIC

- THE WASTE CHEMICAL IS ONE OF OVER 400 LISTED BY THE EPA AS A HAZARDOUS WASTE (SEE EH&S WEB SITE FOR A LIST OF THESE WASTES)
WHAT IS AN IGNITABLE WASTE?

- It is a liquid and is capable of burning or causing a fire.

- This material will have a flash point below 140°F.

- Examples include acetone, gasoline, industrial alcohols.
WHAT IS A CORROSIVE WASTE?

- The material is a liquid or solid and is capable of eroding materials and human tissue.

- These materials have a pH of 2 or less or 12.5 or greater.

- Examples: Alkaline cleaners, some chlorides, fluorides, and acids & bases.
WHAT IS A REACTIVE WASTE?

- WASTE THAT IS:
  - CAPABLE OF REACTING DANGEROUSLY WITH AIR AND WATER
  - WHEN MIXED WITH WATER COULD CAUSE AN EXPLOSION
  - COULD RELEASE POISONOUS FUMES,
  - IS SHOCK SENSITIVE.

- EXAMPLES INCLUDE PEROXIDES, ISOCYANATES, CYANIDES, SULFIDES, AND CHLORINE.
WHAT IS A TOXIC WASTE?

- MATERIAL IS CAPABLE OF POISONING HUMANS.
- CONTAINS ARSENIC, BARIUM, CADMIUM, CHROMIUM, LEAD, MERCURY, SELENIUM, OR SILVER
- CONTAINS A PESTICIDE OR OTHER EPA TOXIN
- WASTES ARE DETERMINED TO BE “TOXIC” IF THEY FAIL THE TCLP TEST.
WASTE MIXTURES

• KEEP NON-SOLUBLE MATERIALS SEPARATE.
• KEEP CHLORINATED SOLVENTS SEPARATE FROM NON.
• PRECIPITATE DISSOLVED SOLIDS AND FILTER.
• MINIMIZE WATER IN SOLVENTS.
• TEACH WASTE MINIMIZATION AS PART OF LAB INSTRUCTION.
• REMEMBER ... YOU PAY FOR CHEMICALS TWICE.
  • 14 GALLON LAB PACK = $225 OR $16 PER GALLON
  • 55 GALLON BULK = $150 OR $2.74 PER GALLON
WASTE MINIMIZATION

- Find a non-hazardous alternative.
- Practice inventory control: use it all.
- Recycle/recover.
- Reduce: final procedure.
- Teach waste minimization as part of lab instruction.
SATELLITE ACCUMULATION SITES...

- GENERATING ANY HAZARDOUS WASTE IN THE LAB OR WORKSITE, WILL BE CONSIDERED A “SATELLITE ACCUMULATION AREA” AND REQUIRED BY THE EPA TO ADHERE TO CERTAIN REGULATIONS.

- NONCOMPLIANCE WITH ANY HAZARDOUS WASTE REGULATION MAY RESULT IN SUBSTANTIAL FINES AND PENALTIES FOR THE UNIVERSITY OR INDIVIDUAL INVESTIGATORS.
SATELLITE ACCUMULATION REQUIREMENTS

- BEFORE YOU START, LABEL THE SECONDARY CONTAINMENT THAT WILL HOLD THE WASTE BOTTLES AND MAKE SURE THE IT IS THE APPROPRIATE MATERIAL FOR YOU WASTE. LABEL THE CONTAINMENT “SATELLITE ACCUMULATION AREA”.
  - METAL CONTAINMENT SHOULD NOT BE USED WITH CORROSIVES, ETC.
  - ENSURE WASTE BOTTLES ARE APPROPRIATE FOR WASTE: PERCHLORIC ACID WASTE IN GLASS, ETC.

- ONCE A CHEMICAL IS DESIGNATED A “WASTE” AND/OR WHEN THE FIRST DROP OF WASTE HAS BEEN PUT INTO A WASTE CONTAINER, A “HAZARDOUS WASTE” TAG MUST BE COMPLETED, DATED, SIGNED, AND ATTACHED TO THAT CONTAINER.

- WASTES CAN ONLY BE ACCUMULATED FOR UP TO ONE YEAR.
  - THE ACCUMULATION START DATE (MONTH/DAY/YEAR) MUST BE LISTED ON THE HAZARDOUS WASTE TAG.

