

Safety Alert

Drying Oven Fire



INCIDENT DATE: May 9, 2022

SUBJECT: Drying Oven Fire

BACKGROUND:

On May 9 2022 at around noon, plastic pipette boxes that were autoclaved were placed by a lab worker in a drying oven that is set at 110 °C to remove residual moisture. Residual moisture in autoclaved equipment is typical because steam heat is used for the sterilization process. Three boxes were placed on the bottom, middle and top shelves in the drying oven. At around 3:30 pm a different lab worker noticed smoke coming out of the top of the oven. They alerted other researchers who were present, went to the oven to examine it, opened the door cautiously, and saw flames at the bottom of the oven. They closed the oven door and called Campus Security. Only one lab researcher present had fire extinguisher training and opted to extinguish the fire. They obtained a fire extinguisher nearby and successfully extinguished the fire in the oven.

INJURIES

Researchers that were in the lab at the time of the fire were uninjured and were able to extinguish the fire with a Class C fire extinguisher.

EQUIPMENT DAMAGE

The bottom of the drying oven was full of yellow and pink melted plastic, two slightly melted pipette boxes, and smoke-stained glassware. Initial assessment of the drying oven indicated some possible flammable fluid had dripped on the elements which are located in the bottom of the drying oven. The drying oven temperature limit adjustment had ceased.





IMMEDIATE CAUSE

The pipette boxes melted and caught on fire because they are not rated to be placed in a drying oven set at high temperatures such as 100 °C. Pipette tips and boxes are rated for the autoclave which uses steam heat to sterile at 121 °C. Aluminum foil was found placed on the bottom shelf and created a hot spot because it impeded air flow. The pipette box placed in this location was the source of the fire and implies the temperature at this spot was much higher than 100 °C.

LEARNING OUTCOMES

The fire would not have occurred if the pipette boxes were not placed in a drying oven >100 °C. The bottom shelf of the oven must not be obstructed to permit air flow and prevent hot spots. Several loose needles were found in the oven; loose needles pose an electrical fire hazard because if they fall through the bottom shelf slots, they may short out the heating coil and cause damage to the unit as well as an electrical fire.

RECOMMENDATIONS TO PREVENT RECURRENCE

- Do not place plastic/flammables items inside a drying oven set at high temperatures
- Minimize flammable clutter around a drying oven
- Do not obstruct the bottom shelf within a drying oven
- Place all objects in a drying oven on shelves
- Install a drip tray in a drying oven at the lowest shelf height to protect heating coils
- Place any loose needles in a drying oven within a metal or glass container/tray
- Use alternate means to remove moisture from autoclaved pipette tip boxes
 - Increase supply of autoclaved pipette boxes to allow more time to dry
 - Place boxes outside on top of a drying oven if short on time
 - Use an oven set at lower temperatures (such as 50 °C)

More information on fire emergency procedures:

<https://www.uvic.ca/services/emergency/emergency-procedures/fire/index.php>