

# CSM Research Proposal

## Environmental Health & Safety Checklist

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1. Have you planned to provide health/safety services to protect lab workers?
  - The OSHA laboratory safety standard imposes requirements to provide written plans, training, chemical information references, exposure monitoring and medical surveillance for lab workers.
  - Principal Investigators are responsible to ensure that laboratory safety standards are developed for each project and that the standards are met.
2. Have you developed and documented training requirements for lab workers?
  - Research projects often involve complex physical, chemical, or biologic hazards. Measures necessary to protect workers and the environment during work with hazardous materials or processes should be carefully reviewed and implemented by investigators.
  - Responsibility for appropriate training of lab workers lies with the Principal Investigator.
3. Do you have adequate storage facilities for research materials?
  - The Fire Code requires that incompatible chemicals must be stored in segregated storage compartments and that flammable liquids must be stored in approved storage cabinets.
  - The Fire Code also limits the volume of chemicals which can be stored or handled.
  - Certain compressed gases, such as hydrogen chloride, silane, phosphine, etc., must be stored in ventilated gas cabinets. Storage of other flammable and/or toxic gases in ventilated cabinets is highly recommended.
4. Will your storage requirements compromise the use of paths to exits?
  - The Fire Code prohibits the storage of chemicals, gas cylinders or equipment in a path to an exit. Similarly, adequate exit/escape routes must be provided and may not be obstructed.
  - Storage of combustible materials in stairwells or mechanical rooms is prohibited.
5. Will the arrangement/modification of your lab compromise the fire resistive capability of the structure?
  - The Fire Code and Building Code prohibit penetration/modification of fire resistive doors, walls, ceiling, etc. Similarly, construction of partitions, walls, doors and utility outlets must conform to code requirements.
6. Is your lab adequately ventilated?
  - OSHA prohibits the release of toxic airborne materials in areas which are not adequately ventilated. The hood design and air velocity of ventilation systems should conform to modern standards.
  - If highly toxic materials (radionuclides, cadmium, chromium, beryllium, thallium, lead, etc.) are used, ventilation system exhaust should be filtered to preclude release of the material to the environment.
  - EPA and OSHA regulate the release of human carcinogens and other toxics to the environment.
7. Are you adequately prepared to handle/store highly reactive or toxic materials?
  - Storage and use of highly toxic materials, explosives, azides, picric acid, perchloric acid, peroxidizable organics, strong oxidizers, alkali metals, and other water/air reactive materials may require special facilities and management practices.

8. Will you possess reportable quantities of regulated materials?
  - The location and quantity of certain chemicals must be annually reported to local agencies in accordance with the EPA's "Community Right-to-Know" regulation.
9. Will you generate infectious waste (including syringes, body fluid, animal parts handle controlled organisms, or perform recombinant DNA research)?
  - The National Institutes of Health (NIH) provides guidelines for the handling of pathogenic organisms and genetic research materials. Special containment facilities are required for such organisms.
  - The State regulates the disposal of infectious waste. The Centers for Disease Control issues special permits to process agents which are thought to pose threats to security. Permits are expensive and violation of regulations may qualify as a felony.
10. Will you utilize radioactive materials or equipment?
  - Possession of radioactive materials must be authorized in the School's Radioactive Materials License. Natural radioactive mineral samples are also subject to regulatory controls.
  - State and Federal regulations establish strict limits for radiation exposure and release of radionuclides to the environment. Radiation-producing equipment must be certified by the Health Department at two-year intervals.
  - School personnel who may be exposed to radiation must participate in the School's radiation training and dosimetry programs.
11. Will you discharge waste water to the sewer?
  - The School has a permit to discharge waste water to the sewer. This permit establishes very strict discharge limits for metals, corrosives, organics and cyanide. Discharge limits for metals are extremely restrictive. Storm sewer discharges are also regulated.
  - Any proposed discharge of chemical or mineral products to sewers must be reviewed and approved by the Environmental Health and Safety Department.
12. Have you planned for disposal of waste?
  - EPA strictly regulates the accumulation and disposal of hazardous waste. Cost for disposal of regulated waste can be very high. Intermingling of certain types of waste can raise disposal costs by orders of magnitude.
  - Accumulation or discharge of unidentified chemical waste is prohibited by law. Violation of hazardous waste regulations can qualify as a felony.
  - All waste containers must be clearly labeled as to contents.
  - All personnel who generate wastes or submit wastes for disposal must receive annual training from the Environmental Health and Safety Department.
13. Will you utilize a laser or other equipment or procedures which subject lab personnel to significant exposure to physical agents including vibration, noise, heat, electromagnetic fields and other forms of non ionizing radiation?
  - Limits for occupational exposure to physical agents are established by OSHA and ACGIH. OSHA and ACGIH prescribe safety procedures related to the use of lasers.
14. Will you utilize custom built, high pressure vessels; robots; industrial vehicles; or equipment with rotating parts, belts, gears, pulleys or high pressure hydraulic systems?
  - OSHA prescribes safety equipment and procedures associated with use of such equipment.
15. Will you be digging holes or drilling wells?
  - OSHA prescribes shoring requirement for trenches. Check with a utility locator service to ensure that you will not penetrate buried utilities. Environmental regulations may require that bore holes must be capped or filled. Abandoned or unattended mine openings must be sealed.