



Jonathan Y. Richmond, PhD, RBP

Contributors

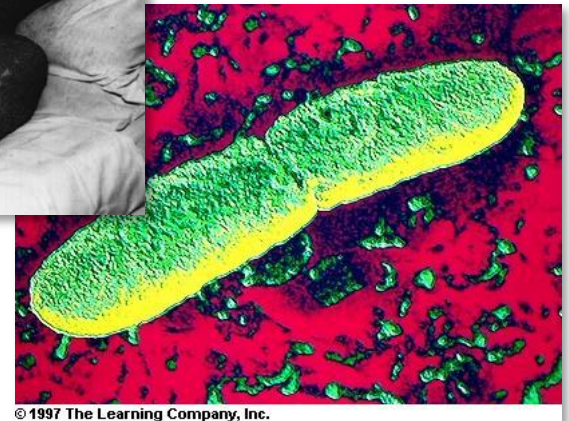
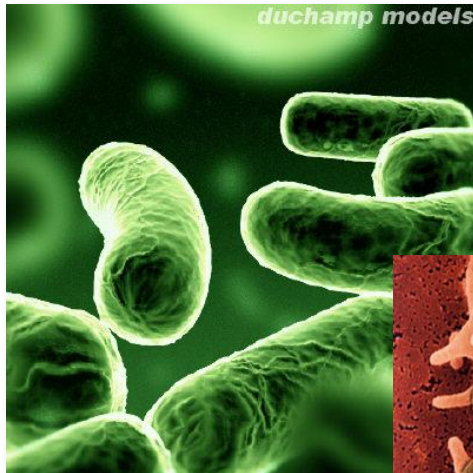
**Russell McElroy, Dr. Anna Noller,
James Herd, ME, Dr. Ryan Burnette**

Concept

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- Following the hantavirus infections in the four corners of the US in the mid-1990s, considerable interest developed within the forensic medical community regarding the “what ifs” of high consequence pathogens that might be released during autopsies.



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- ▶ **Features of a BSL-3 Facility:**
- ▶ **Reversal of airflow during power failure**
 - ▶ Lab goes from “negative” to “positive”
- ▶ **Proper air balancing of the containment area**
- ▶ **Overall decontamination scheme**
- ▶ **What are the pitfalls for an autopsy biocontainment lab?**
 - ▶ **Expect similar pitfalls**
 - ▶ **Be prepared for new pitfalls**

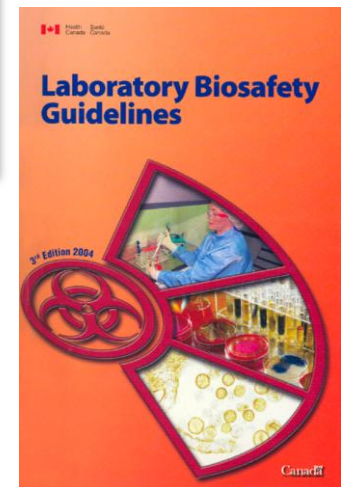
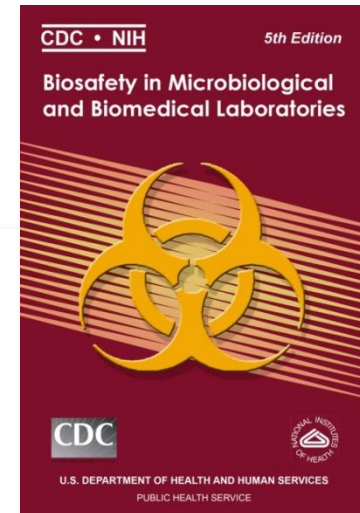
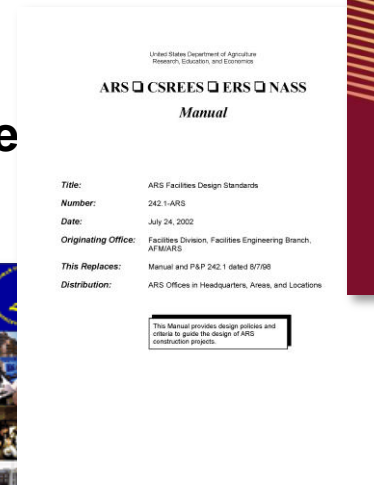
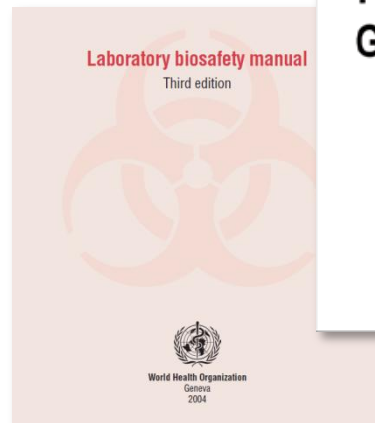


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- ▶ What are we certifying to?
 - ▶ BMBL 5th Ed., NIH/CDC
 - ▶ USDA ARS 242.1
 - ▶ NIH Guidelines
 - ▶ Canadian Lab Biosafety Guideline
 - ▶ WHO Biosafety Manual, 3rd Ed.
 - ▶ Internal standards



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Northern Virginia Forensics Center

