

# Refinement of an Animal Housing Room Decontamination Protocol



Bernie Hughes LAT, Linda Braddy, Dakota Lyons, Chris Manuel, DVM, PhD, DAACLAM, Jori Leszczynski, DVM, DAACLAM  
Office of Laboratory Animal Resources, University of Colorado Denver, Anschutz Medical Campus, Aurora, CO



## BACKGROUND AND OBJECTIVE

Animal housing room decontamination (decon) is an important process to eliminate potential pathogens and reduce the biological burden within the room. Our current decon method developed and used during a full facility decontamination in 2010 has demonstrated its effectiveness. However, we were interested in determining if all components of the decon process were essential to achieve room sanitation. During our full decon procedure, rooms are emptied of all mobile and detachable equipment, foamed with a germicidal detergent, all surfaces scrubbed with a firm brush, rinsed with water, and then fogged using a chlorine dioxide solution, followed by a final rinse. On average this process takes 6.5 hours of physical labor over 2 days. Our objective was to determine if foaming and scrubbing could be removed from the procedure and still obtain satisfactory sanitation results. To test our hypothesis, an emptied rodent housing room (that had been in service for the previous 6 months) was divided in half for a decon procedure. Side A was foamed with a germicidal detergent, all surfaces scrubbed with a firm brush, rinsed with water, and then fogged using a chlorine dioxide solution followed by a final rinse. Side B was only fogged using a chlorine dioxide solution and then rinsed.

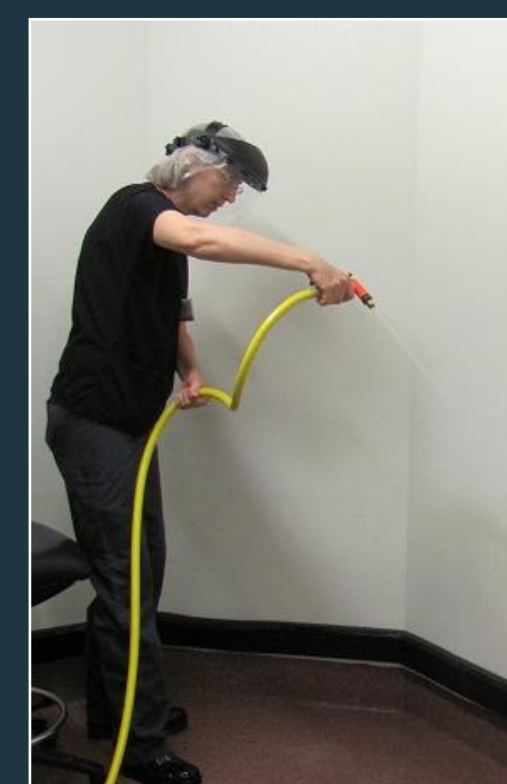
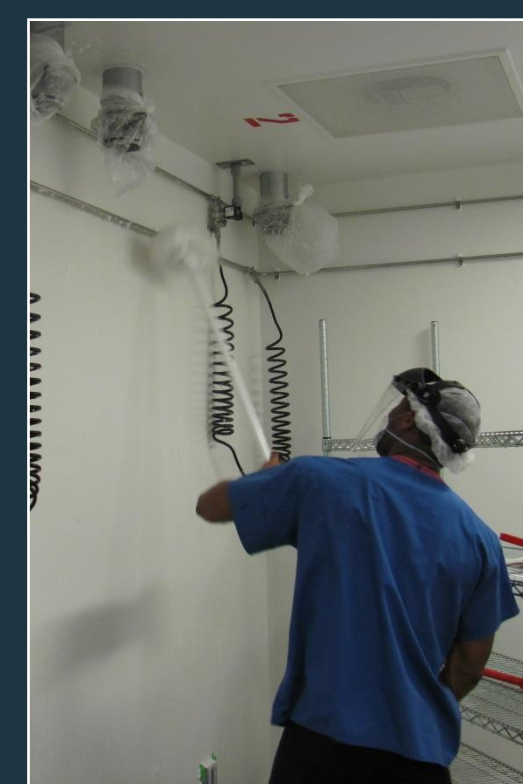
## MATERIALS

- **Decon Equipment**
  - Gloves
  - Face shield
  - Rubber boots
  - 10 gallon trash bags
  - Painter's tape
  - Wall brush
  - Cove brush
  - Clidox (Chlorine Dioxide)
  - Dust brush
  - Squeegee
  - Fogger
  - Foamer
  - Saniplex (Ammonium Chloride)
  - Floor Scrubber
  - Wet-vac
  - Extension Cords
- **Testing Equipment**
  - RODAC Plates
  - Incubator set at 35°C
  - ATP Swabs
  - ATP Luminometer

