

5

Infection Control: Principles and Practices

Chapter Outline

- Why Study Infection Control?
- Regulation
- Principles of Infection
- Principles of Prevention
- Standard Precautions
- The Professional Salon Image
- Procedures



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Learning Objectives


After you have completed this chapter, you will be able to:

- ✓ **L01** Discuss state laws and rules and explain the differences between them.
- ✓ **L02** List the types and classifications of bacteria.
- ✓ **L03** Define hepatitis and human immunodeficiency virus (HIV) and explain how they are transmitted.
- ✓ **L04** Explain the differences between cleaning, disinfecting, and sterilizing.
- ✓ **L05** List the types of disinfectants and how they are used.
- ✓ **L06** Discuss Standard Precautions.
- ✓ **L07** List your responsibilities as a salon professional.
- ✓ **L08** Describe how to safely clean and disinfect salon tools and equipment.

Key Terms

Page number indicates where in the chapter the term is used.

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There is a great deal of confusion and misuse of the terms “cleaning,” “sanitizing,” “disinfecting,” and “sterilizing” within the beauty industry, including at the state regulatory level. In previous editions of this chapter, and in many commercially available products, the word **sanitizing** has been used to mean “clean” or “cleaning.” The publisher’s goal is to end any possible confusion about the use and definition of these words by clearly defining them here and within the glossary. Milady has opted to consistently use “cleaning,” instead of using “cleaning” in one sentence and “sanitizing” in another sentence, since these terms have similar meanings and accomplish the same outcome: removing dirt and germs.

The word “cleaning” is defined as a mechanical process (scrubbing) using soap and water or detergent and water to remove dirt, debris, and many disease-causing germs. Cleaning also removes invisible debris that interferes with disinfection.

The word “sanitizing” is defined as a chemical process used to reduce the number of disease-causing germs on surfaces to a safe level, which is what cleaning accomplishes. The word “disinfecting” is defined as a chemical process that uses specific products to destroy organisms on nonporous surfaces.

WHY STUDY INFECTION CONTROL?

Nail technicians should have a thorough understanding of infection control principles and practices because:

- ▶ To be a knowledgeable, successful, and responsible professional in the field of nail technology, you are required to understand the types of infections you may encounter in the salon and their modes of transmission.
- ▶ Understanding and practicing proper infection control within the laws and rules will safeguard your business.
- ▶ Respecting the chemicals in the cleaning and disinfecting products that you use, and knowing how to safely use them, will help keep you, your clients, and your salon environment safe.

■ REGULATION

Various federal and state agencies regulate the practice of nail technology. Federal agencies set guidelines for the manufacturing, sale, and use of equipment and chemical ingredients; for the type of disinfectants used in salons; and for safety in the workplace, placing limits on the types of services you can perform in the salon. For example, nail professionals are prohibited from cutting or puncturing the living skin and from removing callused skin, warts, corns, in-grown nails, etc. State agencies are responsible for regulating licensing, enforcement, and the conduct of nail technicians when they are working in the salon.

Federal Agencies

Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Administration (OSHA) was created as part of the U.S. Department of Labor to regulate and enforce safety and health standards to protect employees in the workplace. Regulating employee exposure to potentially toxic substances and informing employees about possible hazards of materials used in the workplace are key points of the Occupational Safety and Health Act of 1970. This regulation created the Hazard Communication Act, which requires that chemical manufacturers and importers assess the potential hazards associated with their products. The **Material Safety Data Sheet (MSDS)** is a result of this law.

In 2012, along with representatives from most nations who participate in the United Nations (UN), OSHA agreed to comply with the Globally Harmonized System of Classification and Labeling of Chemicals System (GHS). This initiative was designed to create label standards to be used around the globe and includes the use of specific pictograms to indicate possible safety concerns as well as adoption of a 16-category, standard-format **Safety Data Sheet (SDS)** to replace the MSDS. In 1983, the Hazard Communication Standard (HCS) gave workers the “right to know”; however, the new GHS gives workers the “right to understand.” Many of the standards set by OSHA are important to the nail industry because of the products used in salons. These standards address issues relating to the handling, mixing, storing, and disposing of products; general safety in the workplace; and the technician’s right to know about any potentially hazardous ingredients contained in the nail products he or she uses and how to avoid these potential hazards.

Safety Data Sheet (SDS) Replaces Material Safety Data Sheet (MSDS)

As of June 2015, the HCS requires a manufacturer, distributor, or importer to supply an SDS (previously known as an MSDS) for each professional product sold. Both the MSDS and the SDS contain information compiled by a manufacturer about its product, including the names of potentially hazardous ingredients, safe use and handling procedures, precautions to reduce the risk of accidental harm or overexposure, flammability warnings, useful disposal guidelines, and medical and first aid information, should it ever be needed for any reason.

The new SDS contains 16 categories of information. All SDS sheets will be organized identically. The categories are:



1. Identification: product identifier; manufacturer or distributor with contact information (including emergency phone number); recommended use of product and restrictions on use
2. Hazard identification: All potential hazards of using the product
3. Composition/information on ingredients: includes information on chemical ingredients
4. First-aid measures: includes important symptoms/effects—acute and delayed; required treatment
5. Fire-fighting measures: lists suitable extinguishing techniques; equipment; chemical hazards from fire
6. Accidental release measures: lists emergency procedures; protective equipment; proper methods of containment and cleanup
7. Handling and storage: lists precautions for safe handling and storage, including incompatibilities
8. Exposure controls/personal protection: lists OSHA's permissible exposure limits (PEL); personal protective equipment (PPE)
9. Physical and chemical properties: lists the chemical's characteristics
10. Stability and reactivity: lists chemical stability and possibility of hazardous reactions
11. Toxicology information: includes routes of exposure; related symptoms; acute and chronic effects
12. Ecological information: includes effects on wastewater and environment
13. Disposal consideration: includes proper disposal and disposal restrictions
14. Transport information: includes restrictions on transportation
15. Regulatory information: lists agencies responsible for regulation of product
16. Revision date: lists original date of document and any revision

In addition, pictograms that are internationally recognized will be used to ensure that information is being communicated in easily recognizable formats.

When necessary, the SDS can be taken to a doctor so that the situation can be properly treated. OSHA and state regulatory agencies require that SDSs for all professional products be kept in the salon, available for reference by nail technicians and other staff during normal hours of business. Either OSHA or state board inspectors can issue fines to salons that do not have SDSs available during regular business hours. There are also SDS-related training requirements. Employers must regularly (e.g., yearly) train workers on how to read and understand SDSs and OSHA regulations.

Federal and state law requires nail salons to obtain an SDS from the manufacturers and/or distributors for each professional product that you use. You can often download them from the product manufacturer's or the distributor's website. The absence of SDSs may pose a health risk to anyone in a salon who is exposed to potentially hazardous materials and is a violation of federal and state regulations. Take the time to read all of this information to be certain that you are protecting yourself and your clients to the best of your ability.

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Environmental Protection Agency (EPA)

The Environmental Protection Agency (EPA) registers many different types of disinfectants that are sold and used in the United States. **Disinfectants (dis-in-FEK-tents)** are chemical products that destroy most bacteria, fungi, and viruses on surfaces. Most disinfectants do not destroy spores. EPA-registered disinfectants are products used on nonporous surfaces that destroy organisms such as bacteria, viruses, and fungi when used according to the instructions on their label. The two types of disinfectants that are used in salons are hospital and tuberculocidal. **Hospital disinfectants** (HOS-pih-tal dis-in-FEK-tents) are effective in cleaning blood and body fluids from nonporous surfaces in the salon, thus controlling the spread of **disease** (dih-ZEEZ)—an abnormal condition of all or part of the body, or its systems or organs, that makes it incapable of carrying on normal function.

Tuberculocidal disinfectants (tuh-bur-kyoo-LOH-sy-dahl dis-in-FEK-tent) are proven to kill the bacteria that causes **tuberculosis** (tuh-bur-kyoo-LOH-sus), a disease that is caused by bacteria that are transmitted by coughing or sneezing, not by salon implements or services. The bacteria that causes tuberculosis is very difficult to kill, so the tuberculosis organism is used to test the efficacy of disinfectants. Tuberculocidal disinfectants are also classified as hospital disinfectants; however, this does not mean that you should use them in the salon. In fact, tuberculocidal disinfectants can be harmful to salon tools and equipment and require special methods of disposal. Review the rules in your state to be sure that the product you choose complies with requirements; also check with the implement or equipment manufacturer to determine if there are any incompatibilities with various disinfectants.

It is against federal law to use any disinfecting product contrary to its labeling. Before a manufacturer can sell a product for disinfecting surfaces, salon tools, implements, or equipment, it must obtain approval from the EPA and a registration number. Only then does the product qualify as a disinfectant for use in the salon, and only in the manner dictated by the manufacturer's label. For example, pedicure and manicure basins, bowls, or tubs must be disinfected with a product that is specifically approved by the EPA for use with these types of tools and equipment. If you do not follow the instructions for mixing, contact time, and the type of surface the disinfecting product can be used on, you have not complied with federal law and can be held to blame if there is a lawsuit.

