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**LEARNING OBJECTIVES**

1. List six types of safety hazards.
2. List common hazards found when manually cleaning.
3. Define hazard controls commonly used to reduce injuries

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# How Safe is Your Sink?

by Janet Strong, Heide Ames

**S**terile processing technicians handle medical instruments contaminated with potentially pathogenic microorganisms. Many instruments include sharp edges and points that could cut or puncture technicians. Staying safe when manually cleaning requires attention to potential safety hazards both in and out of the sink.

**Manual Cleaning Process**

Manual cleaning starts with receipt of instrumentation. Technicians sort through trays and containers, weighing upwards of 25 pounds, to find and remove missed disposable items. Following this; technicians carry the sets and instruments to the sink to remove any gross soil and pretreatment product. Next, the set is soaked, then cleaned, brushed, and flushed as needed.

Technicians reach into the cleaning sink to select an instrument to clean. Instrumentation is cleaned beneath the surface of the cleaning solution using non-linting cloths, sponges, and brushes with bristles made of nylon or metal. Technicians flow cleaning solution through lumens as specified by the instructions for use (IFU).

The cleaned instruments move to rinse sinks filled with fresh, clean water. Typically, instrumentation is collected in the rinse sink until the whole set has been cleaned. Several rinses follow to ensure all cleaning solution is removed from the lumens, channels, and restricted areas like box locks. The final step of manual cleaning is to either place the instrumentation on a rack for automated cleaning or in an area to dry as determined by the instructions for use.

Technicians are exposed to many hazards throughout this process. Staying safe starts with knowing what hazards are present.

**OSHA Hazards**

The Occupational Safety and Health Administration (OSHA) defines six types of hazards.

- **Biological Hazards:**

Harms that come from living things like communicable diseases, pathogenic microorganisms, and toxins.

- **Chemical Hazards:**

Harms from chemicals such as burns, poison, blindness, and death

- **Safety Hazards:**

Events, such as slipping and falling on wet floors, that can cause harm.

- **Physical Hazards:**

Injuries caused by the environment, such as excessive room temperatures.

- **Ergonomic Hazards:**

Repetitive motions or awkward postures that cause injuries.

- **Work Organization Hazards:**

This hazard recognizes the harms that come from high workload demands; threat or actual violence in the workplace; and high-intensity environments.

**Staying safe when manually cleaning**

Eliminating hazards is the primary goal. However, not every hazard is removable. Instead, the chance for injury is reduced through personal protective equipment (PPE), engineering controls, and safe practices.

Due to their contact with human blood, tissue, and other body fluids, instrumentation may have microorganisms that cause diseases like hepatitis, HIV, and other infections. Surfaces and fluids that touch instrumentation become

contaminated with these biological hazards. Common areas of contamination include trays, baskets, transport carts, pretreatment products, cleaning solutions, and rinse water. Other areas of contamination include fluid absorption pads and non-linting towels used to dry surfaces and rinsed instruments. Direct contact with any of these can transfer microorganisms to the technician.

Rinsing with spray arms; placing and removing instrumentation into sinks; and cleaning the instrumentation can lead to splashes and aerosols that could contaminate the area with microorganisms. Pilot studies performed by Ofstead et al. showed that splashes from manual cleaning activities reached technicians and surfaces up to five feet away.<sup>1</sup>

Contamination cannot be eliminated, but technicians use PPE and safe practices to protect themselves. PPE creates a barrier between contaminated instruments, surfaces, and fluids and the technician's skin, eyes, nose, and throat. PPE for manual cleaning includes:

- Fluid-resistant coverings including gowns, bouffants, and shoe covers
- Goggles and full-length face shields
- Fluid-resistant facemasks
- Utility gloves

Cleaning chemistries and point-of-use treatment products pose another type of hazard. Direct contact with, or inhalation of, these chemicals during manual cleaning can be harmful. Injuries may include skin irritation, respiratory distress, and blindness. If correctly chosen, the same PPE that provides a barrier to contaminated fluids can protect technicians from cleaning chemistries. To be effective, gloves, face shields, and goggles should meet the requirements specified within the chemistry's safety data sheet.