## METHODS

### Foam, scrub and rinse (Side A only):

- A face shield and mask were worn at all times when chemicals were being sprayed.
- A solution of 1.5 oz of Sani-plex per gallon of water was mixed and foamed on all surfaces of side A.
- A scrub brush was used to clean the ceiling and walls.
- A floor buffer was used to scrub the floor.
- 15 minutes of contact time were allowed.
- Walls, ceilings and floors were rinsed.
- Squeegee walls, ceilings and then the floor. Due to the lack of a floor drain, all water was pushed to a wet vac outside the door and vacuumed up.



### Fogging and rinsing (both Side A and Side B):

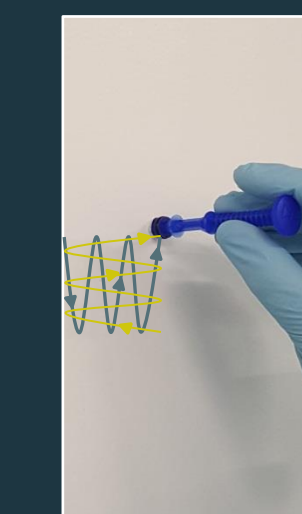
- Airflow was turned off to the housing room (both supply and exhaust).
- All vents and outlets were sealed.
- The fog machine was filled with 1:5:1 Clidox solution and placed in the center of the room (with the cord on the outside).
- The animal housing room door was then closed and taped to seal off the room.
- The door was checked for drafts and additional tape was applied in those areas that leaked.
- The fogger was then plugged into the outlet and allowed to run for 20 minutes and then shut off.
- The following day the airflow was turned back on.
- Respirators were worn to enter room to remove vent covers.
- The room was allowed to vent and a final rinse was performed.



