SAND2013-7560P

Guided Exercise:
Laboratory Design Review

Scenario

As we have discussed, while laboratory design best principles and practices may be consistent, anything else in the laboratory is subject to change. In this scenario, you and your research team have an opportunity to take advantage of some additional laboratory space for your research program.

In your group, identify ways to improve laboratory operations and enhance biosafety and biosecurity. As a group, you will choose the research goal of your lab using the questions below to select a hazard, a potential model, and a process or procedure you will require. This selection should take no more than 15 minutes.

Spend the remaining time (60 minutes) reviewing the proposed laboratory design. Based upon the research goal identified by your team, determine if the necessary biorisk mitigation strategies have been included. As necessary, reconfigure the laboratory design so that it best addresses the risks of the scenario you have created. If the design lacks mitigation measures to address the risk of your research, please identify what mitigations you would recommend, where they would be implemented, and how they address any deficiencies you have identified.

Each member of your group must present one aspect of the design you modified.

Part I: Selecting a Research Goal (15 minutes)

1. Hazard identification:

   a. What agent(s) will you be working with inside the laboratory?

   ☐Brucellosis sp.
   ☐Chikungunya
   ☐Dengue Fever Virus
   ☐Foot and Mouth Disease Virus
   ☐Highly Pathogenic Avian Influenza (HPAI), H5N1
   ☐Leptospirosis
   ☐Malaria
   ☐Mycobacterium tuberculosis

   b. What animal model will be using in your research?

   ☐Arthropod
   ☐Avian
   ☐Murine / Small Rodent
   ☐Primate (Small)

c. Are there any special procedures and/or equipment you will need to perform your research activities?

☐Media/Tissue Culture
☐PCR
☐Incubator
☐Centrifuge
☐Shakers
☐Cold storage (Fridges or Freezers)

Part II: Evaluating the Laboratory Design (60 minutes):

1. Based on your responses in Part 1, review the laboratory design and identify:

    a. Personnel flow,
    b. Material flow, and
    c. Waste flow

    It may be helpful to use different colored pens for each flow diagram.

2. Based on your laboratory flows identified in the previous step, identify areas in the design where operational inefficiencies or biosafety and biosecurity deficiencies could potentially create a hazardous situation.

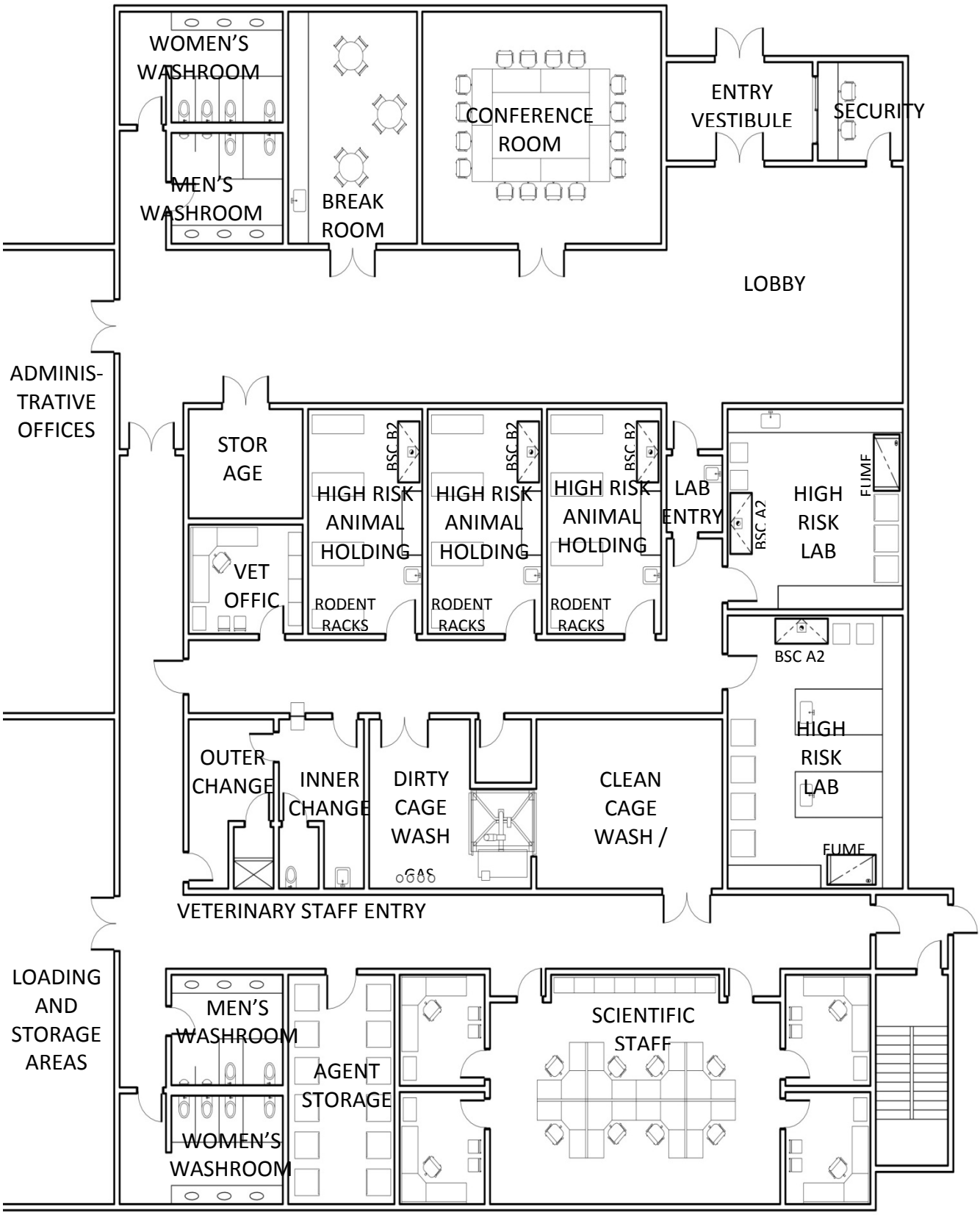
    Notes:

3. For any hazardous situations identified in the laboratory design, develop a mitigation strategy and suggest modifications to the design that will eliminate or reduce the hazard and increase operational efficiency and improve biosafety and biosecurity. Also identify areas were non-engineering controls could help mitigate risk.

   Notes:

4. How will ensure the performance of the mitigation strategy and modifications you have recommended?

   Notes:



Sample Laboratory

0 1 2 5 10m