1.0 Purpose, Applicability, and Scope

1.1 Purpose - The purpose of this procedure is to provide a framework for those individuals on campus who ship and transport hazardous materials or dangerous goods for transport following all applicable DOT regulations.

1.2 Applicability – This shall apply to all students, staff and faculty on the UTK campus whenever hazardous materials are shipped or transported off-campus for various reasons. Some of these scenarios include:

- Sending/transporting items to a lab for testing or analysis, or to a colleague for collaborative research
- Sending/transporting specimen materials preserved in ethanol or another flammable solvent
- Sending/transporting any items on Dry Ice
- Returning items to a manufacturer
- Carrying an item with you when you travel (i.e. on an airplane)
- Sending/transporting hazardous waste for disposal

1.3 Scope – This standard applies to all “dangerous goods” and hazardous materials” as defined in section 2.2 below.

NOTE: Radioactive materials, infectious agents and animal or human diagnostic specimens are NOT regulated as hazardous materials/dangerous goods. They are NOT included in this survey because those who ship these materials should already have authorization and training to ship such materials. If anyone transports/ships these materials has NOT completed training/been granted approval by the Radiation Safety or Biosafety office, the applicable office must be contacted as soon as possible at the following phone #s: Radiation Safety Office: 974-5580; Biosafety Office: 974-1938.

2.1 Abbreviations, Acronyms, and Definitions

2.2 Abbreviations/Acronyms
2.3 Definitions

**Dangerous goods**- articles or substances which are capable of posing a significant risk to health, safety or to property when transported and are classified by ICAO or IATA as dangerous goods.

**Hazardous materials** – “A substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has been designated as hazardous under section 5103 of the Federal Hazardous Materials Transportation law (49 U.S.C. 5103)”. Examples of transporting hazardous materials “in commerce” include: shipment via FedEx or UPS, transportation via public highways, waterways, air, etc.

**Shipper**- Any person who either prepares or offers a package containing hazardous materials for transportation on a public right-of-way. Preparing a hazardous material for transportation includes: classifying, packaging, marking, labeling, preparing shipping papers and affixing placards depending upon the hazards.

3.0 Roles and Responsibilities

a. **Shippers:**
   i. Shall be properly trained according to applicable DOT and/or IATA requirements before shipping any hazardous materials or dangerous goods for transport. There must be documentation of completed training.
   ii. Must be responsible for accurately identifying the material and any known hazards associated with the item(s) and must follow all appropriate regulations.
   iii. Understand that both the individual and the institution who ship such materials are subject to penalties and fines if these materials as shipped improperly due to lack of training, misclassification, inappropriate packaging, etc.

b. **Department Heads/Employers** who have Shippers under their control shall:
   i. Ensure that their employees are properly trained, following IATA and DOT regulations, to ship dangerous goods, and that their training is kept current.
   ii. Ensure their employees are familiar with UT’s policy for transporting hazardous materials and dangerous goods for commerce.
c. EHS shall:

i. Update UTK’s DOT dangerous goods and hazardous materials shipment procedure as necessary.

ii. Serve as a technical resource for questions and comments regarding the shipment of hazardous materials and dangerous goods.

iii. Assist with the shipment of hazardous materials and dangerous goods.

iv. Maintain appropriate training for EHS personnel, by meeting requirements specified in 49 CFR 172.700 (DOT) and ensure that training is kept up-to-date.

4.1 Procedure

Hazardous Waste:

- If you have any hazardous waste that needs disposed, please do not ship this waste. Please bring hazardous waste to the 90 day waste storage rooms on campus. There is a storage room in Walters Life Sciences open from 1:00-2:00 every Wednesday and a storage room in the Science and Engineering Building open from 2:00-3:00 every Wednesday. For large quantities of waste, large containers, special hazards, and for more information, please contact EHS at 974-5084.

5.0 Recordkeeping

A record of training must be maintained, which includes: individual’s name; most recent training completion date; a description, copy of reference to training materials used to meet the training requirement; name and address of organization providing the training and evidence which shows the test was completed satisfactorily. All shipping documents (i.e. manifests, bills of lading, air bills), and any other shipping documentation should be kept for a period of three years. A copy of any shipping documents involving dangerous goods and hazardous materials shipments should be provided to EHS. If the documents are kept electronically, or in the computer system, they should be capable of being reproduced in a printed manner.

6.0 Training and Information Requirements

EHS shall provide guidance to any shippers on campus to ensure they have been properly trained before handling and shipping hazardous materials and dangerous goods. If the department head has an employee who ships hazardous materials and/or dangerous goods on a regular basis, they need to send the employee to IATA and/or DOT training, based on their particular situation.

