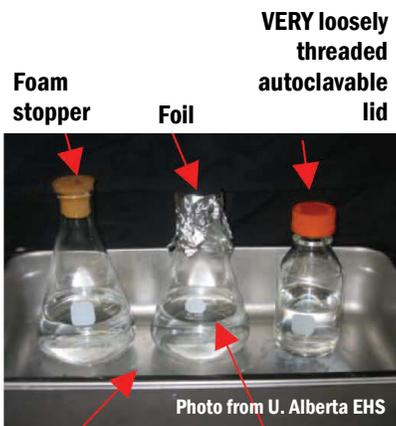


# HAZARD ALERT: AUTOCLAVES & RISK OF SCALDING

## TO PREVENT SCALDING, USE **METAL** SECONDARY TRAYS **WITHOUT** ADDED WATER WHEN AUTOCLAVING

At least 3 Duke employees have been scalded by hot water spilling from secondary plastic trays when autoclaving liquid media. To prevent these and other autoclave injuries, follow these guidelines when autoclaving liquid media:

### BEST PRACTICES FOR AUTOCLAVING LIQUIDS



**Autoclavable metal tray without added water**

**Autoclavable flask filled less than half full with water or media**



**Autoclave gloves won't protect against hot liquids!**  
Also wear lab coat, eye/face protection, closed-toe shoes and clothing covering the legs.

- Put media in autoclavable borosilicate glassware (such as Pyrex). Fill no more than half full. Cover with foil, use a **VERY** loosely threaded autoclavable cap, or use a foam stopper (NOT a rubber stopper!). (Regular glass can break; a tight seal can cause the container to explode.)
- Place flasks in a **METAL** secondary tray no more than **6"** deep. (Plastic trays become flexible when hot, and water can spill out unexpectedly. Metal is more rigid and transfers heat better than plastic. Trays deeper than 6" can trap air, limiting heat transfer—choose a tray no deeper than needed for containment and easier handling.)
- Do **NOT** add water to the secondary container – adding water increases the risk of burns when removing the load.

You may think that water...	HOWEVER, water is NOT needed in the secondary container because...
"Keeps flasks from breaking"	Borosilicate glassware resists breaking without water in the tray.
"Prevents evaporation of media"	Steam in the autoclave is saturated, so added water cannot add humidity and will not prevent evaporation of media. To prevent evaporation, use the liquid cycle and open the autoclave slowly.
"Improves heat transfer"	With a shallow ( $\leq 6"$ deep) container, heat will transfer to the media (better in metal than plastic trays). A longer cycle time may be necessary without water in the tray. This can be tested with chemical temperature indicators or by incubating sterilized media.

- If using stacked autoclaves, use only the lower autoclave for liquids.
- Use the liquid load (slow exhaust) cycle.
- When removing items:
  - Wear **proper clothing & PPE**: long-sleeved lab coat, clothing covering the legs, closed-toe shoes, thermal gloves, and safety glasses or goggles with face shield. For large liquid loads, aprons & gloves resistant to hot liquids are advised.
  - **Open door 1"** and allow load to cool for  $\geq 10$  minutes before removing.
  - Remove one flask at a time and place on a nearby cart.