- EH&S MUST BE NOTIFIED WHEN CONTAINERS ARE ¾ FULL AND PRIOR TO THE ONE YEAR ACCUMULATION DATE. WHICHEVER COMES FIRST.
THE FOUR “L’S” OF SATELLITE ACCUMULATION

- **LIDS:** Keep containers tightly closed. Open containers only when adding waste.

- **LABELS:** Tag containers before using for waste collection.

- **LEAKS:** Inspect waste containers weekly for leaks. Residue on outside of a container is considered a discharge by EPA. Keep containers clean.

- **LOCATION:** Collect waste at or near point of accumulation in a secondary container. Segregate by compatibility.
HAZARDOUS WASTE LABELING

- All hazardous waste containers must be properly labeled with EH&S tags.
- Do not use chemical formulas or abbreviations.
- Tag must show all the constituents by percent, equals 100%.
- Attach the tag to the container with string, wire, lab tape (no Scotch/clear tape) or rubber band.
- Inspect label integrity and replace if damaged or stained weekly (follow self-inspections).
ENVIRONMENTAL HEALTH & SAFETY HAZARDOUS WASTE TAG

THESE CAN BE PRINTED FROM THE EH&S WEBSITE, THEY COME 3 TO A PAGE. MAKE SURE TO FILL IT OUT COMPLETELY, INCLUDING THE SIGNATURE AT THE BOTTOM.
UNKNOWN CHEMICALS/WASTE

- **DEFINITION:** ANY CHEMICAL THAT DOES NOT HAVE A LABEL AND CANNOT BE IDENTIFIED

- **INCLUDE UNKNOWNS ON THE PICK-UP REQUEST FORM**
  - **INSURE AMOUNT AND ANY IDENTIFYING CHARACTERISTICS ARE ON THE FORM**

- **ECU’S CHEMICAL CONTRACTOR WILL HAVE TO RETRIEVE THE CHEMICAL**

- **DEPARTMENTAL RESPONSIBILITY FOR COST**
  - **IDENTIFICATION, REMOVAL, SAFE DISPOSAL**
HAZARDOUS WASTE DISPOSAL

- Ensure that wastes are properly stored, packaged and labeled.
- Complete the waste pick-up request form from EH&S web page and email to safety@ecu.edu.
- Waste pick-ups are conducted every Thursday.
- If there is a lab close-out, clean out or large pick up EH&S can schedule with you.
How do you handle your toxic waste?

I pour it down the drain.

Isn't that dangerous?

No... I wear rubber gloves.
DRAIN DISPOSAL

- MUST HAVE EH&S APPROVAL
- MUST COMPLY WITH EH&S AND GUC REQUIREMENTS
- ANY APPROVED DISPOSAL MUST BE LOGGED ON THE DRAIN LOG
- PH BETWEEN 6 AND 9
- ALWAYS USE COPIOUS AMOUNTS OF WATER
EPA’S 5 MOST COMMON SATELLITE ACCUMULATION VIOLATIONS FOR UNIVERSITIES

1. UNLABELED CONTAINERS
2. OPEN CONTAINERS
3. NO “ACCUMULATION START” DATE
4. NO SECONDARY CONTAINMENT
5. NO WEEKLY INSPECTIONS
IN THE EVENT OF A SPILL

IF THE SPILL REPRESENTS AN INCREASED RISK OF EXPOSURE TO YOU OR OTHERS, GET HELP!

LEAVE THE AREA, CLOSE ALL DOORS AND CALL FOR ASSISTANCE IF ANY OF THE FOLLOWING OCCUR:

- A FIRE OR POTENTIAL FOR A FIRE - DIAL 911.
- SERIOUS INJURY OR A HAZARDOUS CHEMICAL EXPOSURE - DIAL 911.
- BEYOND YOUR ABILITY TO CONTROL - CALL EH&S (328-6166).
- THE SPILL HAS LEFT THE IMMEDIATE AREA OR THREATENS OTHERS AREAS – CALL EH&S (328-6166) OR 911.
- UNKNOWN MATERIALS ARE INVOLVED – CALL EH&S (328-6166).
WHEN REPORTING A SPILL...

