

<b>Carnegie Mellon University</b> Environmental Health & Safety FIRE   LAB   WORK	<b>Environmental Health and Safety</b> <b>Chemical Syringe Use - Guideline</b>
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## 1. Purpose

Carnegie Mellon University has developed this guideline to for users of syringes and chemicals. Syringes are used in research labs for multiple tasks including injection of gases or liquids into chromatographs, chemical apparatus, or animals. Syringes can range from precision micro syringes to inexpensive disposable units. Needle-stick injuries remain a significant hazard during syringe use, but needle-stick injury is not the subject of this guideline. This guideline addresses proper syringe use and chemical handling to prevent eye and face injury due to syringe spray-back.

Syringe spray-back accidents typically occur when the syringe or injection needle become plugged. If the syringe becomes plugged, do not push the plunger harder. High pressure inside the syringe can cause the plunger seal to fail or the barrel to crack spraying out liquid. The following steps are recommended for safe syringe use.

## 2. Guidelines

- a. Use only new disposable syringes or decontaminated re-usable syringes.
- b. Examine all syringes for evidence of physical damage before use.
- c. Check the plunger for ease of motion before drawing up liquids or gas.
- d. Check again for free plunger movement after installing needles or tubing.
- e. Syringes with frozen plungers or plugged needles should be removed from service.
- f. Clean re-usable syringe after each use following the manufacturer's instruction.
- g. Special wash solvents, detergents, and brushes may be needed for cleaning. Use a squeeze bottle to force cleaning liquid through syringe.
- h. Always wear eye protection or a face shield when cleaning syringes and handling chemicals in a lab.
- i. For stubborn stains or contamination; ultrasonic cleaning, in an appropriate solution, may be effective.
- j. After cleaning, the syringe plunger should be removed for drying and all seals checked.
- k. Syringe bodies should also be dried using compressed air.
- l. Reassemble the syringe and plunger for storage.
- m. Avoid using lubricants on plungers unless required by the manufacturer.

- n. Plugged needles usually occur from coring rubber septa. These can usually be cleared with fine wires that come with the needle. If not, replace the needle.
- o. Some syringes are temperature sensitive and rapid heating or cooling should be avoided. Check with the manufacturer for maximum and minimum use temperatures.
- p. Take steps to secure the plunger when drawing a sample or injecting material into a high pressure system thereby preventing plunger blowout and chemical release.
- q. Any contaminated debris from the cleanup of an inadvertent spill or syringe failure should be managed as a chemical waste depending on the nature of the material.
- r. If an accident or injury occurs when working with chemicals and syringes, please be sure to call University Police at 412-268-2323. All accidents and injuries should also be reported through the Supervisor's Accident and Injury Report Form located on the Human Resources or Environmental Health and Safety web-sites.

For additional questions or concerns please contact EH&S: [safety@andrew.cmu.edu](mailto:safety@andrew.cmu.edu)