A single nail technician can put many clients at risk unless stringent cleaning and disinfection guidelines are performed every day. A case in point was the spread of a bacterium called **Mycobacterium fortuitum** (MY-koh-bak-TIR-ee-um for-TOO-i-tum), a microscopic organism that normally exists in low concentrations in tap water. Until an incident occurred, health officials had considered it to be completely harmless and not infectious. In 2000, over 100 clients of a California salon had serious skin infections on their legs after receiving pedicures. The infection caused stubborn, ugly sores that lingered for months, required the use of strong antibiotics, and, in some cases, caused permanent scarring. The source of the infection was traced to the salon's whirlpool foot spas. Salon staff did





not clean the foot spas properly, resulting in a buildup of hair and debris that created the perfect breeding ground for bacteria.

The outbreak was a catalyst for change in the industry. As a result, the state of California issued specific requirements for pedicure equipment in the hope of preventing a future outbreak. In spite of their efforts at that time, there have since been other outbreaks affecting hundreds of clients, and not only in California. In Texas, the family of a paraplegic woman sued a salon, charging that the woman died because of an improperly disinfected pumice stone that caused an infection on her foot that spread and resulted in a fatal heart attack. As a result of media scrutiny, many clients have become more aware of the cleanliness practices of nail salons, and the industry has become more enlightened about the importance of cleaning and disinfection practices, especially for pedicure equipment.

State Regulatory Agencies

State regulatory agencies exist to protect the health and safety of professionals and of consumers who receive nail and pedicure services in salons and spas. State regulatory agencies include licensing agencies, state boards of cosmetology, commissions, OSHA and health departments. These agencies require that everyone working in a nail salon or spa follow specific procedures. Enforcement of the rules through inspections and investigations of consumer complaints is also part of an agency's responsibility. The agency can issue penalties against both

the salon owner and the operator that range from warnings to fines, probation, and suspension or revocation of licenses and business permits. It is vital that you understand and follow the laws and rules in your state at all times—your salon's reputation, your license, and the client's safety depend on it.

Laws and Rules—What Is the Difference?

Laws are written by both the federal and state legislatures that determine the scope of practice (what each license allows the holder to do) and establish guidelines for regulatory agencies to make rules. Laws are also called *statutes*. *Rules* or *regulations* are more specific than laws. Rules are written by a regulatory agency or state board and determine how the law will be applied. Rules establish specific standards of conduct and can be changed or updated frequently.

LO1

PRINCIPLES OF INFECTION

Being a salon professional is fun and rewarding, but it also carries a great responsibility. One careless action could cause injury or **infection** (in-FEK-shun)—the invasion of body tissues by disease-causing pathogens—and you could lose your license or ruin the salon's reputation. Fortunately, preventing the spread of infections is easy if you have learned what to do and you practice that at all times. Safety begins and ends with you (**Figure 5-1**).

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Infection Control

Infection control is the methods used to eliminate or reduce the transmission of infectious organisms. There are four types of potentially harmful and infectious organisms that are important to practitioners of nail technology: bacteria, fungi, viruses, and parasites. An **infectious disease** is caused by pathogenic (harmful) organisms that enter the body. An infectious disease may or may not be spread from one person to another.

Remember, nail professionals are never allowed to **diagnose**, determine the nature of a disease from its symptoms, treat, or recommend treatments for infections, disease, or abnormal conditions. Never attempt to treat or service any abnormal condition or injury or other unhealthy conditions. Instead, clients must be referred to their physicians for diagnosis and treatment. Nail professionals are only permitted to service healthy nails and skin. What you will learn in this chapter will teach you how to properly clean and disinfect tools and equipment so they are safe to use on clients. These steps are designed to prevent infection or disease. **Disinfection** is a chemical process that uses specific products to destroy organisms on nonporous surfaces. Disinfectants used in salons must be **bactericidal** (back-teer-uh-SYD-ul), capable of destroying bacteria; **fungicidal** (fun-jih-SYD-ul), capable of destroying fungi; and **virucidal** (vy-rus-SYD-ul), capable of destroying viruses. Be sure to mix and use these disinfectants according to the instructions on their labels to ensure their effectiveness.

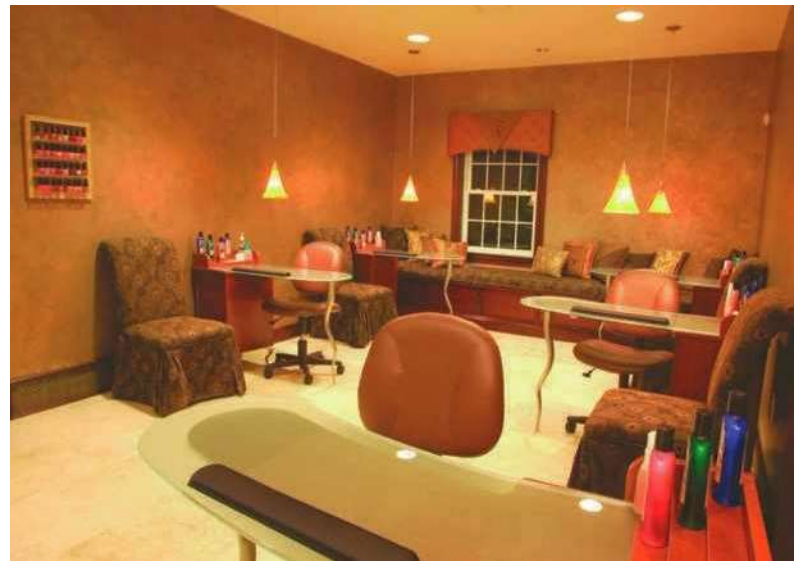
Contaminated salon tools and equipment may spread infections from client to client if the proper disinfection steps are not taken after every client. You have a professional and legal obligation to protect consumers from harm by using proper infection-control procedures. If clients are infected or harmed because a service or an infection-control procedure is not performed correctly, you may be found legally responsible for their injuries or infections.

Bacteria

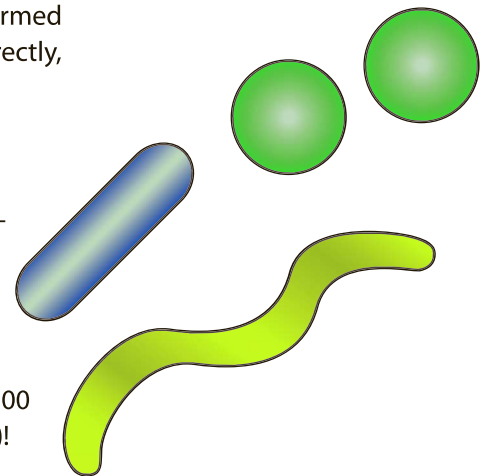
Bacteria (bak-TEER-ee-ah) are one-celled **microorganisms** (my-kroh-OR-gah-niz-ums), organisms of microscopic or submicroscopic size, with both plant and animal characteristics. Some are harmful, some are harmless. Bacteria can exist almost anywhere: skin, water, air, decayed matter, body secretions, clothing, or under the free edge of nails. Bacteria are so small they can only be seen with a microscope. In fact, 1,500 rod-shaped bacteria will fit comfortably on the head of a pin (**Figure 5–2**)!

Types of Bacteria

There are thousands of different kinds of bacteria that fall into two primary types: pathogenic and **nonpathogenic**. Most bacteria are nonpathogenic (non-path-uh-JEN-ik): they are harmless organisms that may perform useful functions and



▲ **Figure 5–1** A sparkling-clean salon gains your clients' confidence.



▲ **Figure 5–2** Some general forms of bacteria.

are safe to come in contact with since they do not cause disease or harm. They can perform many helpful functions. For example, bacteria are used to make yogurt, cheese, and some medicines. In the human body, nonpathogenic bacteria help the body break down food, protect against infection, and stimulate the immune system. **Pathogenic** (path-uh-JEN-ik) bacteria are considered harmful because they may cause disease or infection in humans when they invade the body. Preventing the spread of pathogenic microorganisms is why salons and schools must maintain the highest standards for infection control at all times. If good practices are not learned and followed starting in school, many graduating nail technicians will never learn or practice them. **Table 5–1, Causes of Disease**, presents terms and definitions related to pathogens.

Table 5–1 CAUSES OF DISEASE

TERM	DEFINITION
Bacteria (singular: bacterium)	One-celled microorganisms having both plant and animal characteristics. Some are harmful; others are harmless.
Direct Transmission	The transmission of blood or body fluids through touching (including shaking hands), kissing, coughing, sneezing, and talking.
Indirect Transmission	The transmission of blood or body fluids through contact with an intermediate contaminated object, such as a tweezer, metal pusher, nipper, or an environmental surface.
Infection	The invasion of body tissues by disease-causing pathogens.
Germ	A nonscientific synonym for disease-producing organisms.
Microorganism	Any organism of microscopic or submicroscopic size.
Parasite	Organisms that grow, feed, and shelter on or in another organism (referred to as the host), while contributing nothing to the survival of that organism. Parasites must have a host to survive.
Toxins	Various poisonous substances naturally produced by some microorganisms (bacteria and viruses). All toxins are natural substances.
Virus (plural: viruses)	A parasitic submicroscopic particle that infects and resides in cells of biological organisms. A virus is capable of replication only through taking over the host cell's reproduction function.

