

University of Pittsburgh Safety Manual	EH&S Guideline Number: 04-015	
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GUIDELINES FOR SAFE USE OF CHEMICAL SYRINGES

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 is not the subject of this guideline. See our "Needle Stick Prevention Guidelines" at, www.ehs.pitt.edu. 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 pressures 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.

1. Use only new disposable syringes or decontaminated re-usable syringes.
2. Examine all syringes for evidence of physical damage before use.
3. Check the plunger for ease of motion before drawing up liquids or gas.
4. Check again for free plunger movement after installing needles or tubing.
5. Syringes with frozen plungers or plugged needles should be removed from service.
6. Clean re-usable syringe after each use following the manufacturer's instruction.
7. Special wash solvents, detergents, and brushes may be needed for cleaning. Use a squeeze bottle to force cleaning liquid through syringe.
8. Always wear eye protection or a face shield when cleaning syringes and handling chemicals in a lab.
9. For stubborn stains or contamination ultrasonic cleaning in an appropriate solution may be effective.
10. After cleaning, the syringe plunger should be removed for drying and all seals checked. Syringe bodies should also be dried using compressed air.
11. Reassemble the syringe and plunger for storage.
12. Avoid using lubricants on plungers unless required by the manufacturer.
13. 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.
14. Some syringes are temperature sensitive and rapid heating or cooling should be avoided. Check with the manufacturer for maximum and minimum use temperatures
15. 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.

If you have additional questions about chemical syringe safety please contact EH&S at 412-624-9505