Manassas, Virginia

Concept

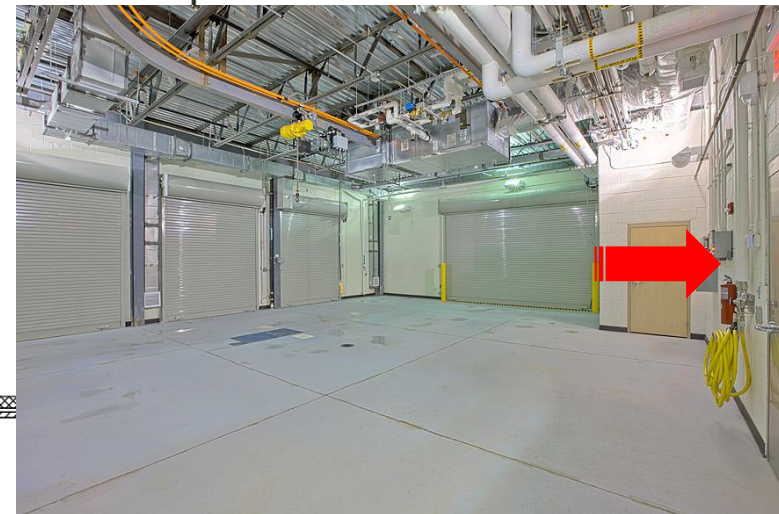
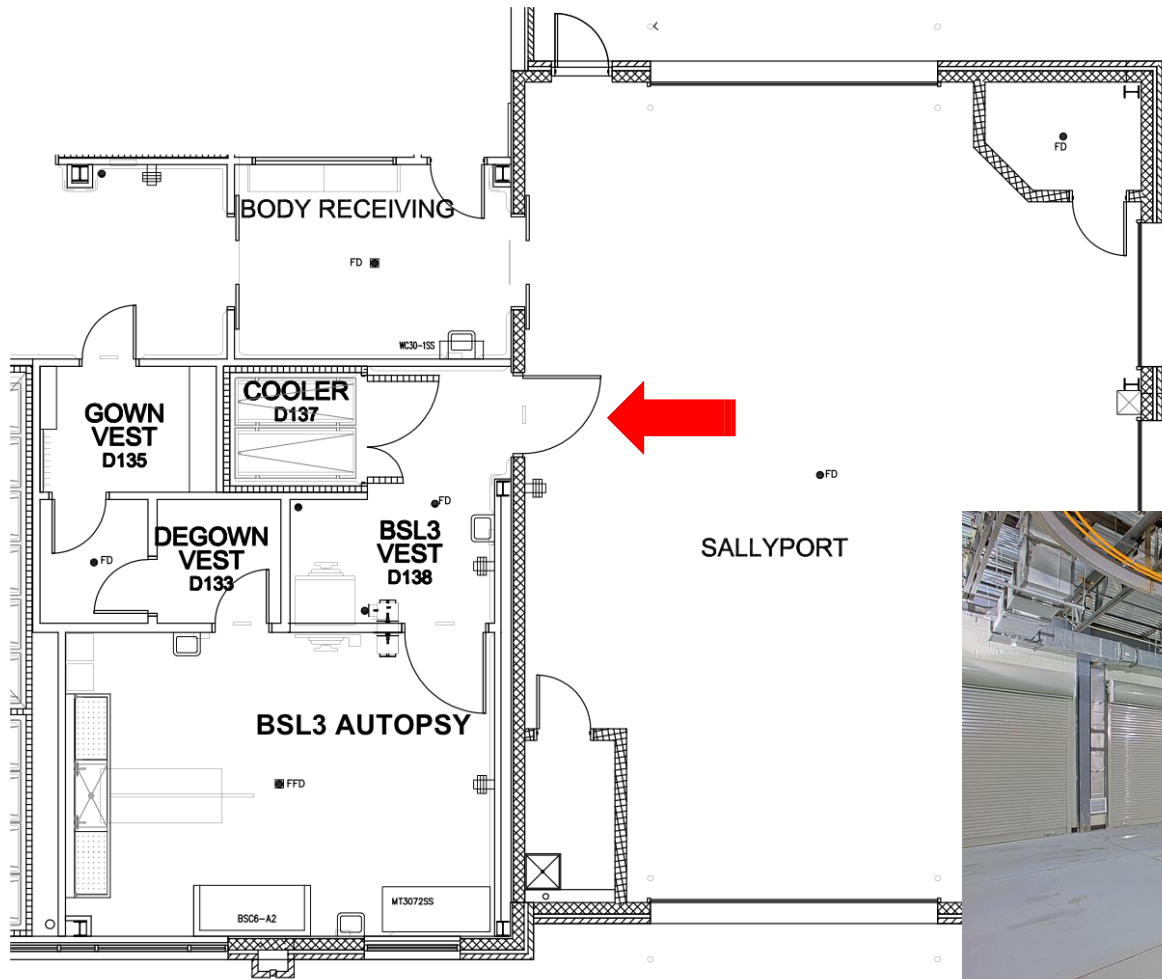
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Concept Evidence Entry



Designing for Justice



Concept

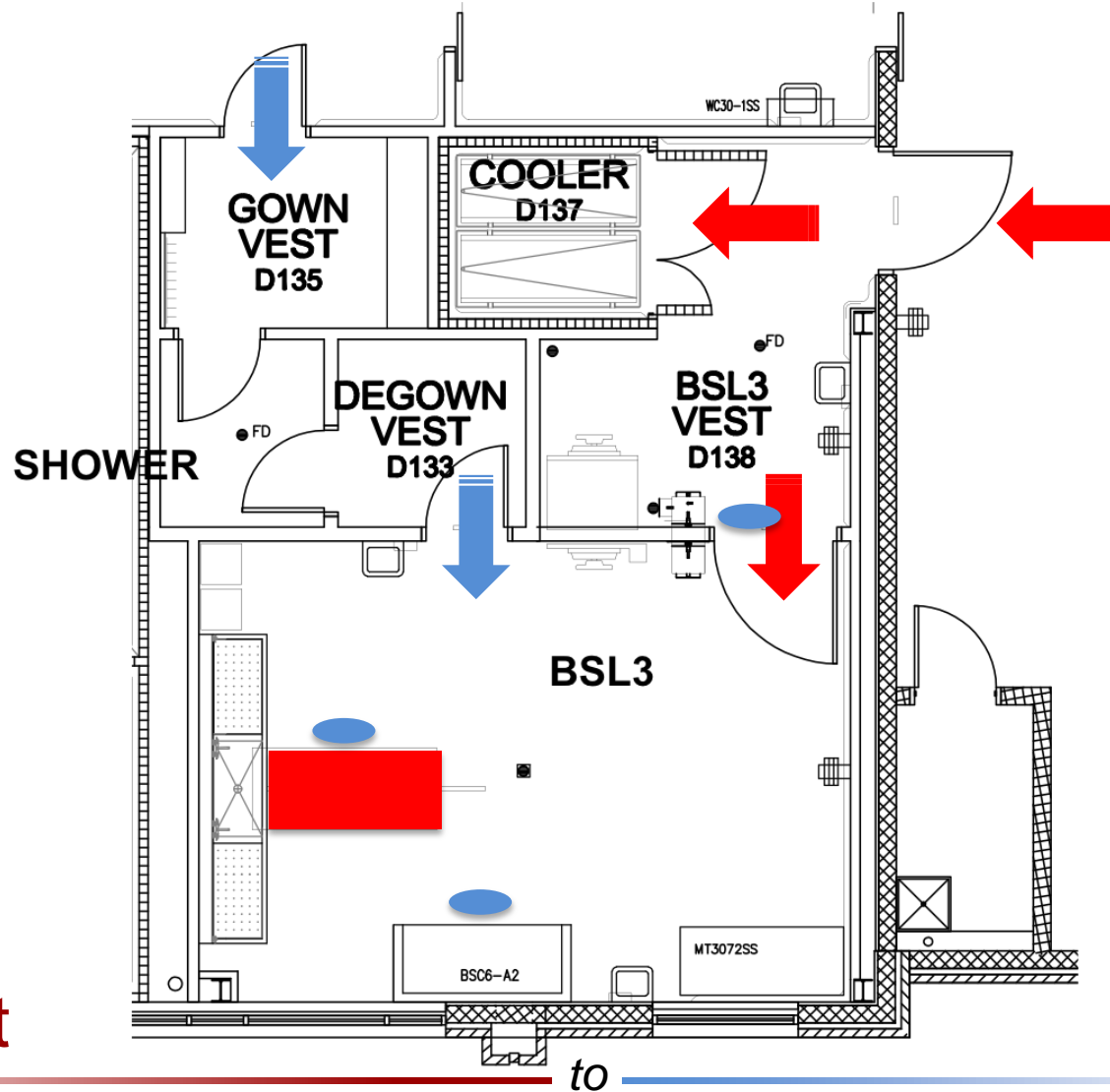
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Concept Staff & Evidence Flow