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Classifications of Potentially Pathogenic Bacteria

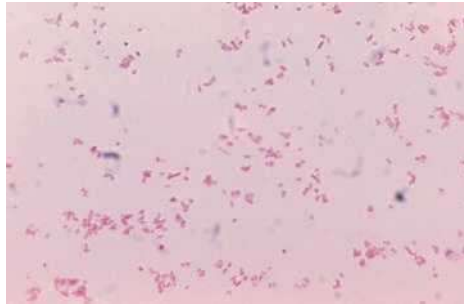
Bacteria have distinct shapes that help to identify them. Potentially pathogenic bacteria are classified as follows:

1. **Cocci** (KOK-sy)—Round-shaped bacteria that appear singly (alone) or in groups (**Figure 5–3**).
 - **Staphylococci** (staf-uh-loh-KOK-sy)—Pus-forming bacteria that grow in clusters, like a bunch of grapes. They cause abscesses, pustules, and boils (**Figure 5–4**).
 - **Streptococci** (strep-toh-KOK-eye)—Pus-forming bacteria arranged in curved lines resembling a string of beads. They cause infections such as strep throat and blood poisoning (**Figure 5–5**).
 - **Diplococci** (dip-lo-KOK-sy)—Spherical bacteria that grow in pairs and cause diseases such as pneumonia (**Figure 5–6**).



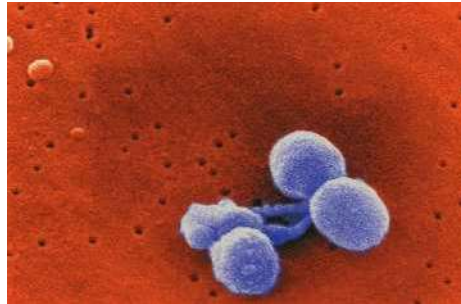
Janice Haney Carr/Public Health Image Library

▲ **Figure 5–3** Cocci.



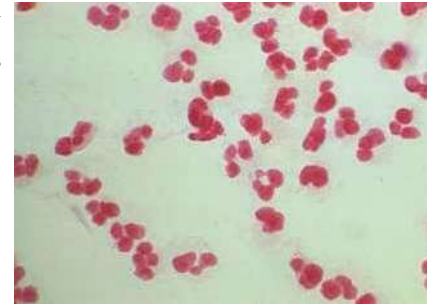
Gilda Jones/CDC/Public Health Image Library

▲ **Figure 5–4** Staphylococci.



Public Health Image Library (PHIL)

▲ **Figure 5–5** Streptococci.



Dr. Norman Jacobs/CDC/Public Health Image Library

▲ **Figure 5–6** Diplococci.

2. **Bacilli** (bah-SIL-ee), singular bacillus—Short, rod-shaped bacteria. They are the most common bacteria; some types produce diseases such as tetanus (lockjaw), typhoid fever, tuberculosis, and diphtheria (**Figure 5–7**).
3. **Spirilla** (spy-RIL-ah)—Spiral or corkscrew-shaped bacteria. They are subdivided into subgroups, such as *Treponema papillida*, which causes syphilis, a sexually transmitted disease (STD); or *Borrelia burgdorferi*, which causes Lyme disease (**Figure 5–8**).



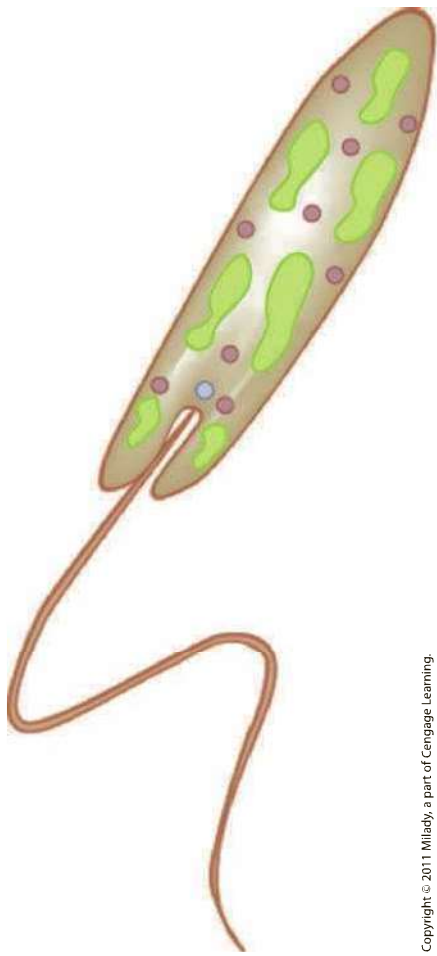
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▲ **Figure 5–7** Bacilli.



The Global Biodiversity Information Facility: GBIF Backbone Taxonomy, 2013-07-01. Accessed via <http://www.gbif.org/species/3220355> <<http://www.gbif.org/species/3220355>> on 2013-11-22. Photo by Wolfram Adiaszng.

▲ **Figure 5–8** Spirilla.



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▲ Figure 5-9 Bacteria with flagellum.

Movement of Bacteria

Different bacteria move in different ways. Cocci rarely show active **motility** (moh-TIL-ee-tee), or self-movement. They are transmitted in the air, in dust, or within the substance in which they settle. Bacilli and spirilla are both capable of moving and use slender, hairlike extensions, known as **flagella** (flu-JEL-uh) (singular: flagellum), for locomotion (moving about). A whiplike motion of these hairs moves the bacteria in liquid (**Figure 5-9**). You may also hear people refer to cilia (SIL-ee-uh) as the hairlike extensions on cells. Cilia are shorter than flagella. Cilia move cells, but cilia and flagella have a different motion. Flagella move in a snake-like motion, while cilia move in a rowing-like motion.

Bacterial Growth and Reproduction

Bacteria are tiny, microscopic bags generally consisting of an outer cell wall that contains liquid called protoplasm. Bacterial cells manufacture their own food from what they can absorb from the surrounding environment. They give off waste products, grow, and reproduce. The life cycle of bacteria consists of two distinct phases: the active stage and the inactive or spore-forming stage.

Active Stage

During the active stage, bacteria grow and reproduce. Bacteria multiply best in warm, dark, damp, or dirty places where food is available. When conditions are favorable, bacteria grow and reproduce. When they reach their largest size, they divide into two new cells. This division is called **binary fission**. The cells that are formed are called daughter cells and are produced every 20 to 60 minutes, depending on the bacteria. The infectious nail pathogen *Staphylococcus aureus* undergoes binary fission every 27 to 30 minutes. When conditions become unfavorable and difficult for them to thrive, the bacteria either die or become inactive.

Inactive or Spore-forming Stage

Certain fungi and bacteria, such as the anthrax and tetanus bacilli, coat themselves with wax outer shells that are able to withstand long periods of famine, dryness, and unsuitable temperatures. In this stage, **spores** can be blown about and are not harmed by most disinfectants, heat, or cold.

When favorable conditions are restored, the spores change into the active form and begin to grow and reproduce. Although spores are dangerous if they enter the body during a surgical procedure and become active, they pose little risk to clients in a salon.

Bacterial Infections

An infection occurs when body tissues are invaded by disease-causing or pathogenic bacteria. There can be no bacterial infection without the presence of pathogenic bacteria. So if they are eliminated, clients cannot become infected. **Pus** is a fluid created by tissue **inflammation** (in-fluh-MAY-shun)—a condition in which a part of the body reacts to protect itself from injury, irritation, or infection. Inflammation is an unhealthy condition characterized by redness, heat, pain, and swelling. Inflamed tissues contain white blood cells, bacteria, and dead cells, while the presence of pus is a sign of a bacterial infection. A **local**

infection, such as a pimple or abscess, is confined to a particular part of the body and is indicated by a lesion containing pus. Inflamed skin should never receive services in the salon setting, since it likely indicates infection or some other medical condition.

Staphylococci (staph) are among the most common human bacteria, and are normally carried by about one-third of the population. Staph can be picked up on doorknobs, countertops, and other surfaces, but are more frequently spread through skin-to-skin contact, such as shaking hands or using unclean files or implements when performing services. If these bacteria get into the wrong place they can be very dangerous. Although rare considering the number of nail services performed, every year there are lawsuits brought against nail salons and nail technicians for allegedly causing staph infections during the performance of their services. Don't let this happen to you or your clients.

Staph is responsible for food poisoning and a wide range of diseases, including toxic shock syndrome. Some types of infectious bacteria are highly resistant to certain antibiotics—for example, the staph infection **Methicillin-resistant *Staphylococcus aureus* (MRSA)**. Historically, MRSA occurred most frequently among people with weakened immune systems or those who had undergone medical procedures. Today, it has become more common in otherwise healthy people. Clients who appear completely healthy may carry this organism and bring it into the salon to infect others. Some may not be aware of their infection; others may show more obvious symptoms. The symptoms usually appear as skin infections, such as pimples and boils, that can be difficult to cure. MRSA infections have at times resulted in death, which is why it is important to clean and disinfect all tools and implements used in the nail salon. You owe it to yourself and your clients. Remember: If proper cleaning and disinfection procedures had been observed, these deaths could likely have been avoided. There is a large amount of scientific and medical evidence to prove that cleaning and disinfection work very well to protect against the spread of infection. When consistently and properly performed, they are the best way to ensure that your clientele are protected.

