Autoclave Safety Guidelines

An autoclave is a common piece of equipment, used in laboratories for the purpose of sterilization of equipment and supplies, which poses several hazards to the user.

- Burn Hazards: pressurized heat and steam
- Explosion Hazards: failure of door seals while in operation
- Heavy Lifting Hazards: loading and unloading of autoclave

The following of these general guidelines in combination of the instructions in the owner’s manual will minimize the potential risk of injury when using an autoclave.

Potential Hazards/ Biohazards:

- **Burn Hazard**: Be cautious of hot surfaces when loading and unloading autoclave. Recently autoclaved contents inside will be extremely hot. Make sure to keep face, body and hands away from escaping heat and steam when opening the door of an autoclave.
- **Explosion Hazard**: explosions can occur when the seal of the door malfunctions or when autoclave is loaded improperly. Pressure and heat in chamber will escape rapidly potentially causing serious injury.
- **Heavy Lifting Hazard**: Ask for assistance if the contents you are loading or unloading is heavy. Use autoclave rack cart to move removable rack, when applicable.

Steps with Burn Hazard: When unloading the autoclave with recently autoclaved material, the material may be extremely hot and cause severe burns if not properly handled. When loading an autoclave, the surrounding interior surfaces and autoclave rack may be extremely hot and cause severe burns.

Steps with Explosion Hazard: While a cycle is running there may be a chance that an old and degraded seal may malfunction. With the extreme heat and pressure inside the chamber being released rapidly, an explosion may occur causing serious injury and may be fatal. Placing oxidizers in the autoclave will also result in explosion.

Steps with Heavy Lifting Hazard: While loading and unloading of the autoclave, the contents may be heavy due to its contents, the container itself or if there is a removable rack in the autoclave. Always ask for assistance if needed and always use autoclave rack cart to move the removable rack (if applicable).

Other Hazard: Do not place materials that are not autoclave safe in autoclave (Non heat resistant plastics and glass) as they will melt or shatter during sterilization cycle.
**Never Put in Autoclave:**
- Items containing corrosives
- Oxidizers
- Solvents
- Volatile substances
- Radioactive materials

**Oxidizers + Organics + Heat = EXPLOSION!**

**Autoclaving Waste:**
- Regular autoclave cycle is for a minimum of 15 min at 121°C
- When autoclaving waste, the internal temp must reach a minimum of 115°C for 20 min
- Infectious waste must be autoclaved for a minimum of 30 min at 121°C

**Process use suggestions:**
- Read and understand operating and safety procedures from owner’s manual.
- Be aware of the risks involved and use caution when operating an autoclave.

**Engineering and Administrative controls:**
- **Engineering controls will ensure autoclaves:**
  - Run self-checks to ensure all seals are working properly.
  - Run vacuum checks to ensure all air is removed from autoclave
  - Run a lock check to see if door is locked properly
  - Have interlocking doors so they cannot be opened during a cycle

- **Administrative controls will ensure:**
  - Safety training is given
  - Good housekeeping is performed
  - PPE is worn
  - Emergency preparedness
  - Good records are kept (use, maintenance and calibration logs)

**Appropriate PPE:** Lab coat, safety goggles or face shield, heat resistant gloves, apron (if applicable) are required when operating an autoclave.

**Helpful hint:** Be aware of what you are doing and follow proper safety procedures.

**Training:** Attend the autoclave safety training provided by EHS and also follow manufacturer’s operation and safety guidelines in the owner’s manual.

**The Manufacturers’ Manual:** Read and understand the proper operating and safety procedures outlined in the owner’s manual.

- All **Incidents** should be reported to your supervisor immediately and must be reported to Research Occupational Health Program (ROHP) at 617-414-7647. For medical emergencies, contact Public Safety on the Medical Campus at (617)414-4444 or BU Police on the Charles River Campus at (617) 353-2121.

If you have questions contact your laboratory’s assigned EHS Department Safety Advisor DSA Environmental Health & Safety.

Environmental Health & Safety
Charles River Campus: 353-4094
Medical Campus: 638-8830
Web: http://www.bu.edu/EHS