CALL ENVIRONMENTAL HEALTH & SAFETY AT 328-6166.

- STATE YOUR NAME.
- GIVE YOUR EXACT LOCATION (BUILDING AND ROOM #).
- EXPLAIN THE CHEMICAL SPILLED (TYPE, CONCENTRATION, AND QUANTITY).
- DESCRIBE ANY SPECIAL CIRCUMSTANCES THAT MAY BE INVOLVED.
- LEAVE A PHONE NUMBER OR SPECIFIC LOCATION WHERE YOU CAN BE REACHED.

STAY SAFELY NEARBY TO MEET EH&S/EMERGENCY PERSONNEL.
MEDICAL SURVEILLANCE

WHEN …

- EMPLOYEE DEVELOPS SIGNS OR SYMPTOMS ASSOCIATED WITH EXPOSURE
- MONITORING REVEALS AN EXPOSURE LEVEL ROUTINELY ABOVE THE ACTION LEVEL OR PEL
- THERE IS AN EVENT (SPILL, LEAK, EXPLOSION, ETC.)
- REQUIRED BY A SPECIFIC OSHA STANDARD
ACCESS TO MEDICAL ASSISTANCE

- **EMERGENCY OR AFTER HOURS** – VIDANT ER OR URGENT CARE
- **NON-EMERGENCY** – SCHEDULE TREATMENT WITH ECU PHYSICIAN THROUGH EH&S WORKER’S COMPENSATION MANAGER
- **ROUTINE MEDICAL SURVEILLANCE** - SCHEDULE APPOINTMENTS THROUGH EH&S WORKER’S COMPENSATION MANAGER
- **STUDENT INJURY** – STUDENT HEALTH
FOLLOW-UP

- ALL EXPOSURE INCIDENTS, REGARDLESS OF WHERE TREATMENT WAS PROVIDED MUST BE REPORTED TO EH&S WORKER’S COMPENSATION MANAGER

- ALL INCIDENTS IN THE LAB MUST BE INVESTIGATED BY THE LAB SUPERVISOR AND/OR EH&S TO IDENTIFY POTENTIAL CAUSES AND POSSIBLE CORRECTIVE ACTIONS
REQUIRED DOCUMENTATION

- THE FOLLOWING DOCUMENTS ARE REQUIRED TO BE MAINTAINED IN YOUR LABORATORY.
- ALL AUTHORIZED LAB USERS MUST BE TRAINED ON THE INFORMATION AND LOCATION.
- DOCUMENTS MUST ALSO BE AVAILABLE FOR REVIEW DURING EH&S INSPECTIONS.
ECU Chemical Hygiene Plan

- Basic Prudent Practices
- Applicable to all labs

East Carolina University

Chemical Hygiene Plan

Revised September 2016

Office of Environmental Health and Safety
211 South Jarvis St., Suite 102, Greenville, NC 27858
List of all authorized lab users

Gives location of documentation and emergency equipment

New:

- Spill Kit location
- AUP Activity

<table>
<thead>
<tr>
<th>Name</th>
<th>Office location/phone</th>
<th>Home Phone</th>
<th>Cell Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Supervisor Name</td>
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<tr>
<td>Authorized Lab User</td>
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Lab Location
(Building/Room #)

Location of Emergency Contact List

Location of CHP

Location of SDS

Location of Chemical Inventory

Location of eyewash

Location of safety shower

Location of departmental spill kit

Location of the nearest emergency evacuation fire pull station

Emergency evacuation meeting location

Location of weekly/semesterly/annual self-inspection records

Individual responsible for lab specific training (Name, phone, office location)

Active AUP? (yes/no)

Revision date (update annually)
Lab Specific Training Documentation Form

- Specific to your lab and the protocols you perform
- Updated format

OSHA’s Laboratory Standard (29 CFR 1910.1450) requires that each employee be made aware of the location and content of the laboratory’s Chemical Hygiene Plan. Laboratory Specific Training is necessary to augment the Chemical Hygiene Plan Orientation for specific hazards and procedures unique to each lab. This training provides the following information:

- Location of emergency equipment such as eyewash stations, fire extinguishers, fire pull stations, safety showers, etc;
- How to locate and use personal protective equipment in the laboratory;
- Emergency Action Plan including: exits, evacuation routes and designated meeting locations;
- Chemical labeling, storage, and EH&S waste disposal procedures and location;
- Location of designated use areas for carcinogens, reproductive toxins or acutely toxic substances;
- Location and access instructions for a copy of the laboratory chemical inventory, Chemical Hygiene Plan, safety data sheets (SDS) and laboratory specific standard operating procedures/lab safety plans and/or methodologies;
- Specific use of laboratory hoods and other engineering controls;
- The EH&S Lab Safety website: [http://www.ecu.edu/cs-admin/oehs/ih/Laboratory-Safety.cfm](http://www.ecu.edu/cs-admin/oehs/ih/Laboratory-Safety.cfm)
- Other (please specify):

NOTE: Your signature confirms that all items noted above have been communicated during a training session administered by the Principal Investigator or Laboratory Trainer.

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>SIGNATURE</th>
<th>LAB SPECIFIC TRAINING DATE</th>
<th>CHP/LAB SAFETY TRAINING DATE</th>
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</table>

For additional (laboratory related) training information regarding the specific use of:
- Radioactive materials, Biological materials, and Bloodborne Pathogens, please contact Prospective Health for details. (744-2070)
- HIPPA forms, please contact the Office of Compliance for details. (744-5200)
SAMPLE: Laboratory Safety Plan for DNA extraction/recovery/precipitation

<table>
<thead>
<tr>
<th>Process</th>
<th>DNA extraction/recovery/precipitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Chemical/Chemical Class</td>
<td>Flammable liquids-alcohol, ether, acetone poisons/ carcinogens-chloroform, corrosive-phenol</td>
</tr>
<tr>
<td>Hazardous Equipment</td>
<td>Centrifuge</td>
</tr>
<tr>
<td>Potential Hazards</td>
<td>Fire; inhalation of toxic vapors, absorption through skin, eyes, and transport of toxic substance dissolved in them into the body; poisons can increase the hazard in any fire due to inhalation of volatilized reagent; chloroform vapor is toxic and damaging to tissues, absorption through skin; phenol is corrosive and direct contact can cause serious burns, vapor is also corrosive to tissue.</td>
</tr>
<tr>
<td>Personal Protective Equipment</td>
<td>Safety glasses; nitrile gloves (resistant to these materials) full-buttoned front or back closing lab coat; close toed shoes.</td>
</tr>
<tr>
<td>Engineering and Ventilation Controls</td>
<td>All handling, pipetting, dilutions of these reagents must be done in a chemical fume hood; tubes containing these materials can only be removed from fume hood for vortexing or centrifuging if tightly capped; always point opened test tube or eppendorf tube away from face so as to minimize inhalation; be sure that tube cap is on securely before mixing.</td>
</tr>
<tr>
<td>Special Use Procedures</td>
<td>(Use for additional procedures not covered in other sections)</td>
</tr>
<tr>
<td>Special Handling and Storage Requirements</td>
<td>Avoid ignition sources such as hot plates, heat lamps or Bunsen burners; use metal tray or absorbent materials to contain any spilled solvent; never heat directly or work near a spark source; dispose of waste or used ethanol, phenol and chloroform in labeled hazardous waste containers; be sure that centrifuge and refrigerator can be used safely - that they don't generate enough of a spark to ignite reagent.</td>
</tr>
<tr>
<td>Spill and Accident Procedures</td>
<td>Clean up spills only if you have the necessary materials on hand and are trained to do so. All other spills should be reported to EH&amp;S for clean-up. Needed: absorbent materials (vermiculite, paper towels if you have nothing else on hand) brush and dust pan, plastic bags, sealable can to contain clean up materials, protective clothing, gloves, safety glasses, and mask to cover nose and mouth if needed. For minor spills: open windows or ventilate area; if spill occurs outside hood; cover liquid with absorbent material; brush into dust pan slowly and place into plastic bag; do not breathe dust from absorbent, place all clean up materials in plastic bag, then soap and water, discarding materials as above; contact EH&amp;S for removal of sealed container, do not place clean up materials in regular waste.</td>
</tr>
<tr>
<td>Hazardous Waste Disposal</td>
<td>All waste material will be discarded through the ECU hazardous waste management system.</td>
</tr>
<tr>
<td>Decontamination Procedures</td>
<td>Not applicable (This would apply to biosafety cabinets or other areas that might require specific clean-up after a process.)</td>
</tr>
<tr>
<td>Animal Care Precautions</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Chemical Procurement</td>
<td>Quantity required and means of obtaining the minimum necessary</td>
</tr>
</tbody>
</table>
LAB INSPECTIONS