Also, *never* perform your services if the client's hands or feet show visible signs of infections or other unhealthy conditions. Nail technicians are only allowed to work on healthy nails and skin. Nail technicians are *never* permitted to diagnosis, treat, or service unhealthy conditions, nor can they suggest or prescribe any type of treatment for these conditions. To do so is in violation of federal law.

When a disease spreads from one person to another, it is said to be a **contagious disease** (kon-TAY-jus dih-ZEEZ). Some of the more common contagious diseases that will prevent a salon professional from servicing a client are the common cold, ringworm, conjunctivitis (pinkeye), viral infections, and natural nail or toe and foot infections. The chief source for spreading these infections is dirty hands, especially dirt under the fingernails and on the webs between the fingers. Disease may also be spread by contaminated implements, cuts, infected nails, open sores, pus, mouth and nose discharges, shared drinking cups, telephone receivers, door knobs, and towels. Uncovered coughing or sneezing and spitting in public also spread germs. **Table 5–2, Terms Related to Disease**, lists general terms and definitions that are important for an understanding of disease in general.

Did You Know?

One of the main causes of infection from a salon's whirlpool foot spas can be traced to debris building up to create a thin, film-like coating called biofilms.

Biofilms are a highly protective breeding ground for bacteria and fungi and can serve as nests in which huge colonies of these microorganisms can grow and multiply. Biofilms are often highly resistant to solely soaking in an EPA-registered disinfectant. Once biofilms have a chance to form and get established, they can only be removed by a thorough scrubbing with a stiff bristle brush and soap and water. The bad-tasting film in your mouth and on your teeth when you wake up each morning is an example of a biofilm. The biofilm forms each night while you sleep. Brushing your teeth only temporarily removes the biofilm; it will quickly reform. This is one of the main reasons why we must brush our teeth often to keep them healthy. Just as rinsing your mouth out in the morning won't get your teeth and mouth clean, quickly washing and rinsing basins, tools, and implements won't get them clean, either. A proper cleaning requires the use of a brush with bristles that are stiff enough to thoroughly scrub the surface free of biofilms and other debris. Don't let biofilms build up in your salon; use a brush that has been properly cleaned and disinfected!

Table 5–2 TERMS RELATED TO DISEASE

TERM	DEFINITION
Allergy	A reaction due to extreme sensitivity to certain foods, chemicals, or other normally harmless substances.
Contagious Disease	Also known as <i>communicable disease</i> ; a disease that is spread from one person to another. Some of the more contagious diseases are the common cold, ringworm, conjunctivitis (pinkeye), viral infections, and natural nail or toe and foot infections.
Contamination	The presence, or the reasonably anticipated presence, of blood or other potentially infectious (caused by or capable of being transmitted by infection) materials on an item's surface or visible debris or residue such as dust, hair, and skin.
Decontamination	The removal of blood or other potentially infectious materials on an item's surface and the removal of visible debris or residue such as dust, hair, and skin.
Diagnosis	The determination of the nature of a disease from its symptoms and/or diagnostic tests. Federal regulations prohibit nail professionals from performing a diagnosis.
Disease	An abnormal condition of all or part of the body, or its systems or organs, that makes the body incapable of carrying on normal function.
Exposure Incident	Contact with nonintact (broken) skin, blood, body fluid, or other potentially infectious materials that is the result of the performance of an employee's duties.
Infectious Disease	Disease caused by pathogenic (harmful) microorganisms that enter the body. An infectious disease may or may not be spread from one person to another person.
Inflammation	Condition in which a part of the body reacts to injury, irritation, or infection. An inflammation is characterized by redness, heat, pain, and swelling.
Occupational Disease	Illnesses resulting from conditions associated with employment, such as prolonged and repeated overexposure to certain products or ingredients.
Parasitic Disease	A disease caused by parasites, such as lice and mites.
Pathogenic Disease	A disease produced by organisms, including bacteria, viruses, fungi, and parasites.
Systemic Disease	A disease that affects the body as a whole, often due to under- or overfunctioning internal glands or organs. The disease is carried through the blood stream or the lymphatic system.

Viruses

A **virus** (VY-rus) is a parasitic submicroscopic particle that infects and resides in the cells of a biological organism. A virus is capable of replication only when it takes over the host cell's reproduction machinery. Viruses are so small that they can only be seen under the most sophisticated and powerful microscopes. They cause common colds and other respiratory and gastrointestinal (digestive tract) infections. Other viruses that plague humans are measles, mumps, chicken pox, smallpox, rabies, yellow fever, hepatitis, polio, influenza, and HIV, which causes AIDS.

An example of a common viral infection often seen in nail salons is the human papillomavirus (HPV) (**Figure 5–10**). The virus can infect the bottom of the foot and resembles small black dots, usually in clustered groups. HPV is highly contagious, difficult to kill, and can be passed from pedicure client to pedicure client by dirty implements and foot baths. If the client shows signs of HPV infection, do not perform a pedicure service. However, many people have no visible symptoms, making infection control for every client even more important!

One difference between viruses and bacteria is that a virus can live and reproduce only by penetrating other cells and becoming part of them, while bacteria can live and reproduce on their own. Bacterial infections can usually be treated with specific antibiotics, while viruses are hard to kill without harming the body in the process. Viruses are also not affected by antibiotics. When available, vaccinations prevent viruses from growing in the body but are not available for all viruses. Vaccines are available for hepatitis B and varicella (the virus that causes the shingles); you should consider receiving these vaccines as well as those for the seasonal flu and pneumonia. **LO2**

Warts

A wart is caused by a highly contagious virus that has infected an area of the skin and created a generally small, rough growth that resembles a solid blister with a cauliflower-like appearance. The virus gains access through broken tissue to create a localized area of infection that can grow and spread to other areas. In the salon, warts are most likely found on the bottom of the feet (plantar warts) or on the fingers or palms (palmar wart). A typical infection can last months or years and may disappear only to spontaneously recur. Treatments are available, but preventing the spread of the virus is easily accomplished by always properly following cleaning and disinfection practices and procedures. Nail professionals should *never* attempt to treat any wart nor provide services to these areas of skin. Clients with warts on their feet or hands should be referred to a physician for diagnosis and treatment, if required.

Bloodborne Pathogens

Disease-causing microorganisms that are carried in the body by blood or body fluids, such as hepatitis and HIV, are called **bloodborne pathogens**. The spread of bloodborne pathogens is possible through nipping, clipping, facial treatments, waxing, tweezing, or any time the skin is cut, shaved, or broken. Use great care to avoid cutting or damaging clients' skin during any type of service. Intentional cutting of any living skin is considered outside the scope of the nail technician's licensed and approved practices. Federal law allows only qualified

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Photography by Joseph Schuyler.



▲ **Figure 5–10** Plantar wart caused by human papillomavirus (HPV).

medical professionals to cut living skin, since this is considered a medical procedure. This means that nail technicians are not allowed to trim or cut the skin around the nail plate. Cutting hardened tissue and removing a callus are both considered medical procedures. Cutting the living tissue is what creates the hardened tissue, as the body seeks to protect itself from the injury. Even if the client insists, nail technicians may not intentionally cut any living skin for any reason. Normally, once the cutting is discontinued, the hardened tissue will eventually disappear and the skin around the nail plate will revert back to a healthy, normal appearance.

Hepatitis


A bloodborne virus causes **hepatitis** (hep-uh-TY-tus), a disease that damages the liver. In general, it is difficult to contract hepatitis; however, hepatitis is easier to contract than HIV because it can be present in all body fluids of those who are infected. Unlike HIV, hepatitis can live on a surface outside the body for long periods of time. It is vital that all surfaces with which a client comes into contact are thoroughly cleaned.

There are two types of hepatitis that are of concern within the salon: hepatitis B and hepatitis C. Hepatitis B is the most difficult to kill on a surface, so check the label of the disinfectant you use to be sure that the product is effective against it. Hepatitis B and C are spread from person to person through blood and less often through other body fluids, such as semen and vaginal secretions. Those who work closely with the public can be vaccinated against hepatitis B. You may want to check with your doctor to see if this is an option for you.

HIV/AIDS

Human immunodeficiency virus (HIV) (HYOO-mun ih-MYOO-noh-di-FISH-en-see VY-rus) is the virus that causes **acquired immunodeficiency syndrome (AIDS)** (uh-KWY-erd ih-MYOO-no-di-FISH-en-see sin-droh-m). AIDS is a disease that breaks down the body's immune system. HIV is spread from person to person through blood and less often through other body fluids, such as semen and vaginal secretions. A person can be infected with HIV for many years without having symptoms, but testing can determine if a person is infected within six months after exposure to the virus. Sometimes, people who are HIV-positive have never been tested and do not know they are infecting other people.

HIV is spread mainly through the sharing of needles by intravenous (IV) drug users, and less often by unprotected sexual contact or accidents with needles in healthcare settings. The virus is less likely to enter the bloodstream through cuts and sores. It is not spread by holding hands, hugging, kissing, sharing food, or using household items such as the telephone or toilet seats. There are no documented cases of the virus being spread by food handlers; insects; casual contact; or hair, skin, nail, and pedicure salon services.

