

Risk Groups and Biosafety Levels

What is a risk group, and how does it differ from a biosafety level?

Risk Groups

The risk group refers to the risks associated with a specific agent to a healthy, adult, human.

The risk group alone does not describe the specific biosafety level that will need to be used to perform experiments with the organism. You will also need to review the specific experiments and procedures being performed with the organism to determine the appropriate biosafety level required to safely work with the organism.

There are 4 risk group designations. Risk Group 1 (RG1) is the lowest risk group, and Risk Group 4 (RG4) is the highest.

Risk Group	Definition	Examples
1	Agents that are not associated with disease in healthy adult humans	<i>B. subtilis</i>
2	Agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available	<i>Salmonella</i>
3	Agents that are associated with serious or lethal human disease for which preventive or therapeutic interventions may be available	Prions, HIV types 1 and 2
4	Agents that are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available	Lassa virus, Ebola virus; NOT permitted at Virginia Tech

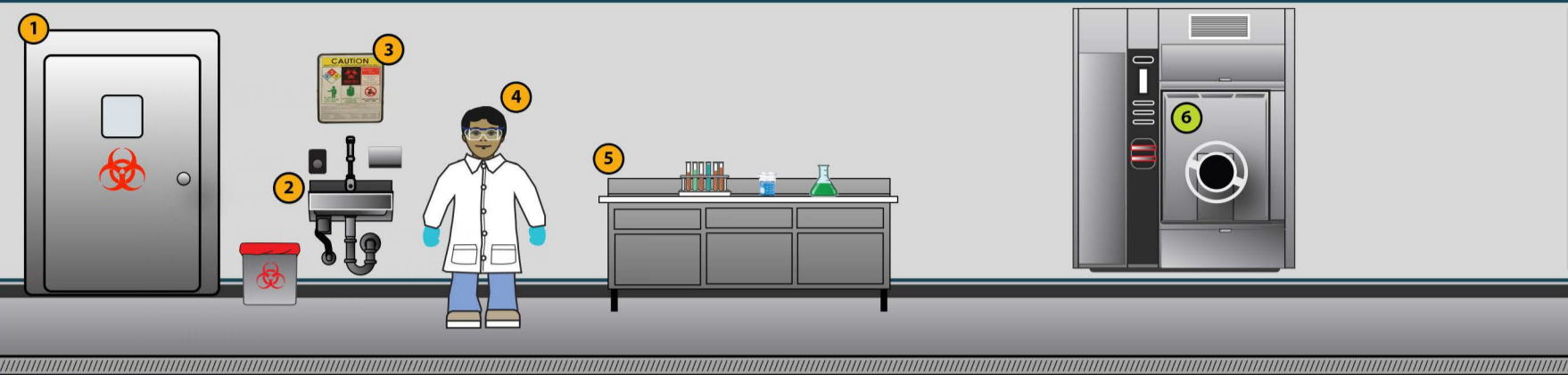
Biosafety Level (BSL)

Physical containment is designated by a biosafety level (BSL). The level is a description of the lab practices/techniques, safety equipment, lab facility design, and training requirements needed to safely perform specific experiments and biohazards in a specific space.

The biosafety level is not a designation, or synonym, for the organism(s) being used.

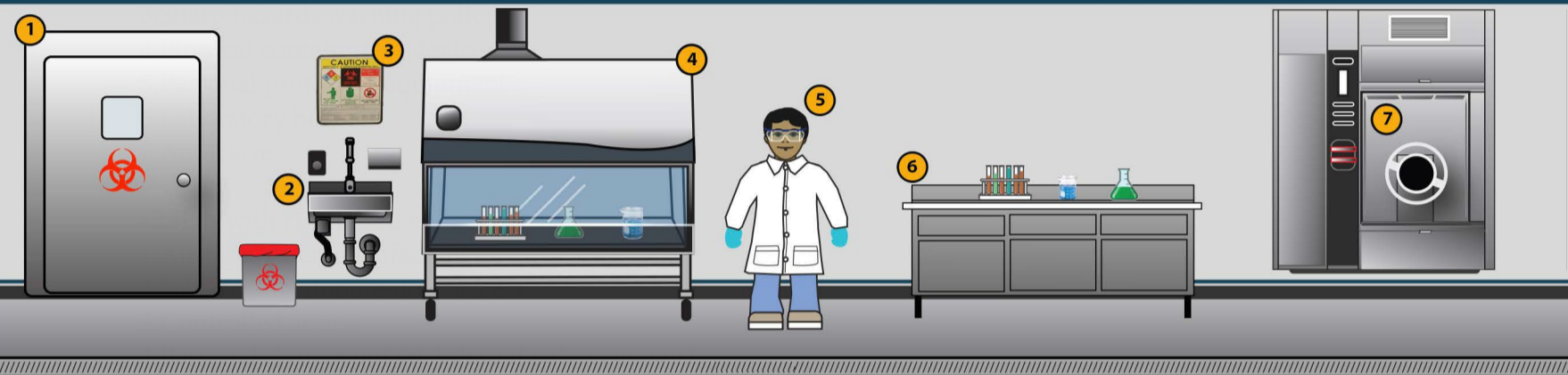
There are 4 biosafety levels. Biosafety level (BSL-1) is the lowest, and Biosafety level 4 (BSL-4) is the highest.