- ALL UNIVERSITY LABS - ANNUALLY BY EH&S
- SELF-INSPECTIONS - WEEKLY, EACH SEMESTER AND ANNUALLY BY LAB STAFF
- SELF-INSPECTION SHEETS ARE AVAILABLE ON THE EH&S WEB PAGE
- PURPOSE OF INSPECTIONS IS TO ASSIST DEPARTMENTS:
  - COMPLIANCE WITH EPA REGULATIONS
  - COMPLIANCE WITH OSHA LAB STANDARD
  - COMPLIANCE WITH FIRE AND LIFE SAFETY CODES
  - PROVIDE REQUIRED PAPER RECORDS FOR REGULATORY AGENCY VISIT
### EH&S Lab Inspection Report

- Now electronic word document sent individually by lab/room number
- Continue to document and submit action plan to safety@ecu.edu

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Posted Information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is emergency contact information posted on the outside of the lab door?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>The coversheet for the lab safety plans should be used for this purpose.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action Plan:</td>
<td></td>
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<tr>
<td>Is a list of emergency phone numbers posted near the telephone?</td>
<td>No</td>
<td></td>
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<tr>
<td>Action Plan:</td>
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<tr>
<td>Are evacuation procedures posted near the telephone?</td>
<td>No</td>
<td></td>
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<tr>
<td>Action Plan:</td>
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<tr>
<td><strong>Required Documentation</strong></td>
<td></td>
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</tr>
<tr>
<td>An up-to-date copy of the ECU Chemical Hygiene Plan 2013 is available to personnel in the lab.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Action Plan:</td>
<td></td>
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<tr>
<td>Are lab safety plans available that coincide with each lab protocol?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Action Plan:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the lab safety plans been forwarded to EH&amp;S?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Action Plan:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there a current chemical inventory list?</td>
<td>No</td>
<td>Please send to <a href="mailto:safety@ecu.edu">safety@ecu.edu</a></td>
</tr>
<tr>
<td>Action Plan:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the current chemical inventory list been sent electronically?</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
**Self-Inspection Form**

- Forms for weekly, semester and annual self-inspections available on EH&S website

---

### Laboratory Inspections

<table>
<thead>
<tr>
<th>Weekly Inspection List</th>
<th>Yes</th>
<th>No</th>
<th>Correction Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>All lights, including exit lights, are in working condition.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Aisles and exits are clear of all obstructions.</td>
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</tr>
<tr>
<td>Eyewash station is clear from obstructions.</td>
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</tr>
<tr>
<td>Eyewash station has been cleaned and run for at least 30 seconds. If not properly functioning, tag “Out of Service” and place immediate priority work order for repair.</td>
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<tr>
<td>No stored items are placed within 18 inches of a sprinkler head or ceiling.</td>
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<tr>
<td>All supplies and moveable equipment stored at least 12 inches off of floor.</td>
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<tr>
<td>Work areas are free of debris and lab equipment and furnishings are in good condition.</td>
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<tr>
<td>Hand washing facilities are clean, supplied with soap and towels.</td>
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<tr>
<td>Caps are secure on all containers, including waste collection containers.</td>
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</tr>
<tr>
<td>All containers, including temporary secondary containers and hazardous waste containers are properly labeled and in good condition. Waste containers have a completed EH&amp;S waste tag attached.</td>
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<tr>
<td>EH&amp;S is contacted when hazardous waste containers are ¾ full and/or prior to 1 year old.</td>
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<tr>
<td>Hazardous chemical waste is inspected to insure that the containers are compatible with the waste and free from leaks.</td>
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<tr>
<td>Gas cylinders are properly chained, leak free and capped if not in use.</td>
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<tr>
<td>Fume hood/laminar flow hood is clear of stored items and is operating normally (visual indication of flow, sound is normal, no odors).</td>
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<tr>
<td>No food, tobacco, gum or cosmetic products are in use or stored in the lab.</td>
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<tr>
<td>All lab occupants are wearing fully enclosed shoes and long pants. Safety glasses, lab coats, gloves and other protective equipment is available, clean and used by all lab staff.</td>
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</tbody>
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**Signature of Inspector**