If you accidentally cut a client who is HIV-positive and you continue to use the implement without cleaning and disinfecting it, you risk puncturing your skin or cutting another client with a contaminated tool. Know that proper disinfection will completely eliminate any **contamination** risks. However, it is important to understand that there is no indication that salon services transmit HIV nor does any authoritative body believe that salon services are a source of HIV transmission.  **L03**

Fungi

Fungi (FUN-jl), single-cell organisms that grow in irregular masses that include molds, mildews, and yeasts, can produce contagious diseases, such as ringworm. **Mildew** (MIL-doo) affects plants or grows on inanimate objects, but does not cause human infections in the salon. Nail infections can be spread by using dirty implements or by not properly preparing the surface of the natural nail before enhancement products are applied. Nail infections can occur on both hands and feet. Fungal infections are much more common on the feet than hands, but bacterial infections can occur on both. Both bacterial and fungal infections can be spread to other nails, or to other clients, unless everything that touches the client's skin is either properly disposed of (disposable or single-use items) or properly cleaned and disinfected before reuse. The FDA has determined that topical treatments applied directly to the fingernails, skin, and toenails are not effective in eliminating fungal infections. In short, they don't work. The FDA prohibits the sale of antifungal products for fingernails and toenails without a medical prescription (**Figure 5-11**).

How Pathogens Enter the Body

Pathogenic bacteria, viruses, or fungi can enter the body through:

- Broken skin, such as a cut or scratch (intact skin is an effective barrier to infection).
- The mouth (contaminated water, food, or fingers).
- The nose (inhaling dusts or sprays from sneezing).
- The eyes or ears (less likely, but possible).
- Unprotected sex.

The body prevents and controls infections with:

- Healthy, unbroken skin—the body's first line of defense.
- Body secretions, such as perspiration and digestive juices.
- White blood cells within the blood that destroy bacteria.
- Antitoxins that counteract the **toxins** (TAHK-sin), any of various poisonous substances produced by some microorganisms (bacteria and viruses).

Parasites

Parasites are organisms that grow, feed, and shelter on or in another organism while contributing nothing to the survival of that organism (referred to as a host). They must have a host to survive. Parasites can live on or inside of humans and animals. They also can be found in food, on plants and trees, and in water.

Scabies (SKAY-beez) is a contagious skin parasitic disease that is caused by the itch mite, which burrows under the skin (**Figure 5-12**). Contagious diseases and conditions caused by parasites should only be treated by a doctor. Contaminated countertops, tools, and equipment should be thoroughly cleaned and then disinfected with an EPA-registered disinfectant used as directed or 10 percent bleach solution for 10 minutes.



Courtesy of Godfrey F. Mix, DPM, Sacramento, CA

▲ **Figure 5-11** Nail fungus.

Did You Know?

All toxins are produced by living things, so all toxins are naturally derived.

Nature is filled with many naturally occurring poisons, carcinogens, and toxins. Don't be fooled into thinking that anything natural must be safe. "Natural" simply means that the substance occurs in nature and many harmful substances are all natural.

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▲ **Figure 5-12** Scabies.

Immunity

Immunity is the ability of the body to destroy and resist infection. Immunity against disease can be either natural or acquired and is a sign of good health. **Natural immunity** is partly inherited and partly developed through healthy living. **Acquired immunity** is immunity that the body develops after overcoming a disease or through inoculation (such as flu vaccinations), or through exposure to natural allergens, such as pollen, cat dander, and ragweed.

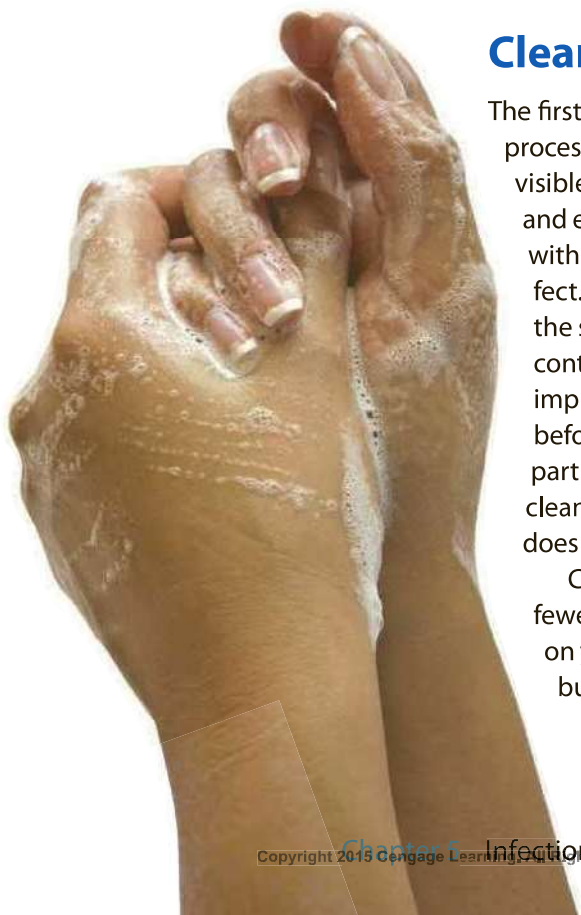
■ PRINCIPLES OF PREVENTION

Proper infection control can prevent the spread of disease caused by exposure to potentially infectious materials on an item's surface. Infection control also will prevent exposure to blood and visible debris or residue such as dust, hair, and skin. Proper infection control requires two steps: cleaning and then disinfecting with an appropriate EPA-registered disinfectant. When these two steps are followed correctly, virtually all pathogens of concern in the salon can be effectively eliminated. **Sterilization**, which is the process that destroys all microbial life, is a method that can be incorporated but is very rarely mandated. Effective sterilization typically requires the use of an autoclave to complete: this piece of equipment incorporates heat and pressure. For sterilization to be effective, items must be small enough to fit into the autoclave chamber, pre-cleaned beforehand and the autoclave must be tested and maintained per the manufacturer's specifications. The Centers for Disease Control and Prevention (CDC) requires that autoclaves be tested weekly to ensure they are properly sterilizing implements. The accepted method is called a spore test. Sealed packages containing test organisms are subjected to a typical sterilization cycle and then sent to a contract laboratory that specializes in autoclave performance testing.

Cleaning

The first step of any infection control method is to **clean**; that is, a mechanical process (scrubbing) using soap and water or detergent and water to remove all visible dirt, debris, and many disease-causing germs from tools, implements, and equipment. Proper cleaning also removes invisible debris that interferes with disinfection. Nail technicians are required to clean before they disinfect. When a surface is properly cleaned, the number of contaminants on the surface is greatly reduced, as is the risk of infection. The vast majority of contaminants and pathogens can be washed from the surfaces of tools and implements through proper cleaning. A surface must be properly cleaned before it can be properly disinfected: This is why cleaning is an important part of disinfecting nail tools and equipment. Using a disinfectant without cleaning first is like using mouthwash without brushing your teeth—it just does not work properly!

Cleaned surfaces can still harbor small amounts of pathogens, but the fewer there are, the less likely they can spread infections. Putting antiseptics on your skin will drastically lower the number of pathogens on your hands, but it will not clean your hands nor remove residual contaminants, such



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as monomer or UV gel. The proper cleaning of the hands requires liquid soap, running water, a nail brush, and a clean towel. Do not underestimate the importance of proper cleaning and hand washing. They are the most powerful and important ways to prevent the spread of infection. Some common methods of cleaning in a salon include:

- Washing with soap and water and scrubbing with a clean and properly disinfected brush.
- Using an ultrasonic unit.
- Using a cleaning solvent (i.e., on metal bits for electric files).

Disinfecting

The second step of infection control is disinfecting. Disinfection is the chemical process that uses specific products to destroy organisms on nonporous surfaces. This process requires the use of an EPA-registered disinfectant prepared and applied following the manufacturer's instructions. All surfaces must be cleaned prior to disinfection.

The disinfecting process is not effective against bacterial spores, which is much more of an issue for hospitals where surgical procedures are performed. In the salon setting, disinfection is extremely effective and is considered to be the EPA-approved method for controlling microorganisms on surfaces such as shears, nippers, and other multiuse tools and equipment and nonporous surfaces.

Disinfectants are EPA-registered products used on nonporous surfaces that destroy organisms such as bacteria, viruses, and fungi when used according to the disinfectant label instructions. *Disinfectants are not for use on human skin, hair, or nails.* Never use disinfectants as hand cleaners since they can cause skin irritation and/or allergy. All disinfectants clearly state on the label to avoid skin contact. This means avoid contact with your skin as well as the client's. Do not put your fingers directly into any disinfecting solution. These are pathogen pesticides that can be harmful to the skin if not properly used. If you mix a disinfectant in a container that is not labeled by the manufacturer, it must be properly labeled with the contents and the date mixed.

Sterilization

A second method of infection control is cleaning and then sterilizing. The word "sterilize" is often used incorrectly. **Sterilization** is the process that completely destroys all microbial life, including spores. The most effective methods of sterilization use high-pressure steam autoclaves. Simply exposing instruments to steam is not enough. To be effective against spores and certain disease-causing pathogens, the steam must be pressurized in an autoclave. Dry heat forms of sterilization are less efficient and require longer times at higher temperatures but still can be used in the salon.

Sterilization is not useful for many items in the salon setting (e.g., pedicure basins, countertops, door knobs or anything else that won't fit inside the relatively small autoclave); therefore, it can never replace disinfection in salons. Training for the use of autoclaves can be found by searching the internet and from the manufacturers of autoclaves. For example, dirty implements cannot



Did You Know?

