

## Aligning Risk Assessment with the proposed Safety Guidelines for Chemical Demonstrations

**Does this demo require the use of a fume hood or other local ventilation system? If yes, specify and ensure that it is available at the demonstration site. No hood = no demo.**

**Indoor vs. outdoor, etc.**

5. Ensure that all **demonstrations are appropriate for the room** being used and the available safety equipment. Keep all exit paths clear. Check the **ventilation** in the demonstration area to ensure that participants and audience members will not be exposed to harmful quantities of toxic gases or chemical vapors. The use of a **fume hood** is required for any demonstration that uses or produces a substance with a TLV less than 50 ppm (check the SDS for the TLVs of all chemicals).
7. Prepare and follow a safety checklist for all **combustion demonstrations** involving the use of a flammable liquid. Dispense only the amount of the liquid required BEFORE beginning the demonstration. Cap the solvent bottle and REMOVE it from the demonstration area before applying the ignition source. NEVER add more flammable liquid to a combustion demonstration once it is underway.

**What PPE is appropriate for the chemicals and processes in this demo? List and include in the materials required prep sheet.**

6. Consult current **Safety Data Sheets (SDS)** and review the safe handling information for all chemicals used in the demonstration.
8. Ensure that observers will be a **safe distance** (10 feet or more) or are protected by a physical barrier, such as a polycarbonate shield, from the demonstration area when working with flammable, corrosive or toxic substances. In a small setting such as a classroom or lab, all participants and observers must wear **appropriate eye protection** at all times.
12. Wear appropriate **personal protective equipment (PPE)** for the level of risk as determined by the assessment, such as chemical splash goggles, chemical-resistant gloves, and a lab coat, to protect against the hazards. Active participants must also wear appropriate PPE.

**What waste disposal protocols are required to dispose of the created/leftover solutions? Include instructions to collect or dispose on site.**

11. **Plan for appropriate handling or disposal** of reaction byproducts or excess chemicals in accordance with institutional policies.
17. Ensure proper packaging and secondary containment for the **safe transport** of all chemicals to and from off-site locations. Materials of Trade (MOT) exceptions to Department of Transportation requirements allow for the transport of certain hazardous materials without a license or shipping papers provided certain guidelines are met. There are strict limits on the amounts of material, depending on the hazard. Visit the links below for more information about hazard classes, packaging requirements, and restrictions on the amounts of chemicals.  
[https://hazmatonline.phmsa.dot.gov/services/publication\\_documents/MOTS05.pdf](https://hazmatonline.phmsa.dot.gov/services/publication_documents/MOTS05.pdf)  
<http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/safetypractices/transporting-chemicals.pdf>

**Are unusual emergency response protocols necessary for work involving this demonstration? That is, special spill cleanup, fire extinguishers, portable eyewash solutions, etc. List and include on materials required prep sheet.**

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8. Ensure that observers will be a **safe distance** (10 feet or more) or are protected by a physical barrier, such as a polycarbonate shield, from the demonstration area when working with flammable, corrosive or toxic substances. In a small setting such as a classroom or lab, all participants and observers must wear **appropriate eye protection** at all times.
9. Ensure there is an appropriate **fire extinguisher** on hand whenever the slightest possibility of fire exists and that you have the knowledge, experience and training to use it properly in the event of an emergency.
10. Keep a **spill kit** nearby to contain, absorb, and neutralize any spilled chemicals.

**Are there specific chemical or physical reactivity hazards associated with the use of the chemicals involved (fire, pressure, temperature, etc.) List and ensure they are communicated to users and/or audience.**

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8. Ensure that observers will be a **safe distance** (10 feet or more) or are protected by a physical barrier, such as a polycarbonate shield, from the demonstration area when working with flammable, corrosive or toxic substances. In a small setting such as a classroom or lab, all participants and observers must wear **appropriate eye protection** at all times.
13. Provide **safety shield** protection whenever there is the slightest possibility that a container, its fragments or the contents could be propelled with sufficient force to cause exposure and/or personal injury.
14. **Warn** members of the audience to cover their ears if a loud noise is anticipated.
15. Participants and spectators must **not taste** any food or non-food substances used in the demonstration.
16. Do not perform demonstrations in which parts of the **human body** will be placed in danger (such as placing dry ice in the mouth or dipping hands into a hazardous liquid).
17. **Notify** security and/or administrators that you will be performing demonstrations. If public space will be used for demonstrations involving fire, **contact the local fire department** to determine if the demonstrations meet local fire and building use codes.