**Date**

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### Weekly Inspection List

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</tr>
<tr>
<td>All containers, including temporary secondary containers and hazardous waste containers are properly labeled and in good condition. Waste containers have a completed EH&amp;S waste tag attached.</td>
<td></td>
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</tr>
<tr>
<td>EH&amp;S is contacted when hazardous waste containers are ¾ full and/or prior to 1 year old.</td>
<td></td>
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</tr>
<tr>
<td>Hazardous chemical waste is inspected to insure that the containers are compatible with the waste and free from leaks.</td>
<td></td>
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<tr>
<td>Gas cylinders are properly chained, leak free and capped if not in use.</td>
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<tr>
<td>Fume hood/laminar flow hood is clear of stored items and is operating normally (visual indication of flow, sound is normal, no odors).</td>
<td></td>
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</tr>
<tr>
<td>No food, tobacco, gum or cosmetic products are in use or stored in the lab.</td>
<td></td>
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<tr>
<td>All lab occupants are wearing fully enclosed shoes and long pants. Safety glasses, lab coats, gloves and other protective equipment is available, clean and used by all lab staff.</td>
<td></td>
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</tr>
</tbody>
</table>

**Signature of Inspector**

**Date**
<table>
<thead>
<tr>
<th>Department</th>
<th>Building</th>
<th>Room #</th>
<th>Chemical Name</th>
<th>CAS #</th>
<th>Quantity</th>
<th>Units</th>
<th>MSDS on file?</th>
<th>Hazard Class</th>
<th>Shelf Life</th>
<th>Vendor</th>
<th>Catalog#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hydrochloric Acid (40%)</td>
<td>7647-01-0</td>
<td>2</td>
<td>gal</td>
<td>yes</td>
<td>Class 8 Corrosive</td>
<td>Not critical</td>
<td>J.T. Baker</td>
<td>123-34-56</td>
</tr>
</tbody>
</table>

EH&S can not accept inventories that contain metic units. You must convert metrics to english standard units.

List of Hazard Classes

- Class 1 Explosive
- Class 2 Flammable Gas
- Class 2 Nonflammable Gas
- Class 3 Flammable Liquid
- Class 4 Flammable Solid
- Class 5.1 Oxidizer
- Class 5.2 Organic Peroxide
- Class 6 Poison
- Class 7 Radioactive
- Class 8 Corrosive
- Class 9 Pyrophoric
- Class 9 Water Reactive
- TBD - must submit MSDS
- Nonhazardous

Must be emailed to safety@ecu.edu annually
Safety Data Sheets (SDS’s)

- Must be readily available to lab users when they are in the work area during each work shift
- Archive old MSDS’s
**DRAIN LOG**

Go to this location for a direct link to the instructions.

<table>
<thead>
<tr>
<th>Date</th>
<th>Chemical Name</th>
<th>Amount</th>
<th>ph</th>
<th>Responsible Party</th>
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</thead>
<tbody>
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</tbody>
</table>

- Post near the lab sink
- Only dispose of APPROVED materials
- Will be collected during annual inspections
EAST CAROLINA UNIVERSITY HAZARDOUS CHEMICAL USE GRANT REVIEW FORM

ECU policy requires that all grant proposals involving the use of hazardous chemicals be reviewed by an institutional review committee or their designee prior to initiation. The Office of Environmental Health and Safety (EH&S) serves as the review committee for the University. If a grant proposal involves the use of hazardous chemicals, this form must be completed and submitted to EH&S at 210 East Fourth Street or safety@ecu.edu for review and approval. Questions regarding the completion of this form should be directed to EH&S by calling 328-6166. Failure to provide all requested information will delay the review and grant approval process.