While some clients who have impaired immune systems will share that information with you, many will not: either they do not know it is important or they do not know that they have a compromised immune system. These people are at very high risk of infection if they come into contact with pathogens in the salon. Keeping in mind that you won't always know who these people are, it is important to practice proper infection control before every client! One example is a diabetic whose immune system does not work effectively and who also has impaired healing. Most diabetics are diabetic for 7 years prior to being diagnosed, which means that even if you ask, they will say "no" because they have not yet been diagnosed! Another example is clients who are on medication for things like asthma, rheumatoid arthritis, and fibromyalgia: these medications are designed to dull the immune system, and as such make these clients particularly susceptible to infection. Remember, you don't know everyone who sits in your chair. Treat everyone as though they deserve the best in disinfection!

be properly sterilized without pre-cleaning. Autoclaves need regular maintenance and testing to ensure they are in good working order and performing properly. Color indicator strips on autoclave bags can provide false readings, so you should never rely solely on these to ensure proper sterility. Autoclaves offer complete destruction of all microorganisms, which is an advantage over liquid disinfectants.

The Centers for Disease Control and Prevention (CDC) *requires* that autoclaves be tested *weekly* to ensure that they are properly sterilizing implements. The accepted method is called a spore test. Sealed packages containing test organisms are subjected to a typical sterilization cycle and then sent to a contract laboratory that specializes in autoclave performance testing. You can find laboratories to perform this type of test by simply doing an Internet search for *autoclave spore testing*. Nail techs can obtain self-spore testing vials or mail-in spore testing kits. Other regular maintenance is also required to ensure that the autoclave reaches the proper temperature and pressure.

Salons should always follow the manufacturer's recommended schedule for cleaning, changing the water, service visits, replacement parts, etc. Be sure to keep a logbook of all usage, testing, and maintenance for the state board to inspect. Showing your logbook to clients can provide them with peace of mind and confidence in your ability to protect them from infection. Salons that are not prepared to meet each of these requirements should not invest in or utilize an autoclave. Those salons should instead rely on the proper use of a salon disinfectant. **LO4**

Read Labels Carefully!

Manufacturers take great care to develop highly effective disinfection systems. However, disinfectants can be potentially harmful and/or rendered ineffective when used improperly. If you do not follow proper guidelines and instructions, any professional salon product can be potentially dangerous. Like all products, disinfectants must always be used exactly as the label dictates. If used improperly, disinfectants cannot be expected to perform properly and will not protect you or your clients.

Choosing a Disinfectant

To use a disinfectant properly, you must read and follow the manufacturer's instructions. Mixing ratios (dilution) and contact time are very important. Not all disinfectants are mixed to the same concentration, so be sure to mix the correct amount according to the instructions on the label. If the label does not have the word "concentrated" on it, the product is already premixed and must be used as is. All EPA-registered disinfectants, even those sprayed on large surfaces, will specify a contact time in their directions for use. (Contact time is the amount of time the surface must remain wet with disinfectant in order for the disinfectant to be effective.)

Disinfectants must have **efficacy** claims on the label. Efficacy is the ability to produce an effect. As applied to disinfectant claims, efficacy is the effectiveness with which a disinfecting solution kills specific organisms when used according to the label instructions. Salons pose a much lower infection risk when compared to hospitals. Cleaning and disinfection standards are much stricter in hospitals than in salons, and for good reason. Some types of disinfectants are much too dangerous for use in the salon environment, especially since the risk of caus-

ing serious infection is low. Even so, there is a risk of spreading certain types of infections to nail clients; therefore, it is important to always clean and disinfect correctly. Fortunately, any EPA-registered liquid hospital disinfectant will be effective enough for salons. For this reason, when salon implements accidentally come into contact with blood, body fluids, or unhealthy conditions, they should be cleaned and then completely immersed in a liquid EPA-registered hospital disinfectant solution that shows effectiveness against HIV, hepatitis, or tuberculosis. Of course, you should wear gloves and follow the proper Standard Precautions protocol for cleaning exposure incidents (described later in this chapter).

Disinfectants for Large Surfaces

Some surfaces are too large to completely immerse in an EPA-registered disinfectant. A wide range of disinfecting surface cleaners is available for use on countertops, arm/foot rest, door handles, etc. Always follow the manufacturer's directions and heed all precautions when using any disinfectant, including those designed for cleaning and disinfecting large surfaces. Typically, instructions may be to spray the surface and wipe the surface clean, spray again and allow the surface to remain wet for the time specified by the product's label, and wipe dry. It is important to note that none of these work instantly and typically require five to ten minutes to be effective.



▲ **Figure 5-13** Completely immerse tools in disinfectant.

Proper Use of Disinfectants

All implements must be thoroughly cleaned of all visible matter or residue before soaking in disinfectant solution, because residue can interfere with the disinfectant and prevent proper disinfection. Properly cleaned implements and tools, free from all visible debris, must be completely immersed in disinfectant solution. Complete immersion means there is enough liquid in the container to cover all surfaces of the item being disinfected, including the handles, for at least 10 minutes or according to the manufacturer's directions (**Figure 5-13**).

Disinfectant Tips

1. Use only on pre-cleaned, hard, nonporous surfaces—not disposable single use abrasive files or buffers. May be used on implements such as abrasive files made of metal, glass and ceramic, or indicated in the manufacturer's directions that the file is designed for multiple uses. Read the manufacturer's directions and follow them carefully.
2. Always wear gloves and safety glasses when handling disinfectant solutions.
3. Always dilute products according to the instructions on the label.
4. A contact time of 10 minutes is required unless the product label specifies differently.
5. To disinfect large surfaces such as tabletops, carefully apply disinfectant onto the pre-cleaned surface and allow it to remain wet for 10 minutes (unless the product label specifies differently).

fyi

Not all household bleaches are as effective as EPA-registered disinfectants. To be effective, the bleach must contain at least 5 percent sodium hypochlorite and be diluted properly to a 10 percent solution consisting of nine parts water to one part bleach. "Low odor" or "scented" bleaches are often diluted to contain less than 5 percent sodium hypochlorite and therefore are not considered effective as disinfectants.

CAUTION:

Disinfectants must be registered with the EPA. Look for an EPA registration number on the label.

6. The entire implement, including the handles, must be completely immersed in the solution.
7. Change the disinfectant according to the instructions on the label. If the disinfectant is not changed as instructed, it will no longer be effective and may begin to promote the growth of pathogens.
8. Proper disinfection of a whirlpool, pipe-less or air-jet pedicure spa requires that the disinfecting solution circulate for 10 minutes (unless the product label specifies otherwise).

CAUTION:

Improperly mixing disinfectants to be weaker or more concentrated than the manufacturer's instructions can dramatically reduce their effectiveness. Always add the disinfectant concentrate to the water when mixing and always follow the manufacturer's instructions for proper dilution. Safety glasses and gloves are recommended to protect against accidental splashes and skin contact.

CAUTION:

Bleach and other disinfectants are not a magic potion! All disinfectants, including bleach, are inactivated (made less effective) in the presence of oils, lotions, creams, hair, skin, nail dusts and filings, etc. If bleach is used to disinfect pedicure equipment, it is critical to use a detergent first to clean away residues left by pedicure products.

Types of Disinfectants

Disinfectants are not all the same. Some are appropriate for use in the salon, and some are not. You should be aware of the different types of disinfectants and those that are recommended for salon use.

Quats

Quaternary ammonium compounds (KWAT-ur-nayr-ree uh-MOH-neeum), also known as quats (KWATZ), are disinfectants that are very effective when used properly in the salon. The most advanced type of these formulations are called multiple quats: They contain sophisticated blends of quats that work together to dramatically increase the effectiveness of these disinfectants. Multiple-quat solutions usually disinfect implements in 10 minutes. These formulas may contain antirust ingredients; however, leaving tools in the solution for prolonged periods can cause dulling or damage. They should be removed from the solution after the specified period, rinsed (if required), dried, and stored in a clean, covered container.

Phenolics

Phenolic (fi-NOH-lik) disinfectants are powerful tuberculocidal disinfectants. Phenolics have a very high pH and can cause damage to the skin and eyes. Some can be harmful to the environment if put down the drain. Phenolic disinfectants have been used reliably over the years to disinfect salon tools; however, they do have other drawbacks. Phenol can damage plastic and rubber and can cause certain metals to rust. Phenolic disinfectants should never be used to disinfect pedicure tubs or equipment. Extra care should be taken to avoid skin contact with phenolic disinfectants.

Bleach

Household bleach, 5.25 percent **sodium hypochlorite** (SOH-dee-um hy-puh-KLOR-ite), is an effective disinfectant for all uses in the salon. Bleach has been used extensively as a disinfectant. Using too much bleach can damage some metals and plastics, so be sure to read the label for safe use. Bleach can be corrosive to metals and plastics and can cause skin irritation and eye damage. To mix bleach solution, always follow the manufacturer's directions. Disinfectants should be mixed fresh daily, not stored. **LO5**

Disinfectant Safety

Disinfectants are classified by the EPA as pesticides (poison) for pathogens and may cause serious skin and eye damage. Some disinfectants appear clear, while

others are a little cloudy, especially phenolic disinfectants. Always use caution when handling disinfectants, avoid skin and eye contact, and follow the following safety tips.