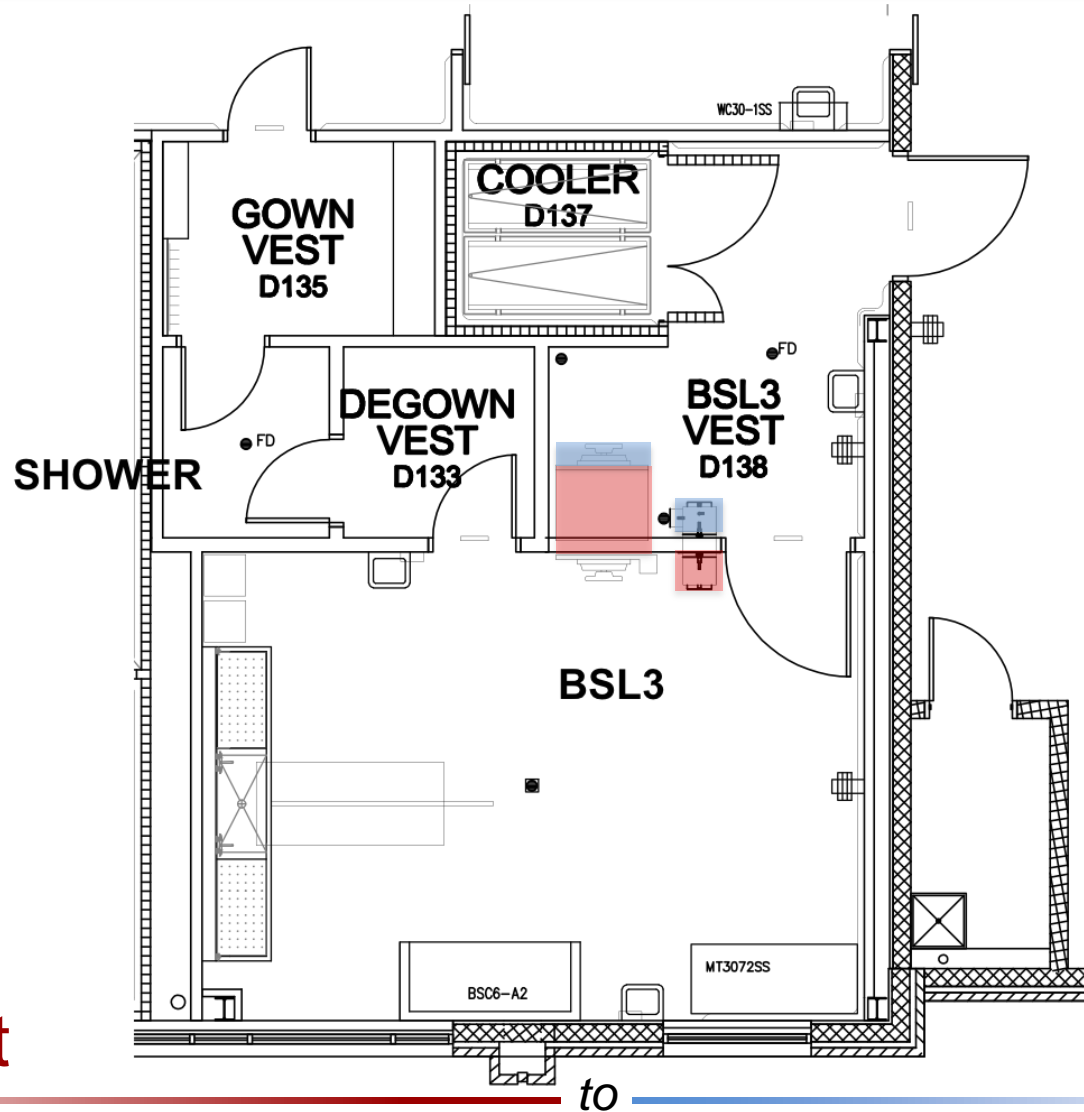
Designing for Justice



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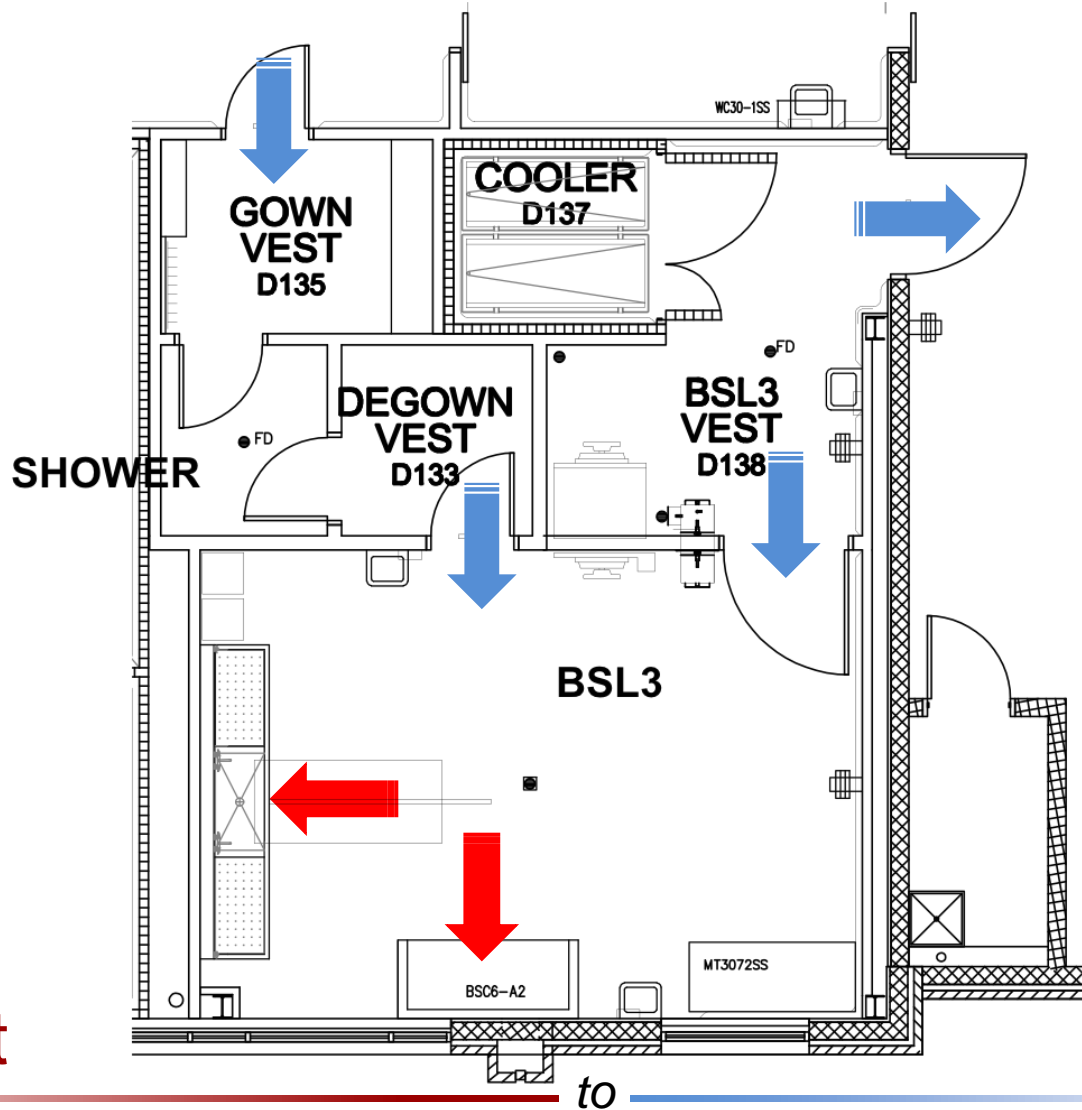
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Concept Directional Air Flow



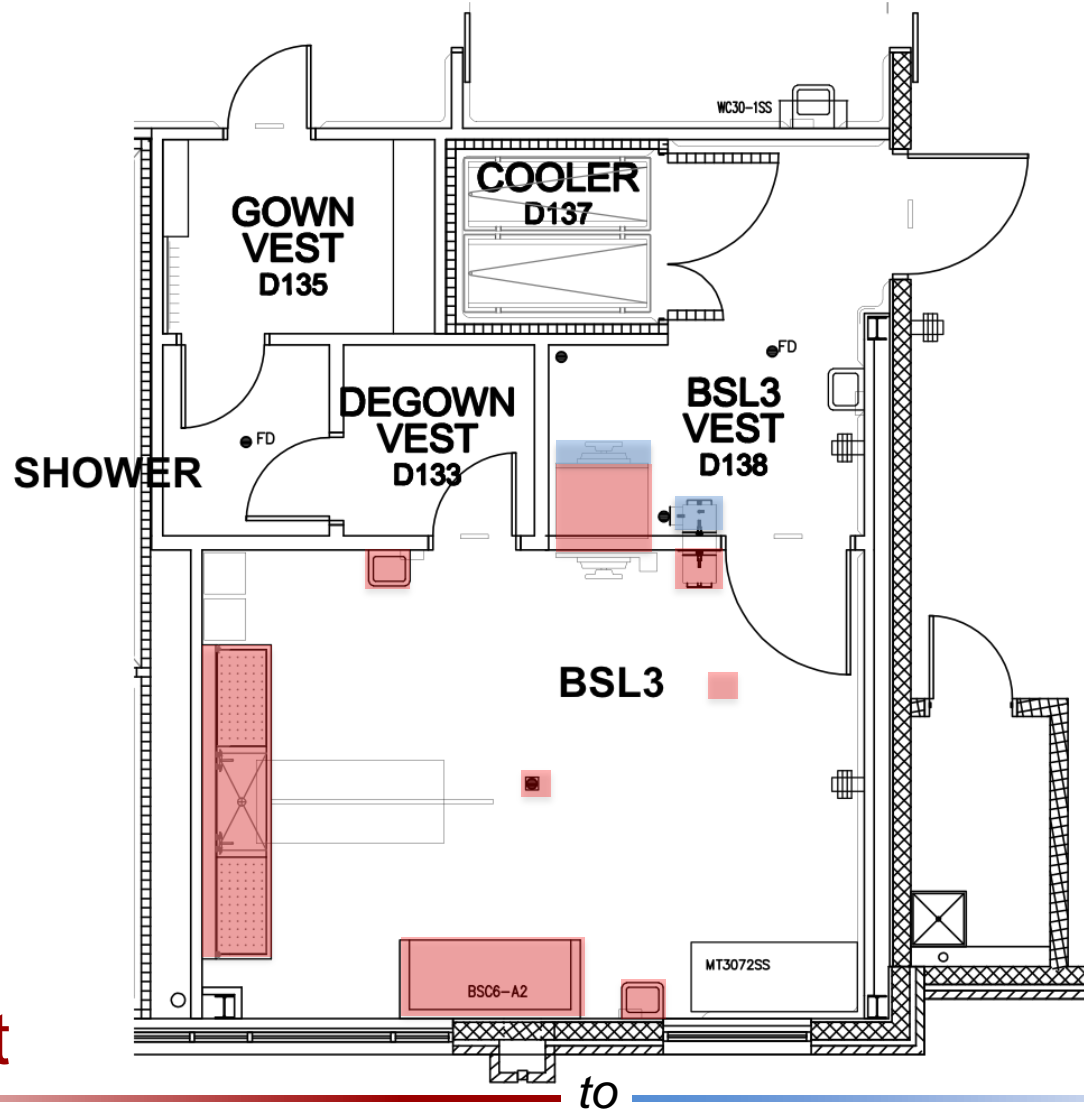
Designing for Justice



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- ▶ **Commissioning (Cx)**
 - ▶ **Verify construction meets design & owner requirements**
 - ▶ **Functional testing of critical parameters**
 - ▶ **Facility start-up**