BSL1



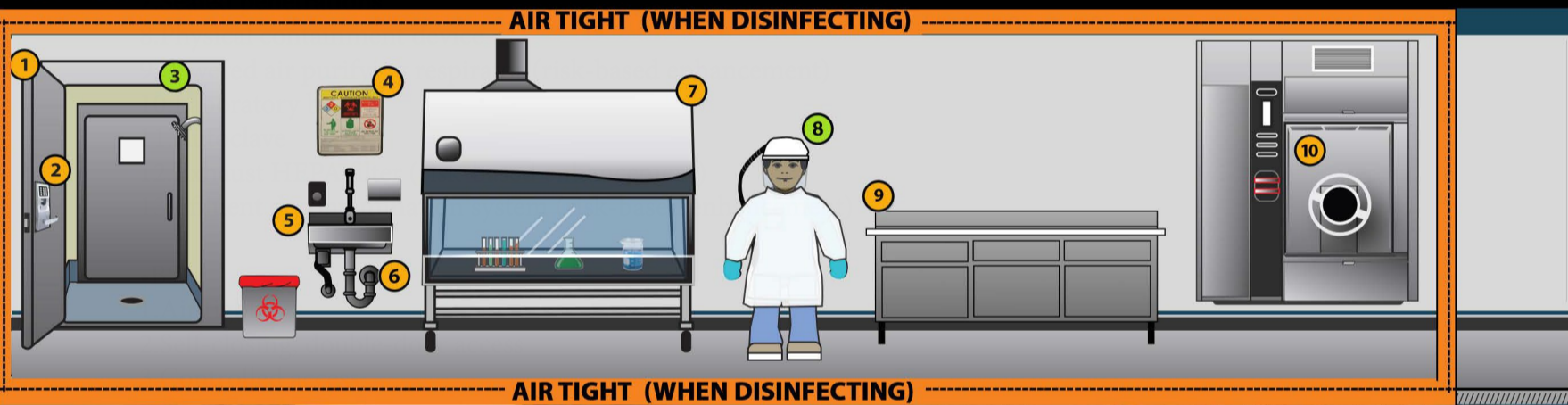
- BSL1**
- 1 controlled access
 - 2 hand washing sink
 - 3 sharp hazards warning policy
 - 4 personal protective equipment
 - 5 laboratory bench
 - 6 autoclave

BSL2



- BSL2**
- 1 controlled access
 - 2 hand washing sink
 - 3 sharp hazards warning policy
 - 4 physical containment device
 - 5 personal protective equipment
 - 6 laboratory bench
 - 7 autoclave

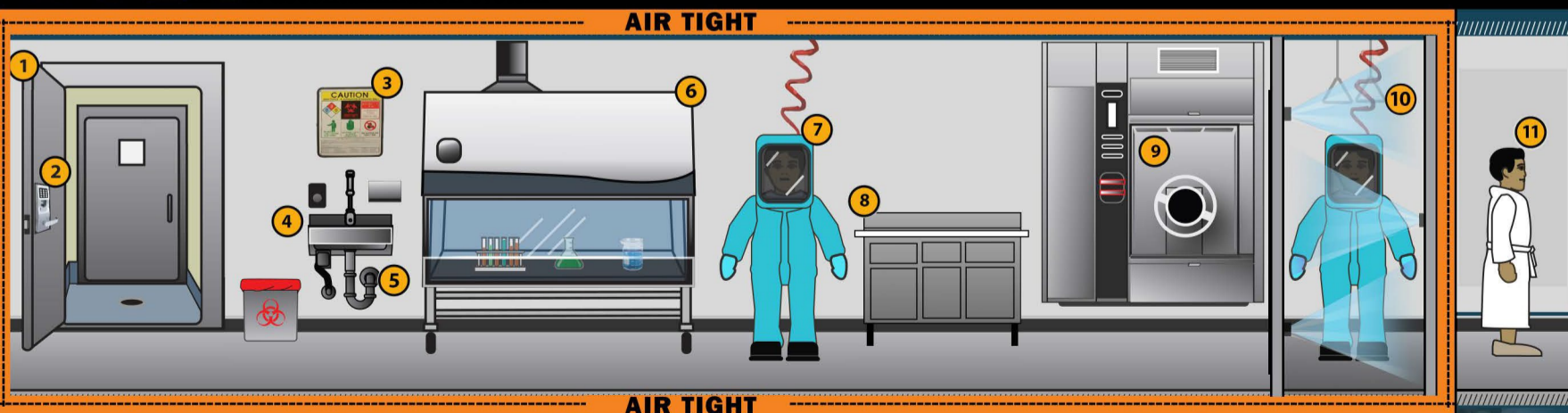
BSL3 (WITH RISK-BASED ENHANCEMENTS)



- BSL3**
- 1 self-closing, double-door access
 - 2 controlled access
 - 3 personal shower out
 - 4 sharp hazards warning policy
 - 5 hand washing sink
 - 6 sealed penetrations
 - 7 physical containment device
 - 8 powered air purifying respirator
 - 9 laboratory bench
 - 10 autoclave
 - 11 exhaust HEPA filter
 - 12 effluent decontamination system



BSL4



- BSL4**
- 1 self-closing, double-door access
 - 2 controlled access
 - 3 sharp hazards warning policy
 - 4 hand washing sink
 - 5 sealed penetrations
 - 6 physical containment device
 - 7 positive pressure protective suit
 - 8 laboratory bench
 - 9 autoclave
 - 10 chemical shower out
 - 11 personal shower out
 - 12 supply and exhaust HEPA filters
 - 13 effluent decontamination system