Safety Tips for Disinfectants

ALWAYS

- Always refer to the disinfectant's SDS and instruction label before use to ensure safe handling and correct use.
 - Always wear gloves and safety glasses when mixing disinfectants (**Figure 5-14**).
 - Always avoid skin and eye contact.
 - Always add a disinfectant to water (not water to a disinfectant) to prevent foaming, which can result in an incorrect mixing ratio. Water should be room temperature or cool, never hot.
 - Always use tongs or gloves to remove implements from disinfectants and use a draining basket for rinsing multiple items at the same time.
 - Always keep disinfectants out of reach of children.
 - Always carefully measure and use disinfectant products according to label instructions.
- Always follow the manufacturer's instructions for mixing, using, and properly disposing of disinfectants.
- Always carefully follow the manufacturer's instructions regarding when to replace the disinfectant solution in order to ensure the healthiest conditions for you and your client. Replace the disinfectant solution every day—and more often if the solution becomes soiled or contaminated.

NEVER

- Never pre-mix large amounts of disinfectants; mixing them freshly on a daily basis is best.
- Never guess or estimate the amount of disinfectant to mix. Always carefully measure before mixing.
- Never let quats, phenols, bleach, or any other disinfectant come into contact with your skin. If you do get disinfectants on your skin, immediately wash your hands with liquid soap and warm water. Then rinse the area and dry thoroughly.
- Never place any disinfectant or other product in an unmarked container (**Figure 5-15**).

Jars or containers used to disinfect implements are often incorrectly called wet sanitizers. The purpose of these containers is to hold a disinfectant solution—not to clean. Disinfectant containers must be covered but not airtight. Remember to clean the container every day and to wear gloves. Always follow the manufacturer's instructions for disinfecting products.



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▲ **Figure 5-14** Wear gloves and safety glasses while handling disinfectants.

CAUTION:

Disinfectants Not Appropriate for Salon Use

Years ago, paraformaldehyde (incorrectly called formalin tablets) was used as a fumigant (a gaseous substance capable of destroying pathogenic bacteria). These tablets are not effective and should never be relied upon to disinfect implements or other equipment. Glutaraldehyde is another example of a disinfectant that is not safe for salon use. The only effective methods of controlling pathogens in the salon is by complete immersion in an EPA-registered disinfectant, or sterilization in an autoclave.

▼ **Figure 5-15** All containers should be labeled.



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Multiuse, reusable or disinfectable are words used in marketing and sales copy to tell the user that the item can be disinfected.

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Absorbent nail files must be properly disposed of if the skin is accidentally cut or comes into contact with unhealthy skin or nails. If nail files cannot be disinfected or autoclaved, they are considered disposable items that must be thrown away after a single use.

CAUTION:

Ultraviolet (UV) sanitizers actually do not sanitize, nor do they clean or disinfect. These devices may be useful storage containers; however, *never* rely on them for anything other than a dust-free storage space (i.e., for properly cleaned and disinfected implements).

Disinfect or Dispose?

How can you tell which items in the salon can be disinfected and used more than once? There are two types of items used in salons: multiuse, or reusable, and single-use, or disposable. If the process of cleaning and disinfecting damages the item or changes its condition, it is a single-use item.

Multiuse, or reusable, items can be cleaned, disinfected, and used on more than one person, even if the item is accidentally exposed to blood or body fluid. Examples of multiuse items are towels, nippers, shears, pushers, some types of nail files, bits, and buffers. Always check with the product manufacturer if you are unsure if an item can be properly disinfected.

Porous describes an item that is made or constructed of a material that has pores or openings that allow liquids to be absorbed. Some porous items can be safely cleaned, disinfected, and used on more than one client. Examples are towels, linens, and some nail files and buffers. An example of a porous item that cannot be properly disinfected is a pumice-type abrasive for calluses. This should not be used in salons since it cannot be properly cleaned and disinfected between clients.

If a porous item contacts broken skin, blood, body fluid, or any unhealthy condition, it must be discarded immediately. Do not try to disinfect it. If you are not sure whether an item can be safely cleaned, disinfected, and used again, throw it out. Remember: *When in doubt, throw it out!*

Single-use, or **disposable**, items cannot be used more than once, either because they cannot be properly cleaned so that all visible residue is removed—such as pumice stones used for pedicures—or because cleaning and disinfecting damages or contaminates them. Examples of disposable items are wooden sticks, cotton balls, sponges, gauze, tissues, paper towels, pumice stones and some nail files and buffers. Single-use, or disposable, items must be thrown out after use.

Keep a Logbook

Salons should always follow the manufacturer's recommended schedule for cleaning and disinfecting tools and implements, disinfecting foot spas and basins, scheduling regular service visits for equipment, and replacing parts when needed. Although your state may not require that you keep a logbook of all equipment usage, cleaning, disinfecting, testing, and maintenance, it may be advisable to keep one. Showing your logbook to clients provides them with peace of mind and confidence in your ability to protect them from infection and disease.

Disinfection Procedures

Tools and Implements. Tools and implements must be cleaned and disinfected after each time they are used and before they may be used on another client. Be certain to dilute and mix disinfectants according to the label on the product that you choose. Mix disinfectants according to the manufacturer's directions, always adding disinfectant to the water (**Figure 5-16**).

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▲ **Figure 5-16** Carefully pour the disinfectant into the water when preparing disinfectant solution.

Go to

Procedure 5-1

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Towels and Linens. Clean towels and linens must be used for each client. After a towel or linen has been used on a client, it must not be used again until it has been properly laundered. Store soiled linens and towels separately from clean linens and towels in covered or closed containers. You should store clean towels in covered or closed containers, even if your state regulatory agency does not require it. Whenever possible, use disposable paper towels, especially in rest rooms.

Work Surfaces. Before beginning a service for each client, all work surfaces must be cleaned and disinfected. It is not necessary to disinfect tables and chairs unless the customers touch them with their skin, but they certainly need to be cleaned regularly (**Figure 5–17**). Clean doorknobs, phone receivers, and other handles that are used on a regular basis daily to reduce transferring germs to your hands.

Individual Client Packs for Nail Services

Some states do not allow technicians to save a client pack with items such as nail files and buffers. This is because clients can become infected by their own implements. For example, bacteria commonly found on the skin in low concentrations can multiply to high concentrations during storage and could cause an infection during the next service. Therefore, you must follow these steps to protect clients if your state allows client packs:

1. Each item must be properly cleaned, disinfected, and dried *before* use, even if it is being used on the same client. If clients bring their own implements to the salon, they must be cleaned and disinfected before they can be used in order to prevent pathogens from contaminating other items in the salon.

Each item must be properly cleaned, disinfected, and dried *before* being placed in the client pack in order to prevent contamination of the storage pack. Never store single-use items in client packs between services. Instead, use new single-use items during the service and then dispose of them.

2. Never use bags or containers with an airtight seal to store tools or implements. These provide an environment that encourages the growth of bacteria or other pathogens if the item is not properly cleaned, disinfected, and dried thoroughly before being stored.
3. Remember, state rules require that *all* tools and equipment must be cleaned and disinfected before each use—even if they're used on the same person!

Even if a client insists on bringing his or her tools to the salon, you must clean and disinfect the item for 10 minutes or as specified by the disinfectant manufacturer's label before you use them. For this reason, it is not recommended that clients be allowed to bring their own implements. Home implements could be harboring infectious organisms and contaminate other items in the salon, especially since some clients use these same implements on their entire family, and sometimes even on pets. Remember, it is your license that is at risk if there is a problem, even if your client brings her tools with her. This very risky practice should be discouraged for the safety of all who visit the salon.

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▲ Figure 5–17 Clean and disinfect manicure tables.

CAUTION:

Products and equipment that have the word “sanitizer” on the label are merely cleaners and not disinfectants—pedicure sanitizers have no ability to disinfect a pedicure basin and should never be used for this purpose. Items must be both properly cleaned and disinfected after each and every use or before they are used on another client. Take time to understand the definitions of words such as clean/sanitize, disinfect, and sterilize. If you don't understand the differences among these words, you risk not passing your licensure exam and you're not likely to be able to properly protect your clients from the risk of infection.



Disinfecting Foot Spas and Pedicure Equipment

All equipment that contains water for pedicures, including whirlpool spas, pipeless units, foot baths, basins, tubs, sinks, and bowls must be cleaned and disinfected after every pedicure, and the information must be entered into a logbook. Inspectors may issue fines if there is no logbook, and potential new clients may leave the salon.

Detergents and Soaps. **Chelating soaps** or **chelating detergents** are specially designed to break down stubborn films and are very important for removing the residue of pedicure products, such as scrubs, salts, and masks. The chelating agents in these detergents work in all types of water, are low sudsing, and are specially formulated to work in areas with hard tap water, which reduces the effectiveness of cleaners and disinfectants. Hard water is more likely to create difficult-to-remove residues on surfaces and inside pipes. Check with your local distributor for pedicure cleaners that are effective in hard water. This will be stated on the label.

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CAUTION:

Most pedicure spas hold 5 gallons of water; check with the manufacturer so that you use the correct amount of disinfectant.

Remember:

1 gallon = 128 ounces
5 gallons = 640 ounces

So, if you are working with a pedicure spa that holds 5 gallons of water, you will have to measure the correct amount of water needed to cover the jets and then add the correct amount of disinfectant.

