

Conquering Challenges in the ABSL-3

A faint, stylized illustration of a balance scale is visible in the background. The scale is tilted, with the right pan hanging lower than the left pan, suggesting it is heavier. The entire image has a monochromatic brown color scheme.

Working with Transmissible
Spongiform Encephalopathies
Finding a Balance

Transmissible Spongiform Encephalopathies (TSEs)

- TSEs also known as “prions” include both human and animal forms
 - Human: CJD and vCJD
 - Animal: Scrapie in sheep, mink and lab animals, BSE in cows and lab animals, and CWD in deer and elk
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TSE Characteristics

- Agent Unknown, not bacterium or virus
 - Stable and difficult to disinfect by chemical and physical methods
 - Lack of a sensitive diagnostic, except for bioassay, difficult to monitor for TSE contamination
 - Not highly transmissible, not airborne
 - Requires injection, consumption or iatrogenic transmission
 - NaOH, Bleach and extreme autoclaving kills
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Working with Sharps

- Recapping needles

*Use a holder for the cap,
never hand held*



- Drawing inoculum from septum bottle

*Limit the range the needle
can travel by keeping
both hands in contact*



Preventing Aerosols

- During sonication, kimwipes and tape create an effective barrier
- Wrapping gauze around the needle during withdrawal absorbs any leakage
- Avoid drops during transfers and blowing out pipets creating aerosols



Large Equipment That Needs to Leave

- CO₂ tank bagged prior to entering the ABSL-3
- Platform on wheels and PVC frame and huge bag protect specialized computer equipment and disassembles for easy storage



Working with things that might leak

- Connections are cable-tied prevent leaks and sealed in plastic sleeving to capture leaks if they occur
- Equipment under pressure is bagged
- HEPA filters are used where venting may occur



Autoclaving Cages

- Average hamster census is 2000 or 500 cages
- Stainless Steel bars were fabricated to suspend cages apart to allow steam penetration



Autoclaving Equipment, Instruments and Trash

- Stainless Steel pots (kill pots) contain lab and animal room waste
- Only dry PPE collected at the exit can be autoclaved outside the SS pot
- Pans containing liquids are nested in larger pans to contain spillage and always labeled with content e.g. NaOH or H₂O



Facility Related Issues

- Additional autoclave installed to keep up with volume
 - High temperature autoclaving at 134°C for 1-2 hours
 - Additional -80°C freezers need for sample storage
 - BSE requires all room exhaust to be HEPA filtered
 - Removing large equipment that could be contaminated for disposal
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Solving the Facility Issues

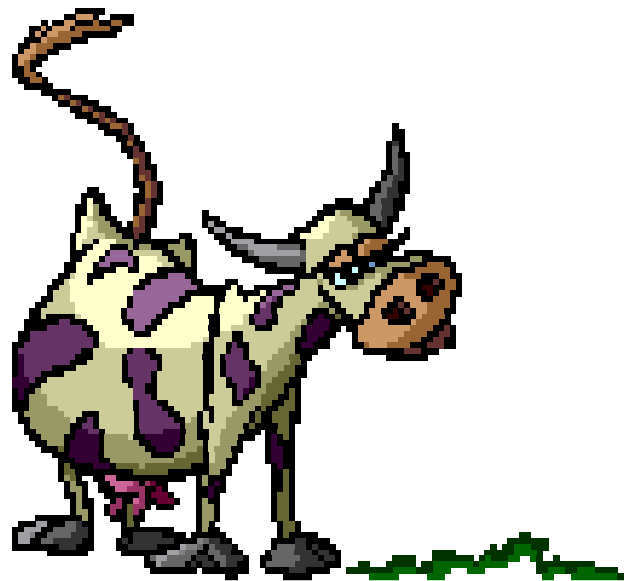
- HEPA units installed at each exhaust duct
- Water cooled A/C unit installed in the autoclave area and in the equipment room housing freezers



Conclusion

- As Biosafety officer and senior technician, its my job to find a way for our employees to do the work safely, NOT STOP THE WORK!
 - Sometimes it requires lots of time, phone calls, investigating and networking
 - And sometimes it only requires common sense
 - It definitely requires a lot of patience
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Questions ?



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