Manual cleaning and the area around it may have several safety hazards depending on the facility's design and operation. One consistent to all designs is wet floors. Slips and falls can be avoided by safe practices and using non-skid mats designed for a sink area. Mats can also cause a trip hazard. Be cautious when selecting these.

Instruments may have sharp or abrasive edges that can cut through gloves, exposing the technician to contaminated fluids during cleaning. Those same instruments can cut or puncture technician hands. Safe practices include segregation of

these instruments and keeping visibility of all instruments in the sink throughout cleaning. Maintaining visibility requires a cleaning chemistry that is low-foaming and able to prevent soils from clouding the solution. The decontamination room's environment has a direct impact on technicians. High room temperatures and humidity combined with PPE; cleaning solutions between 90-100°F; and the strenuous lifting and moving of heavy instrument sets create a potential for heat exhaustion. Heavy sweating, dizziness, muscle cramps, and loss of consciousness are common symptoms. Keep decontamination room temperatures and humidity levels low. Another alternative is to wear cooling vests designed for this application.

Technicians come in all heights. The taller the technician the further they must bend to reach the sink contents. Maintaining an awkward position for extended periods of time can lead to ergonomic back pain. Shorter technicians may need a raised platform or stool to reach the sink contents. They face safety hazards like tripping or falling as they step on and off the platform. Both hazards can be resolved by using a height-adjustable, hydraulic sink.

Emptying case carts, preparing trays for decontamination, and moving the trays from each sink bay can cause sterile processing (SP) technicians to bend and twist their backs excessively. These repetitive motions can cause strains, sore muscles, and other more serious back issues. Practicing proper lifting techniques, reducing tray weights, and reducing the amount of space between work tasks can reduce back strain.

### Stress is a work hazard

Manual cleaning may seem endless. Just as one case cart is finished, another dirty case cart comes in. Remembering the multitude of instruments and each unique cleaning instructions can be mentally fatiguing. Add to this the stress of tracking the manual cleaned instruments needed again that day, quick-turn instrument sets, and shifting needs as cases drop off or become delayed in the OR.

Frustrations can build as sets are returned without using a point-of-use treatment product. The dried blood and tissue on the instruments makes manual cleaning significantly harder. Each

instrument takes more time, which is time the technician may not have. These factors increase the stress level and could lead to headaches, high blood pressure, anxiety, and in some cases, depression.

The best way to manage stress is to reduce the factors that cause the stress. It begins by ensuring sufficient staff to cover high-volume times. Ask technicians at the sink how they feel and what help they may need. Next, improve communication with the operating room. Establish a means to update both the operating room and the sterile processing of schedule changes and quick-turn device status.

### Find and Address Safety Concerns

These are just a few of the many hazards faced by technicians performing manual cleaning. Following industry standards and good ergonomic practices help keep technicians safe. However, each facility is unique with its own distinctive safety concerns. OSHA recommends facilities perform regular safety assessments.

The safety assessment team should include technicians, facilities, sterile processing supervisors/managers, biomed, and others thought necessary by the facility. Some facilities may have a safety committee which can help. The team handles observing the area and tasks performed in the area while looking for the six hazard types listed by OSHA. The team should also gather information on reported injuries that have occurred in the area or while performing sterile processing activities.

The team addresses each hazard or potential hazard through a hazard control plan. The hazard control plan gives a foundation for facilities to list hazards, hazard controls, and monitor effectiveness of the plan. There are many methods to control hazards, but some are better than others. OSHA has defined a hierarchy of controls based upon its efficacy.

#### 1. Elimination

The first control is to remove the hazard. Removing the cause of the hazard removes all probability of occurrence

#### 2. Substitution

This control changes the hazardous item with a non-hazardous one. Substitution is often used when a task cannot be eliminated but a safer alternative is available.

