



## **Hazardous Chemicals, Activities & Devices**

The following guidelines are to be used in completing the Risk Assessment Form that is recommended for all eCYBERMISSION projects. They are designed to help protect the team by ensuring they have proper supervision, all potential risks are considered and appropriate safety precautions are taken.

### **Hazardous Chemicals**

Teams utilizing chemicals (household and laboratory) in their studies should consider all of the following when completing their Risk Assessment Form.

- Chemicals must be acquired and used in accordance with all local, state and federal laws.
- The team must review the [Safety Data Sheets](#) for ALL chemicals (household and laboratory) used in the project.
- For all chemicals requiring a federal and/or state permit, the Team Advisor must obtain the permit PRIOR to experimentation and a copy of the permit must be attached to the Mission Folder in order for the project to qualify for competition.
- The team should take into account a chemical's toxicity, reactivity, flammability and corrosiveness when completing the risk assessment form.
- The team must minimize the impact of an experiment on the environment by using minimal quantities of chemicals and making sure all disposal is done in an environmentally safe manner and in accordance with good laboratory practices.

### **DEA-Controlled Substances**

The U.S. Drug Enforcement Agency (DEA) regulates substances that can be diverted from their intended use to make illegal drugs. DEA controlled substances and their schedule number are available at the DEA website (<http://www.deadiversion.usdoj.gov/schedules/>). The use of DEA-controlled substances is prohibited in the eCYBERMISSION competition.

### **Drones**

Studies involving unmanned aircraft systems/drones must follow all federal, state and local laws. Typically a permit or registration of the aircraft will be required for certain sized drones/unmanned aircraft to be flown outside. Check out the Federal Aviation Administration (FAA) website for more details. ([www.faa.gov/registration](http://www.faa.gov/registration)). If a permit is required, it must be attached to the Mission Folder.



### **Prescription Drugs**

Prescription drugs are drugs regulated by federal laws to protect against inappropriate or unsafe use. Special precautions must be taken when team utilize prescription drugs in a project:

- It is the responsibility of the Team Advisor to properly acquire the drugs from a doctor or pharmacist, using a prescription written out specifically for research ONLY and NOT to an individual.
- All prescription drugs used in a student research project must be kept in a locked cabinet, accessible by the Team Advisor ONLY, when not being used by the team.
- Any unused prescriptions drugs must be disposed of in a proper manner by the Team Advisor.
- This must all be documented in the Mission Folder.

### **Alcohol & Tobacco**

The U.S. Alcohol and Tobacco Tax and Trade Bureau (TTB) regulates the production of alcohol and distribution of alcohol and tobacco products. The use of alcohol and tobacco are prohibited in the eCYBERMISSION competition.

### **Weapons, Firearms & Explosives**

The U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) regulates the purchase and use of firearms and explosives. The use of weapons, firearms, and explosives is prohibited in the eCYBERMISSION competition.

- A firearm is defined as a weapon from which a projectile is fired by gunpowder.
- An explosive is any chemical compound, mixture or device whose primary purpose is to function by explosion. These include, but are not limited to, dynamite, black powder, pellet powder, detonators and igniters.
- Studies involving a fully assembled rocket motor, reload kit or propellant modules containing more than 62.5 grams of propellant are allowed, but are subject to the permitting, storage and other requirements of federal explosive laws and regulations.
- Potato guns and paintball guns are not considered firearms or weapons unless they are intended to be used as weapons, but they must be treated as hazardous devices.

### **Other Hazardous Devices & Activities**

Due to middle school students' young ages and limited experience, eCYBERMISSION requires that ALL teams complete a Risk Assessment Form and assign a Team Advisor to DIRECTLY supervise the student while working on the project. Students and supervisors should think about ALL potentially hazardous devices, chemicals and/or activities that might be associated with the



project they are working on and how to best keep everyone safe. The following are common hazards that are overlooked:

- Household chemicals and solutions should be treated the same as laboratory chemicals and students should read the Materials Safety Data Sheets that can be found online on how to safely use them – especially if they are using them for purposes other than their intended household use in a science project.
- Cooking stoves and ovens should be treated the same as laboratory devices and students should be taught how to use them in a safe manner – especially when heating items to high temperatures.
- The use of power tools must be supervised by the Team Advisor or other responsible adult who has significant training or experience using such devices. Students should be clear in their research plan about the type of tools they plan on using (manual or power tools).
- Studies involving radiation that is beyond that normally encountered in everyday life must consider the level and duration of exposure.
- Normal radiation found in everyday life comes in the form of non-ionizing radiation, including the spectrum of ultraviolet, visible light, infrared, microwave, radiofrequency and extremely low frequency.
- Ionizing radiation has enough energy to remove tightly bound electrons from atoms, thus creating ions and health hazards when exposed for long periods of time. Examples include high frequency UV, x-rays and gamma rays.
- Lasers usually emit visible, ultraviolet or infrared radiation and are allowed to be used by teams as long as they are in a fixed position. Remember that lasers and laser pointers are not allowed to be used during science fair competitions.
- All studies involving exposure to radiation may not exceed the dose limits set by the Nuclear Regulatory Commission of 0.5 mrem/hour or 100 mrem/year of exposure.
- Any study requiring between 10 and 25 kV must be conducted at a Regulated Research Institution and be pre-approved by the school.
- Any study requiring more than 25 kvolts must be conducted at an institution with a Licensed Radiation Program and be pre-approved by their Radiation Safety Officer or Committee that oversees the use of ionizing radiation.