

#4

EMORY



#### INTRODUCTION

Autoclaves play a crucial role in the successful operation of high-level containment facilities. When an autoclay operational it can cause an immediate impact on r

- A fire ignited in the ABSL-3 autoclave. The autoc successfully completed a run in the gravity cycle prior to the fire. The morning of day 3 the animatic technician (ACT) opened the door to empty the when a fire ignited. The ACT extinguished the fir the ABC fire extinguisher only to have the fire re two additional times.
- The facility was active at the time of the fire. Res were working with rodents infected with Mycob *tuberculosis* and the West Nile virus.
- Once the fire was extinguished and the immedia human and animal health concerns were assessed team began the risk assessment/mitigation proc address the loss of the autoclave and continuati research.
- Initial and long term challenges, see Figure 1.

Was there a breach in containment?

- Were the animals exposed
- Were agents released into environment?

Autoclave is down, now what?

- Identify cause
- Develop procedures witho
- Repair and restoration of a

Figure 1. Challenges to to be addressed

Timeline, see Figure 2. 9/3/17 9/1/17 When door opened outside ABSL-3, fire Double door autoclave loaded inside ABSL-3 ignited. Fire reignited twice more before and started. extinguished.

**Figure 2. Timeline of events** 

# Fire in an ABSL-3 Autoclave Kalpana Patel, RBP(ABSA) & Maureen Thompson, RN, BSN, COHNs, RBP(ABSA) Yerkes National Primate Research Center, Emory University

#### METHODS

eration of		
ave is not research. clave had e two days al care contents re with eignite	Breach in containment	Animal care technician confirmed no smoke e
		<ul> <li>No loss of directional a</li> <li>All safety measures we operational</li> <li>Facility smoke tested t</li> </ul>
		ensure containment ir
ate sed, the cess to ion of	Cause	<ul> <li>Inspected melted item</li> <li>Interviewed all users</li> <li>DeKalb Arson Investigation assisted in determinint cause</li> </ul>
d to smoke? The	Back up plans	<ul> <li>Collaborate with all us determine polices and procedures to keep factorerating safely</li> <li>Store materials to be even on the procedure of the procedure of</li></ul>
		autoclaved in empty
		Utilize other availab autoclaves at Center
out autoclave autoclave	Repairs and	<ul> <li>Utilize other availab autoclaves at Center</li> <li>Autoclave repairs</li> </ul>
out autoclave autoclave	Repairs and Restoration	<ul> <li>Utilize other availab autoclaves at Center</li> <li>Autoclave repairs</li> <li>Autoclave restoration</li> </ul>

9/3/17 Animal health assessed and facility inspected.

9/5/17 EHSO, facilities, and animal care evaluated materials from fire. All users interviewed.

9/5/17 Procedures developed to continue research safely.



- airflow ere
- ntegrity
- ator
- sers to cility
- room
- dered











## RESULTS

- human health.



Figure 3. Autoclave before and after repairs/restoration

### CONCLUSIONS

The investigation for the cause of the fire was inconclusive. • Two potential theories:

- - of combustible material.

# ACKNOWLEDGEMENTS

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9/6/17 Autoclave technician evaluated and made arrangements for repairs/restoration of autoclave.

9/19/17 Emory Fire Safety and DeKalb County Arson investigator collaborated with ABSL-3 team to determine cause of fire.



Minimum impact on research and no impact on animal or

Work continued in the ABSL-3 with modified procedures. ABSL-3 team worked collaboratively to modify ABSL-3 procedures and to assist with fire investigation.

Autoclave repairs/restoration completed, see Figure 3.



Something with low ignition point was placed in the autoclave. The fire ignited when the door was opened and oxygen was introduced (e.g., empty isoflurane bottle or used F-air canister).

A possible autoclave malfunction that caused ignition

9/26/17-9/28/17 10/6/17 Autoclave repairs and New racks arrived and restoration completed. autoclave was operational.