- ▶ **Certification/Verification (Cert)**
 - ▶ **Detailed review of all laboratory safety features**
 - ▶ **Detailed review of all facility controls**
 - ▶ **Detailed review of operational practices**
 - ▶ **Goal: minimize biohazardous risks**

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- ▶ **Goal: Minimizing aerosol production at BSL-3**
 - ▶ **1. Primary containment**
 - ▶ **2. Secondary containment**
- **Engineering controls**
 - **1. HVAC systems with directional airflow & exhaust control**
 - **2. Hand washing and shower facilities**
 - **3. Decontamination capability**
- ▶ **Use of new Autopsy BSL-3 Checklist, derived from the 5th edition of the CDC/NIH BMBL**

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BSL3

Primary Biocontainment



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**Class II Type A BSC
in BSL-3 Autopsy room**

BSL3

Secondary Biocontainment



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Hands free sink

Cove molding

Ante-room door

Double door autoclave



Dunk tank

Seamless floor



Walk-thru Shower

Decon ports



HEPA filters & Strobic fans



Secure entrance



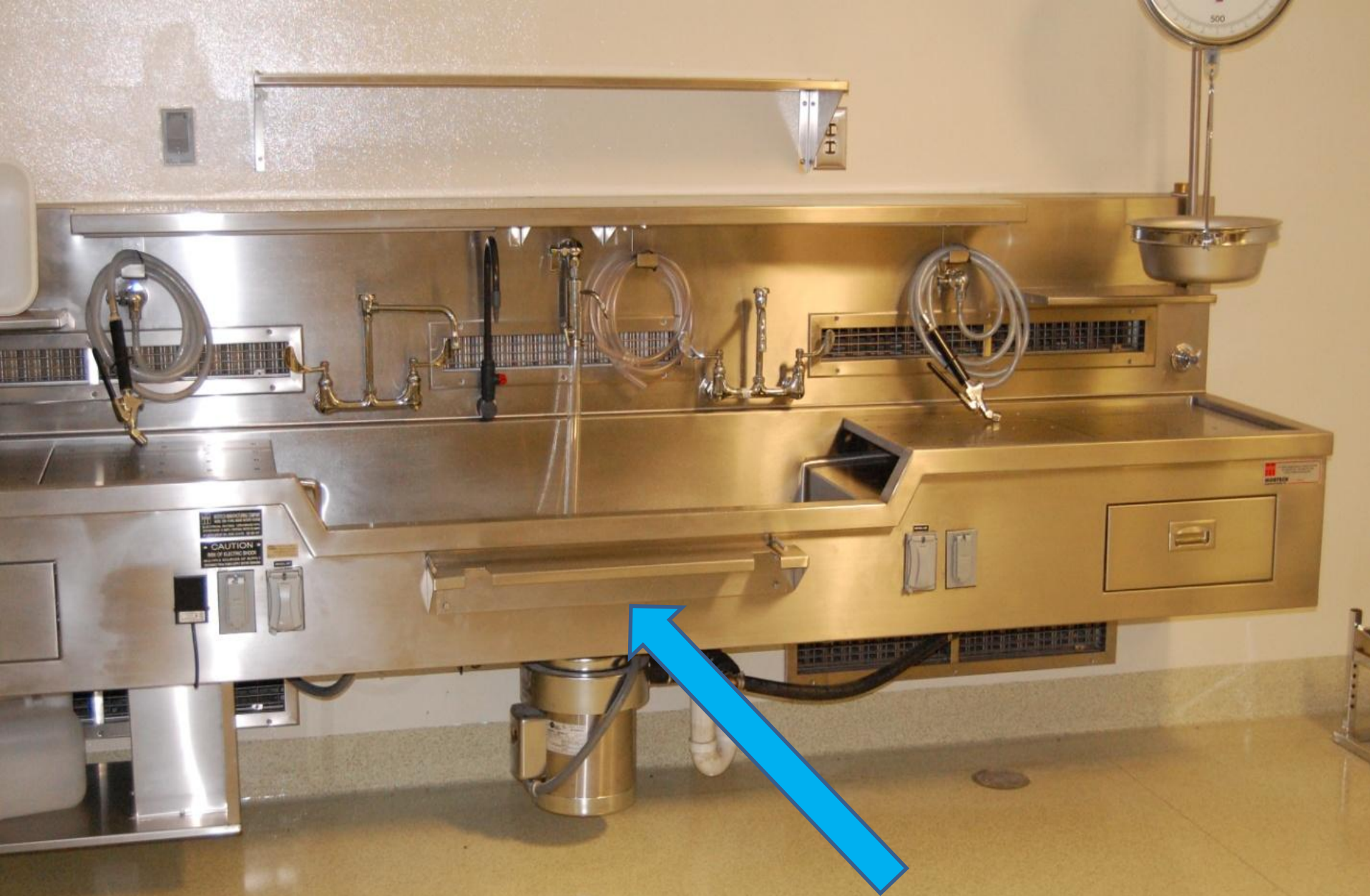
Liquid effluent decon pump



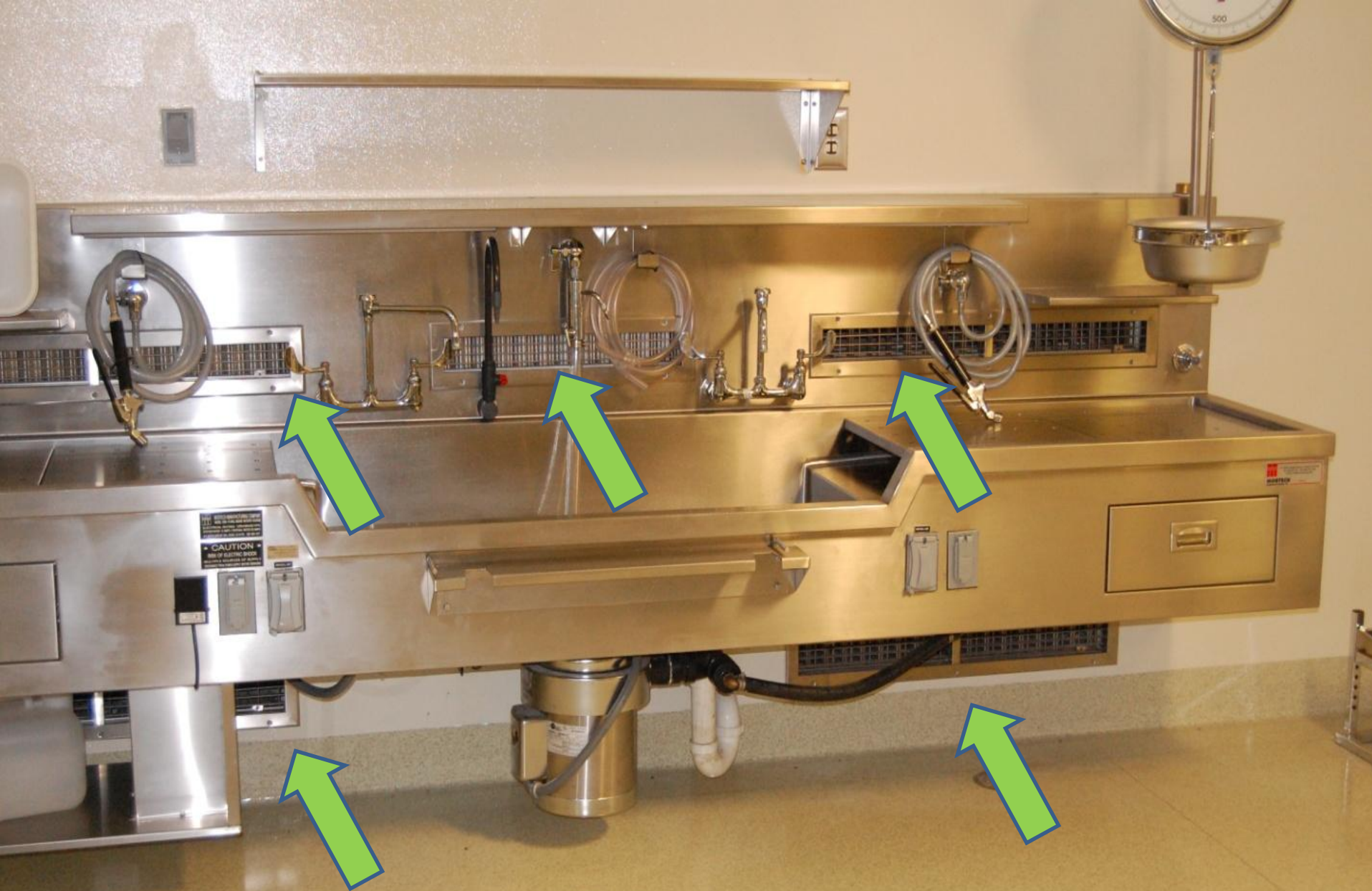
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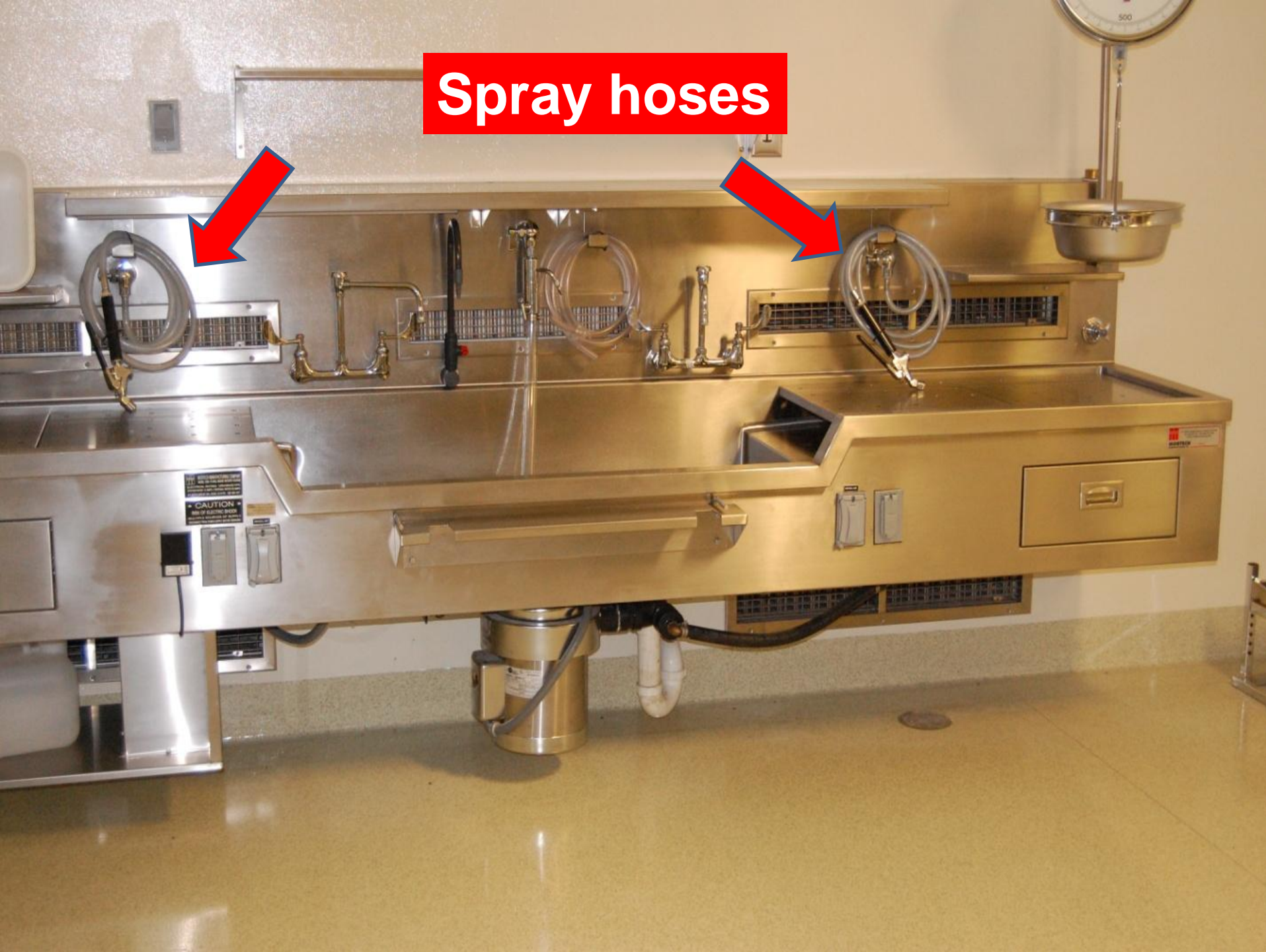


