Name: ______________________

**Dangerous Goods Specialist**

**Objective**
In this lesson, you will take on the role of a Dangerous Goods Specialist for a large chemical company. In this role, you will research a specific commercially available industrial chemical looking at both the properties of the compound as well as how to safely ship the chemical to a buyer in a cost effective and timely manner.

**Materials**
- Safety Data Sheet template
- Global Harmonized System label template
- Shipping Checklist template
- Laptops/iPad (internet access)
- MERCK Manuals (if available)
- Poster board
- Assorted paper
- Markers/colored pencils

**Safety**
- No specific safety precautions need to be observed for this activity.

**Procedure**
1. You will play the role of a Dangerous Goods Specialist.
   a. In this role, you are the person within the chemical company that is in charge of making sure that all products produced by the company are shipped to the buyers in a safe, timely and cost effective method.
2. You will be given a list of chemical formulas of commercially available chemical compounds. Pick a chemical formula from the list.
3. You will be in charge of shipping to a buyer. Research the compound to determine the following things:
   a. Is the compound ionic/molecular/metallic?
   b. What is the structure of the substance (crystal, ring, etc.)?
   c. What is the state of the formula (solid, liquid, gas)?
   d. What is the melting/freezing point, flashpoint, boiling points, reactivity of the substance?
   e. Are there any hazards associated with the formula (volatility, flammability, toxicity, etc.)? What are they and how do they need to be managed when shipping?
   f. Why is the buyer purchasing this substance? (Find out what the applications for this substance in the real world.)
   g. What requirements are there for containment/clean-up of the substance if there is a spill or leak?
4. Complete the Safety Data Sheet template and Global Harmonized System label template for your chosen chemical.
5. Determine how your substance needs to be contained and packaged for shipping.
6. After completing steps 3-5, begin the process of transporting the order to the buyer. You will need to research the following:
   a. Logistics of shipping chemicals around the US and the world.
   b. What are the costs of shipping methods (look at air, rail, over the road, and vessel), excluding UPS, Fed X or USPS.
   c. What is the time frame for each shipping method?
   d. What regulatory constraints are there with each type of shipping method? Is there any additional training required for the handlers of the material? (Drivers, package fillers, etc.)
   e. How does the container/package need to be labeled for each method of shipping?
   f. Do any of the shipping methods require special paperwork/documentation for the substance?

**Conclusion**

1. Complete and submit the required Shipping Checklist template for the chemical you have chosen. Also submit the completed Safety Data Sheet and Global Harmonized System label.

2. Finally, compile the information that you collected into a creative visual display for a short class presentation. You may create a poster board, a PowerPoint, a Prezi, a video, etc. Be creative with your presentation, and be sure to make it both information and engaging for the audience.