Individuals who are certified to ship dangerous goods by air must receive recurrent IATA training every 24 months. Individuals who are certified to ship hazardous materials must have recurrent DOT training every 3 years.
7.0 Attachments- Table 1: List of Hazard Classes

8.1 Associated Standards

The following regulations and agencies regulate dangerous goods and hazardous materials shipments:

A. DOT: Department of Transportation (49 CFR)
B. IATA: Dangerous Goods Regulations
## Appendix A

### DOT Hazard Class Table

<table>
<thead>
<tr>
<th>Hazard class</th>
<th>Division</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>1.1-1.6</td>
<td>Orange</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>red</td>
<td>Flammable Gases</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>green</td>
<td>Non-Flammable Gases</td>
</tr>
<tr>
<td></td>
<td>2.3</td>
<td>white</td>
<td>Poison Gases</td>
</tr>
<tr>
<td>Class 2</td>
<td></td>
<td></td>
<td>Flammable Liquids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Liquids with a flashpoint of &lt;141˚F.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ex: Acetone, Paint Thinner, Methanol</td>
</tr>
<tr>
<td>Class 3</td>
<td>N/A</td>
<td>red</td>
<td>Flammable Solids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Materials that are thermally unstable and can undergo a strong exothermic decomposition even without air.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.1</td>
<td>red striped</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Spontaneously Combustible Materials</td>
</tr>
<tr>
<td>Class 4</td>
<td></td>
<td>4.3</td>
<td>Blue</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ex: Sodium metal</td>
</tr>
<tr>
<td>Class 5</td>
<td></td>
<td>5.1</td>
<td>yellow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Materials that yield oxygen, and can cause or enhance the combustion of other materials.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.2</td>
<td>yellow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ex: Sodium Nitrate, Benzoyl Peroxide</td>
</tr>
<tr>
<td>Class 6</td>
<td></td>
<td>6.1</td>
<td>white</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Materials that are toxic to humans or viable organisms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ex: Cyanides</td>
</tr>
<tr>
<td>Class 7</td>
<td>N/A</td>
<td></td>
<td>Infectious Substances</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Biological toxins or agents that cause or may cause disease in humans or animals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ex: Hepatitis B Virus</td>
</tr>
<tr>
<td>Class 8</td>
<td>N/A</td>
<td></td>
<td>Corrosive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White-top</td>
<td>Liquid or solid that causes destruction of living tissues within four hours of contact.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- A liquid that has a severe corrosion rate on steel or aluminum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black-bottom</td>
<td>- Ex: acids and bases</td>
</tr>
</tbody>
</table>
Hazard Classes:

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>Class 6</th>
<th>Class 7</th>
<th>Class 8</th>
<th>Class 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1.4 EXPLOSIVE B</td>
<td>B 2.1 NON-FLAMMABLE GAS</td>
<td>C 2.2 FLAMMABLE LIQUID</td>
<td>D 2.3 FLAMMABLE SOLID</td>
<td>E 3.2 AEROSOL</td>
<td>F 3.3 INHALATION HAZARD</td>
<td>G 4.1 TOXIC GAS</td>
<td>H 4.2 TOXIC LIQUID</td>
<td>I 4.3 TOXIC SOLID</td>
</tr>
</tbody>
</table>

Class 9 N/A

White-bottom

Miscellaneous
- Material that presents a hazard during transport, but does not meet definition of any other haz class
- Ex: Dry ice, asbestos

DOT Off-Site Shipping Policy  GM50
Appendix B
University of Tennessee Knoxville
Intent to Ship Chemicals Form

Please complete form, attach SDS and send to EHS (Fax #: 865-974-0094; Phone #: 865-974-5084; e-mail: safety@utk.edu)

Name: _______________________________ Date: ________________________

Department: _______________________________

Building: _______________________________ Room #: ________________________

PI: _______________________________________

Phone #: _______________________________ E-mail: _______________________________

How many chemicals are being shipped: _______________________________

Fed-Ex Account #: _______________________________

Departmental (E) or Grant (R) #: _______________________________

When do chemicals need to be shipped (please allow 5 working days lead time):

________________________________________________________________________

Destination Information:

Responsible Receiving Individual: _______________________________

Destination Name: Company/University/Research Affiliate: _______________________________

Department, Building and Room # (if applicable): _______________________________

Address (Number, street, city, state, zip code):

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Phone #: _______________________________

Material Information:

Chemical # 1:

Chemical Name: _______________________________

Total Mass/Volume of each container or vial (mg, g, kg, ml, l): _______________________________

Total Number of Containers or vials: _______________________________

Type of container or vial (please circle one): Glass Plastic Metal

Physical State (please circle one): Solid Liquid Gas

If you have more than one chemical, please use additional form. Please don't forget to attach SDS for each chemical.
**Chemical # 2:**

Chemical Name: __________________________________________________________

Total Mass/Volume of each container or vial (mg, g, kg, ml, l): __________________________

Total Number of Containers or vials: ____________________________________________

Type of container or vial (please circle one): Glass Plastic Metal

Physical State (please circle one): Solid Liquid Gas

**Chemical # 3:**

Chemical Name: __________________________________________________________

Total Mass/Volume of each container or vial (mg, g, kg, ml, l): __________________________

Total Number of Containers or vials: ____________________________________________

Type of container or vial (please circle one): Glass Plastic Metal

Physical State (please circle one): Solid Liquid Gas

**Chemical # 4:**

Chemical Name: __________________________________________________________

Total Mass/Volume of each container or vial (mg, g, kg, ml, l): __________________________

Total Number of Containers or vials: ____________________________________________

Type of container or vial (please circle one): Glass Plastic Metal

Physical State (please circle one): Solid Liquid Gas

**Chemical # 5:**

Chemical Name: __________________________________________________________

Total Mass/Volume of each container or vial (mg, g, kg, ml, l): __________________________

Total Number of Containers or vials: ____________________________________________

Type of container or vial (please circle one): Glass Plastic Metal

Physical State (please circle one): Solid Liquid Gas