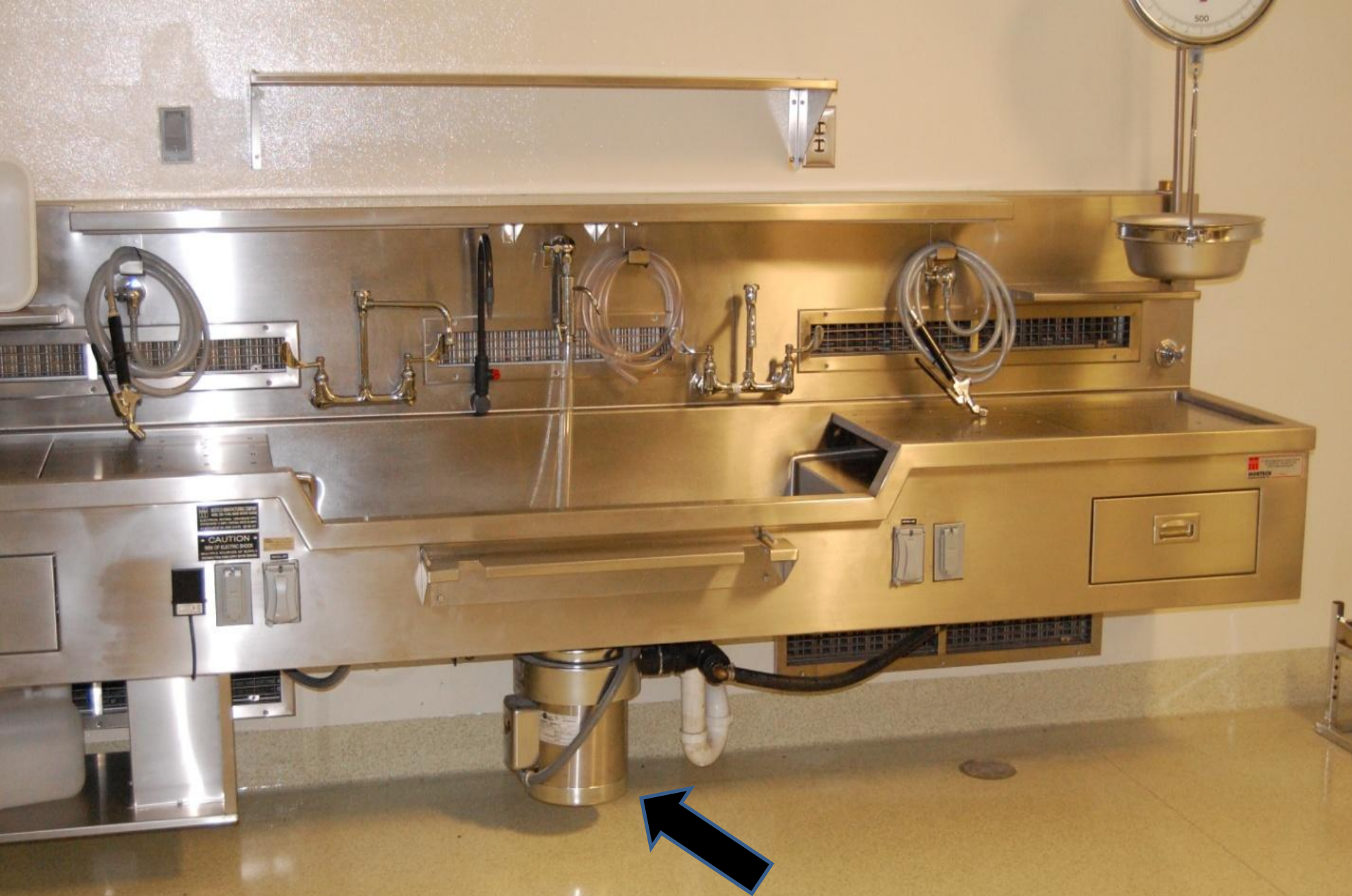
Gurney @ right angle



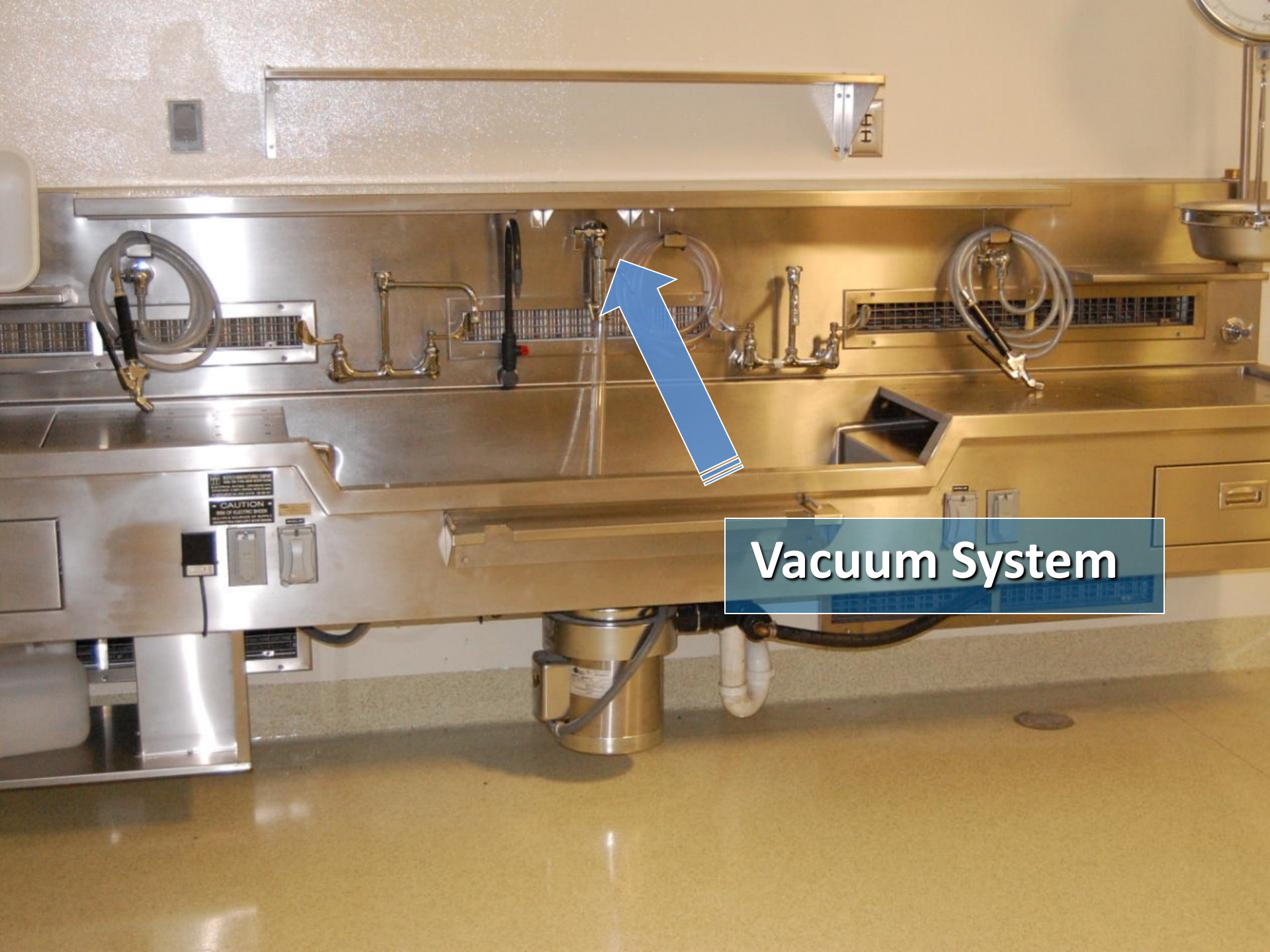
Exhaust vents

Spray hoses



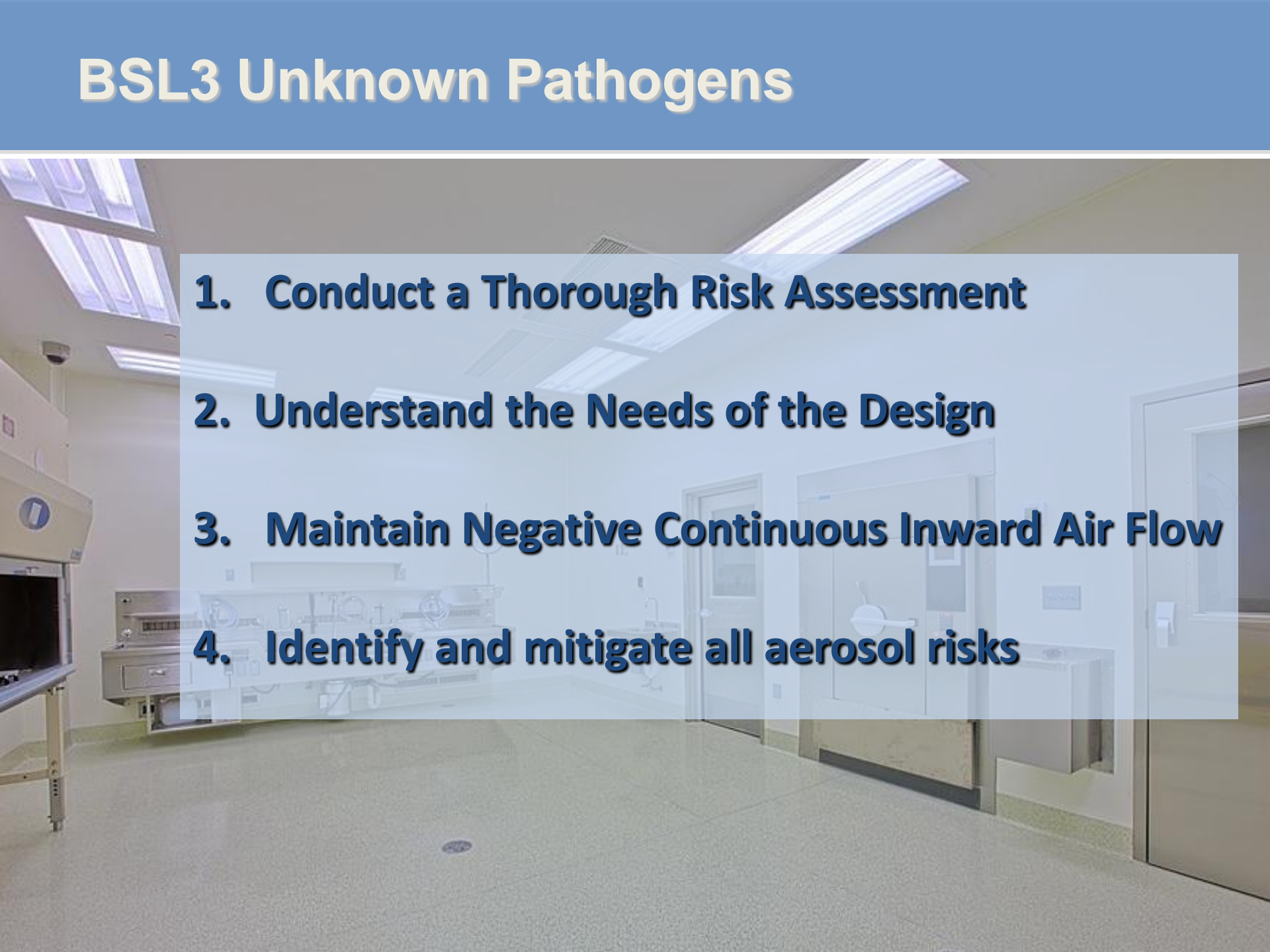


Tissue grinder



Vacuum System

BSL3 Unknown Pathogens

- 
- 1. Conduct a Thorough Risk Assessment**
 - 2. Understand the Needs of the Design**
 - 3. Maintain Negative Continuous Inward Air Flow**
 - 4. Identify and mitigate all aerosol risks**

Autopsy BSL3 Strategies for Unknown Pathogens



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