Title of Project: 
Funding Agency: 
Department: 
Lab building & room number(s): 

Principal Investigator: 
E-mail: 
Phone: 

SECTION I – HAZARD CLASSIFICATION

The researcher must conduct a hazard classification for the chemicals utilized in the research activity. Check all categories that apply to the chemicals used or produced in this research project. Hazard classification information may be obtained by reviewing MSDSs, container labels and other reference material. Material safety data sheets are typically the primary starting point for classifying materials. Click on each category for additional information.

- DOT Class 1 Explosive
- DOT Class 2 Gas
- DOT Class 3 Flammable Liquid
- DOT Class 4 Flammable Solid
- DOT Class 5.1 Oxidizer
- DOT Class 5.2 Organic Peroxide
- DOT Class 6 Poison
- DOT Class 7 Corrosive
- DOT Class 8 Water Reactive
- DOT Class 9 Pyrophoric
- DOT Class 10 Toxic
- DOT Class 11 High-Impact
- DOT Class 12 Heavy Metals
- DOT Class 13 Miscellaneous
- DOT Class 14 Inert
- DOT Class 15 Other

The following substances have specific OSHA standards that may require exposure monitoring, regulated areas, medical surveillance, training and other hazard control measures. Check all that will be used in this project. Click on each chemical for additional regulatory information.

- 4-Nitrobiphenyl
- dichlorobenzene (and its salts)
- Benzidine
- Nitrosodimethylamine
- Ethylenediamine
- Dimethylaminoazo-benezene
- 4-Aminodiphenylchloromethyl ether
- Formaldehyde
- chloropropene
- Lead
- Chromium VI
- Methylenebisazine
- 1,3-Butadiene
- alpha-Naphthylamine
- beta-Naphthylamine
- beta-Propiolactone
- Asbestos
- Vinyl chloride
- Cadmium
- Acrylonitrile
- Methylene Chloride
- Inorganic arsenic
- bis-Chloromethyl ether
- 2-Acetylaminofluorene
- Coal tar pitch volatiles
- Coke oven emissions
- Benzene
- Ethylene oxide
- Cotton dust

SECTION II – CHEMICAL INVENTORY

Submit list of all hazardous chemicals that will be used in this research project by chemical/product name and provide the chemical abstracts service (CAS) number, quantity and location of each. Follow the format indicated by the required annual chemical inventory submission.

SECTION III – LABORATORY SAFETY PLANS

Submit to EH&S laboratory safety plans for each protocol that address the hazards associated with the chemicals used during this research activity. This plan must identify the process, hazardous chemical/chemical class, potential hazards, engineering and ventilation controls, personal protective equipment, special handling and storage requirements, spill and accident procedures, waste disposal methods, etc.
**It is ECU Policy to immediately evacuate the building during a fire alarm.**

<table>
<thead>
<tr>
<th>Building &amp; Room #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Representative (name/phone #)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alternate Safety Representative (name/phone #)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does building have a fire alarm system?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

If no, please describe notification method:

Alternate notification method (all buildings must have an alternate notification method, including those with fire alarm systems):

Evacuation Assembly Points:

When the alarm sounds, all occupants within the building must evacuate and report to an assigned evacuation assembly point. Assembly points should be away from traffic and parking lots and at least 100 feet from the building.

<table>
<thead>
<tr>
<th>Primary Assembly Point:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Assembly Point:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
### Lab Close-Out Form

- **Required for all PI's upon leaving University**
- **Recommended for all other lab staff/students**

### Departmental Lab Close Out Plan for

<table>
<thead>
<tr>
<th>Principal Investigator:</th>
<th>Department:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Location (Building):</td>
<td>Room Number(s) (include shared spaces):</td>
</tr>
<tr>
<td>Laboratory Close-Out Date (Last day principal investigator will be on-site):</td>
<td></td>
</tr>
</tbody>
</table>

The purpose of this checklist is to assist faculty in safely removing hazardous substances from a laboratory and confirming that the area is free from contamination. (Please initial below)