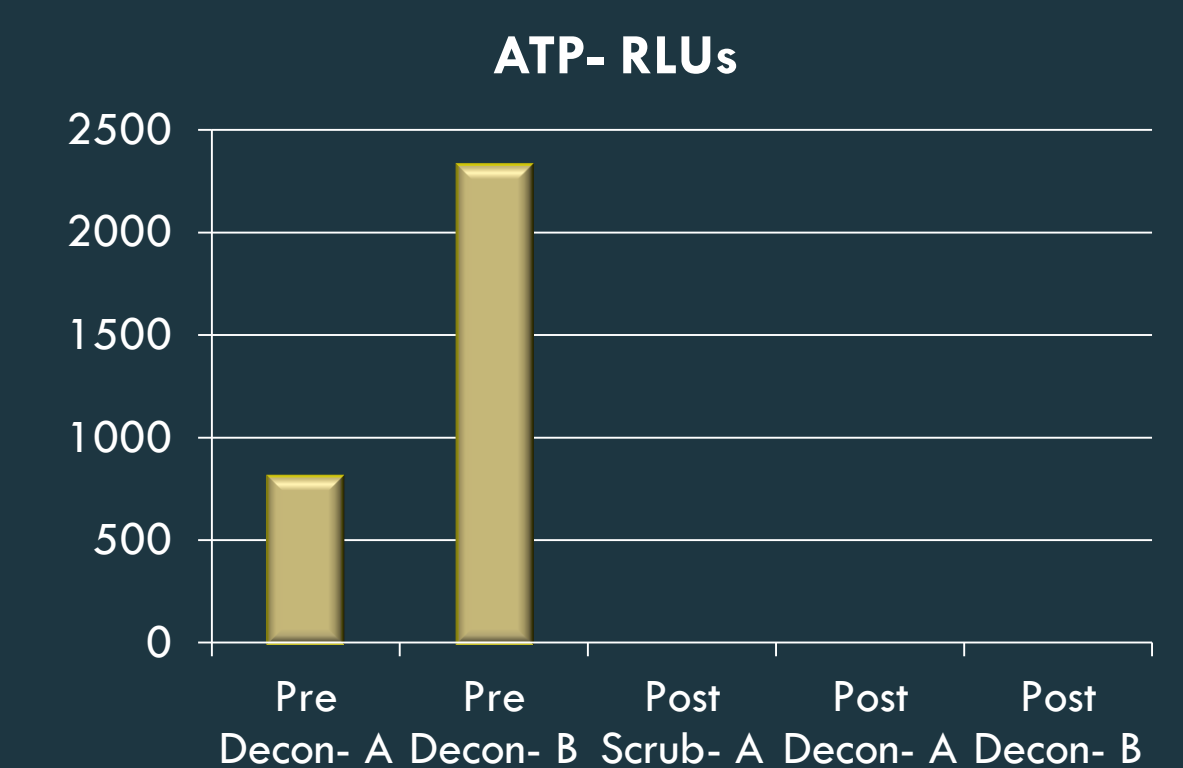
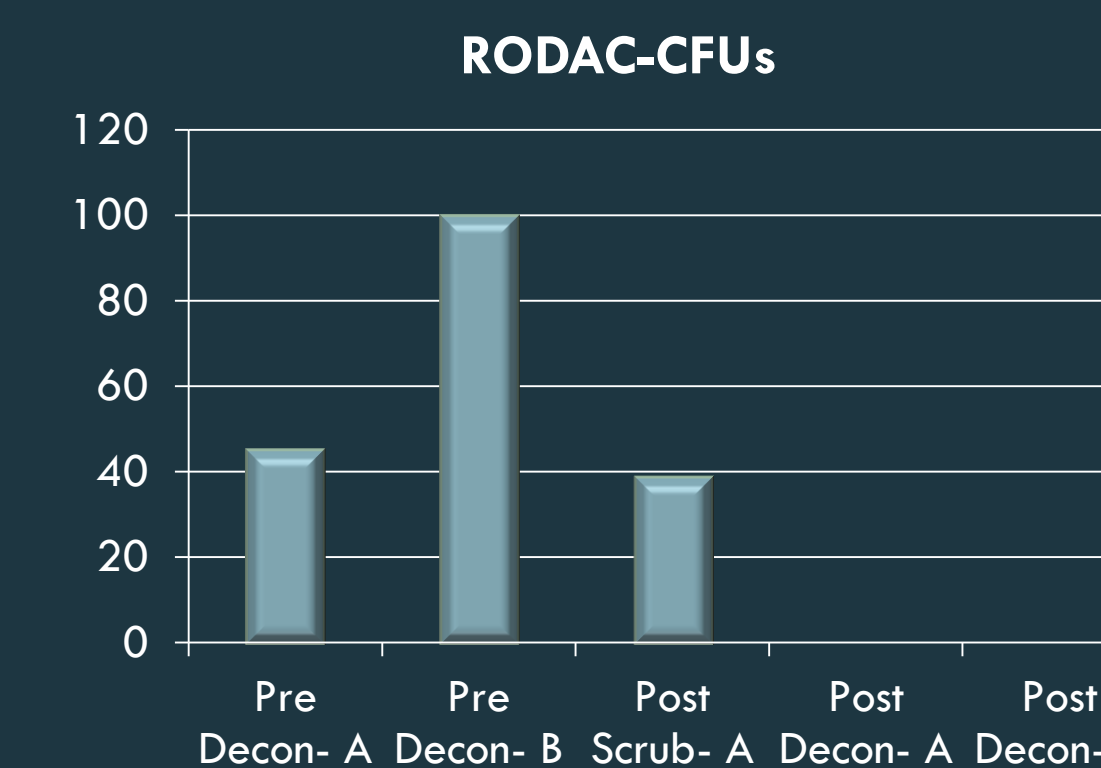
## Sampling

- The decon methods were evaluated by sampling the ceiling, walls, and floor with ATP swabs (n = 9/side) and trypticase soy agar (RODAC) contact plates (n=9/side).
- Samples were taken pre-decon on both sides, post-scrub on side A, and post-decon on both sides
- The ATP swabs were read using a luminometer, which measures the ATP in relative light units (RLU). The RODAC contact plates were incubated at 35°C and bacteria growth was quantified in colony forming unit (CFU) at 72 hours.

### ATP Swab Samples



### RODAC Samples



## RESULTS AND CONCLUSIONS

Post-decon, ATP swabs from both sides of the room resulted in 0 RLU in all samples collected (n=18). The post-decon RODAC contact plates from side A demonstrated no growth while contact plates from side B resulted in 1 CFU in total.

The results from our trial indicate that chlorine dioxide fogging followed by a final rinse with water achieve a level of disinfection that is within our department's acceptable range. By implementing this change we save an average of four hours of physical labor per room decon which ultimately will decrease the decon cost by 62% per year and increase the rate of turn-around on the decon of facility rooms.

### Reference/Special Thanks

Leszczynski J, Wallace M, Tackett J, Jiron U, Collins J, Warder C, Richardson L, Bell L, Russell C. 2014. Shutting down a working vivarium for decontamination. Lab Animal 43:8, 283-290

Michelle Wallace, Idris Afolabi, and Mindy Yarbrough