### 3. Engineering Controls

This control puts a barrier between the hazard and the technician. This is different from personal protective equipment. Engineering controls stay with the hazard. Examples include walls, shields, fume hoods, and interlocking doors.<sup>2</sup>

### 4. Administrative Controls

This control changes the way a technician does the task to reduce exposure. Reducing tray weights, placing necessary tools within easy reach, and educating technicians on proper lifting techniques fall under this category.

### 5. Personal Protective Equipment

This control uses specialized equipment and tools to protect technicians from the hazard. Utility gloves, shoe covers, safety goggles, and facemasks are all forms of personal protective equipment.

The last step to controlling hazards is education.

Education should include:

- What the hazard is
- The injuries it can cause
- Methods and equipment used to control the hazard
- The type and use of personal protective equipment, if applicable

Proper monitoring can identify new hazards and the effectiveness of current hazard controls. Items to monitor include:

- Injury reports
- Near misses
- Safety inspection reports

### Safety is a Primary Goal

Technician safety is a primary goal of sterile processing departments. One poke at the sink could mean thousands of dollars of medical care, stress and worry, and the loss of a sterile processing technician. Manual cleaning should be part of the facility's hazard control plan. Technician safety during manual cleaning should be a priority of every facility. **HPN**

#### References:

1. Ofstead, C, Hopkins, K, Smart, A, Brewer, M. (2022) Droplet dispersal in decontamination areas of instrument reprocessing. *American Journal of Infection Prevention*. 50(2), 126-132. <https://doi.org/10.1016/j.ajic.2021.10.023>
2. The National Institute for Occupational Safety and Health (NIOSH) (2023, November). Directory of Engineering Controls. Centers for Disease Control and Prevention. <https://www.cdc.gov/niosh/engcontrols/default.html>
3. United States Department of Labor. (n.d.). Recommended Practices for Safety and Health Programs. Occupational Safety and Health Administration. <https://www.osha.gov/safety-management/getting-started>

**Janet Strong RN, BSN, CNOR, CRCST** was an operating room nurse for over 20 years. Janet has held various positions at IU Health. She was the Total Joint Coordinator, Ortho Trauma Coordinator, the OR educator and manager of a surgery center. During this time, she also worked in the SPD wrapping ortho instruments for the next day. She learned to clean and decontaminate instruments when taking call on the evening and weekends. Janet is a member of HSPA, AORN, APIC and SGNA.



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## How Safe is Your Sink?

Circle the one correct answer:

- What governmental organization defines the types of workplace hazards?**
  - Occupational Safety and Health Administration
  - Occupational Therapy Administration
  - The Food and Drug Administration
  - The Internal Revenue Service Administration
- Which is an example of a biological hazard.**
  - Point-of-Use treatment product
  - Soiled instruments
  - Lifting heavy trays
  - Stooping over a sink
- Which type of hazards are cleaning chemistries?**
  - Biological Hazard
  - Chemical Hazard
  - Physical Hazard
  - Work Organization Hazard
- Bending over a sink to clean is an example of which type of hazard?**
  - Biological Hazard
  - Chemical Hazard
  - Ergonomic Hazard
  - Work Organization Hazard
- Cloudy cleaning solution leads to poor visibility and the potential of this harm.**
  - Contact with contaminated fluid
  - Cuts
  - Infection from microorganisms
  - All of the above
- What is the purpose of a hazard control plan?**
  - Decides the cross functional team
  - List hazard control and monitor effectiveness of the plan
  - Reports injuries to senior management
  - Describes how to perform a safety assessment
- Who should be on the safety assessment team?**
  - Technicians
  - Facilities
  - Sterile processing supervisors/managers
  - All of the above
- Which is the most effective hazard control?**
  - Substitution
  - Personal Protective Equipment
  - Engineering Controls
  - Elimination
- Educating on proper lifting techniques is an example of which control?**
  - Substitution
  - Personal Protective Equipment
  - Engineering Controls
  - Administrative Controls
- What is monitored after all the hazard controls have been implemented?**
  - Hazard Control Plan
  - Reported Injuries
  - Near misses
  - A and B
  - B and C

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