#### Chemicals

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerators, areas under sinks, fume hoods, cabinets and shelves, and bench tops have been checked for chemical storage (include shared spaces).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All chemicals, specimens and containers have been fully labeled and discarded or transferred to the new owner.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerators have been emptied, defrosted and cleaned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there chemicals that require disposal or transfer to RECY-CHEM? If yes, refer to the Chem. Hygiene Plan (CHP) for instructions and contact Environmental Health &amp; Safety (EH&amp;S) for pick-up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will any chemicals be transferred to another investigator? If yes, make sure chemicals are stored in the proper containers and labeled properly. Transfer Material Safety Data Sheets (MSDSs) with chemicals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage areas are clean: chemical residues, drips and spills are decontaminated and cleaned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposable liners/covers removed from work surfaces.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bench tops washed with soap and water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All debris removed from fume hood; all surfaces washed with soap and water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there chemicals to be transferred to another location? If yes, refer to the CHP for transport information.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All keys, including keys to locked cabinets have been returned.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Controlled Substances

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>All storage areas free of controlled substances.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there controlled substances to be disposed? If yes, refer to the CHP for instructions and contact EH&amp;S for pick-up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will any controlled substances be transferred to another investigator? <strong>Please note:</strong> Permission to transfer ownership of any controlled substances must be obtained from US Drug Enforcement Agency.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there controlled substances to be transported to another location? <strong>Please note:</strong> Abandonment of any controlled substance is in violation of the DEA permit under which it is held.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Compressed Gas Cylinders

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinders are properly labeled, including if empty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylinders are disconnected and caps are replaced.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty cylinders are returned to vendors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will any compressed gas cylinders to be transferred to another investigator? (Brody, Warren, Family Practice, Pediatrics, notify Medical Storeroom. All others notify vendor.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have all standing gas orders been terminated? (Brody, Warren, Family Practice, Pediatrics, notify Medical Storeroom. All others notify vendor.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will any compressed gas cylinders be transported to another location? See the ECU Compressed Gas Policy <a href="http://www.ecu.edu/oehs/LabSafety/compressed.htm">http://www.ecu.edu/oehs/LabSafety/compressed.htm</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Radioactive Materials

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
</table>
I hereby certify that this property (CHECK ONLY ONE):

- Sticker required for any equipment stored/used in a lab
- EH&S for chemical hazards
- Prospective Health for Biological or Radiation hazards

**Surplus Property Hazard Assessment**

Has never contained or been contaminated with hazardous materials (chemical, biological or radiological).

Has been decontaminated in accordance with procedures approved by EH&S and/or Prospective Health. (Identify Hazard Category: Chemical [ ] Biological [ ] Radiological [ ])

<table>
<thead>
<tr>
<th>Description:</th>
<th>ECU Tag #:</th>
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</thead>
<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Department &amp; Location:</th>
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</table>

<table>
<thead>
<tr>
<th>Equipment Owner (print):</th>
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<table>
<thead>
<tr>
<th>Signature:</th>
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</table>

<table>
<thead>
<tr>
<th>Authorized by:</th>
<th>EH&amp;S [ ] Prospective Health [ ] Initial ____</th>
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**COMPLETED TAG MUST BE ATTACHED TO EQUIPMENT**
ADDITIONAL INFORMATION

- ENVIRONMENTAL HEALTH & SAFETY AT 328-6166 OR SAFETY@ECU.EDU

- WWW.ECU.EDU/OEHS -
  - HAZARDOUS WASTE FOR INSTRUCTIONS ON WASTE DISPOSAL
  - LABORATORY SAFETY RESOURCES
  - SAMPLE LAB SAFETY PLANS
  - EMERGENCY ACTION PLANS

- FOR RADIATION/BIOLOGICAL SAFETY - CONTACT THE OFFICE OF PROSPECTIVE HEALTH AT 744-2070
CHEMICAL HYGIENE QUIZ

• PLEASE TAKE THE QUIZ, LINKED BELOW TO COMPLETE THIS TRAINING. YOU WILL BE EMAILED WHEN THE QUIZ IS GRADED, YOU MUST MAKE 100%. COMPLETE THE ENTIRE QUIZ, INCLUDING THE FILL IN THE BLANK PORTION (Q1-Q5).

QUIZ

• IF THE LINK WILL NOT OPEN WHEN LEFT CLICKED, RIGHT CLICK THE LINK AND LEFT CLICK “OPEN HYPERLINK”.