Additives, Powders, and Tablets. There is no additive, powder, or tablet that eliminates the need for you to clean and disinfect. There is no shortcut to proper cleaning and disinfection and no replacement for EPA-registered liquid disinfectant solutions. Water sanitizers (e.g., sanitizing tablets or other similar additives) do not properly clean or disinfect equipment. They are designed for Jacuzzis and hydrotherapy tubs where no oils, lotions, etc., are used, so they don't work properly with salon equipment. Never rely solely on water sanitizer additives to protect your clients.

Products that contain Chloramine T, for example, are not effective disinfectants for any type of salon equipment. These products do not replace proper cleaning and disinfection and provide little to no protection for clients.

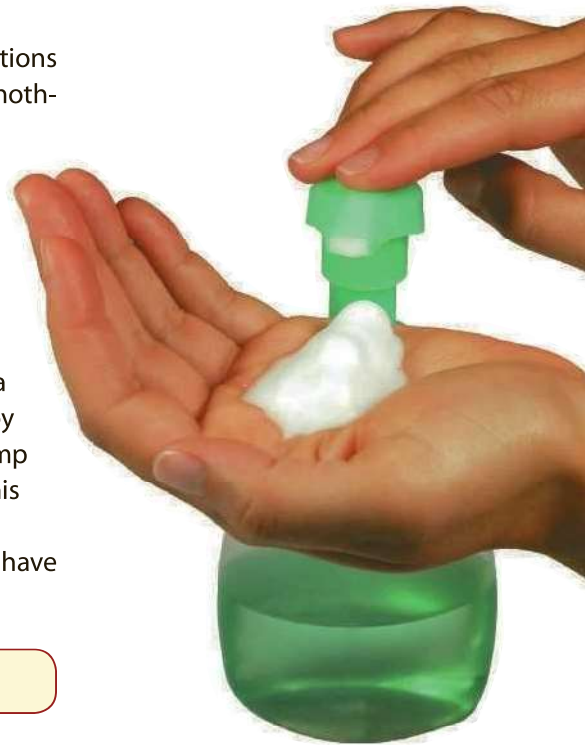
Go to Procedure 5-2 **Cleaning and Disinfecting Foot Spas or Basins** page 90

Dispensary. The dispensary must be kept clean and orderly, with the contents of all containers clearly marked. Always store products according to the manufacturer's instructions, away from heat, and out of direct sunlight. Federal law requires that the salon keep SDSs for all products used in the salon.

Handling Disposable Supplies. All disposable supplies (single use), such as wooden sticks, cotton, gauze, nail wipes, single-use nail files, and paper towels should be stored in a manner to prevent preservice contamination and thrown away after one use. Anything exposed to blood must be placed in a plastic bag and marked with a biohazard sticker or disposed of according to OSHA standards (separated from other waste and disposed of according to federal, state, and local regulations).

Hand Washing. Washing your hands is one of the most important actions you can take to prevent the spread of pathogens from one person to another. Hand washing removes pathogens from the folds and grooves of the skin and from under the free edge of the nail plate by lifting and rinsing them from the surface. In the salon, both your hands and your clients' hands should be thoroughly washed with soap and warm water before each service. Never perform a service without asking clients to first wash their hands and be sure to provide them with a clean and disinfected nail brush. Medical studies suggest that antimicrobial and antibacterial soaps are no more effective than regular soaps or detergents. Using a moisturizing hand lotion can help prevent dry skin, which can be caused by repeated hand washing. When washing hands, use a liquid soap in a pump container. Bar soaps can grow bacteria. Avoid using very hot water, since this can damage the skin.

For your protection, be sure to wash your hands thoroughly after you have completed the service.



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Waterless Hand Sanitizers. **Antiseptics** (ant-ih-SEP-tiks) are chemical germicides registered and regulated by the FDA that are formulated for use on skin. Antiseptics can contain either alcohol or benzalkonium chloride (less drying to the skin than alcohol). Neither type can clean the hands of dirt and debris; this can only be accomplished with liquid soap, a soft bristle brush, and water. When washing hands, use liquid soaps in pump containers. Bar soaps can grow bacteria. Use hand sanitizers only after properly cleaning your hands and never use an antiseptic to disinfect instruments or other surfaces, since they are ineffective for that purpose.

■ STANDARD PRECAUTIONS

The Centers for Disease Control (CDC) has published guidelines called **Standard Precautions** that require the employer and the employee to assume that all human blood and body fluids are infectious for bloodborne pathogens. Because it is impossible to identify many clients with infectious diseases, the same infection-control practices should be used with all clients. In most instances, clients who are infected with the hepatitis B virus or other bloodborne pathogens are **asymptomatic**, which means that they show no symptoms or signs of infection. Bloodborne pathogens are more difficult to kill than those that live outside the body.

OSHA sets safety standards and precautions that protect employees when they are potentially exposed to bloodborne pathogens. Exposure to bloodborne and other pathogens can occur in the salon. Nail technicians may:

1. Potentially be exposed to bloodborne pathogens when exposed to blood or body fluid;
2. Potentially be exposed to airborne pathogens through the illness of the client or coworker, or pathogens that may potentially be released if filing infected nails;

3. Potentially expose their eyes to debris during filing or trimming of the nails. For these reasons, nail technicians must wear gloves when working with clients, dust masks when filing (electronic or hand filing), and protective eyewear when filing (electronic or hand filing).

Precautions include washing hands, wearing gloves whenever there is a potential for blood exposure, and proper handling and disposal of sharp instruments and items that have been contaminated by blood or other body fluids. It is important that specific procedures are followed if blood or body fluid is present.

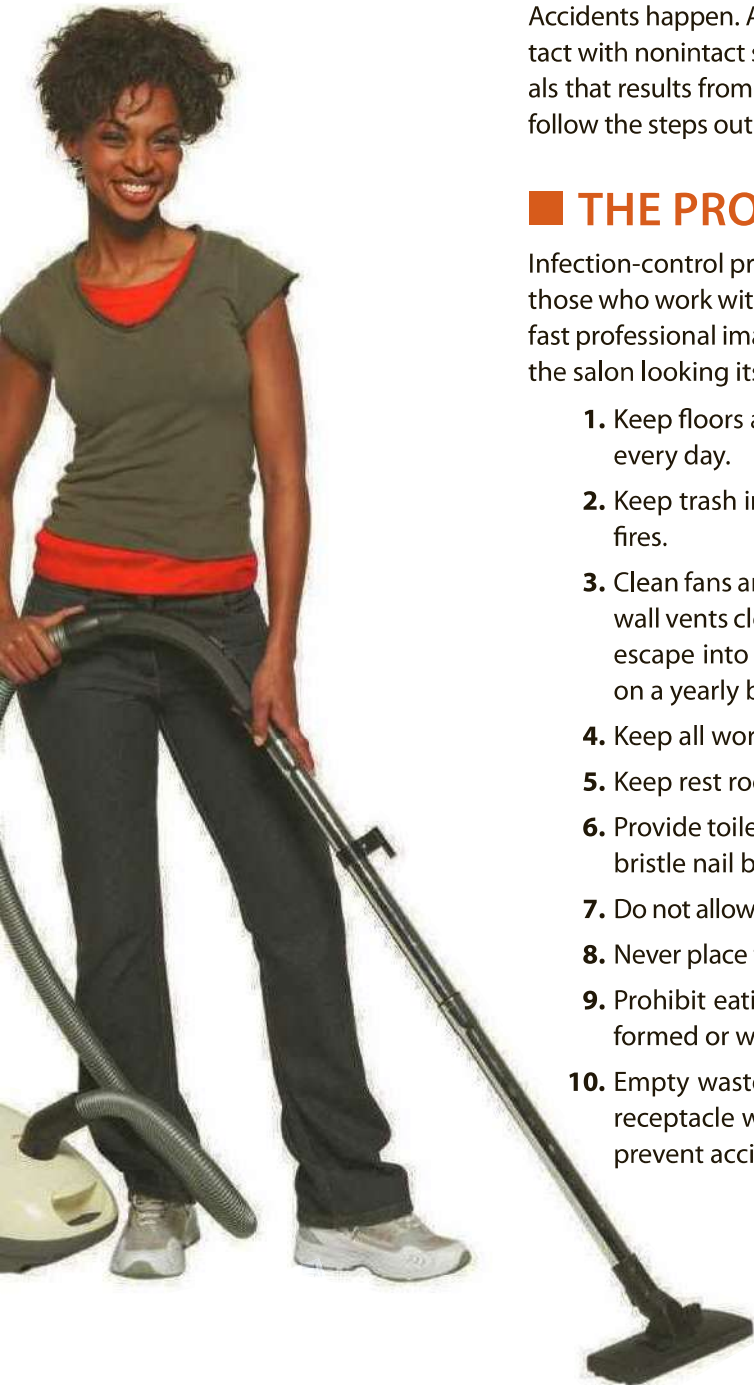
An Exposure Incident: Contact with Blood or Body Fluid

Accidents happen. An **exposure incident** (previously called blood spill) is contact with nonintact skin, blood, body fluid, or other potentially infectious materials that results from the performance of an employee's duties. Should this occur, follow the steps outlined in Procedure 5–4. **LOG**

THE PROFESSIONAL SALON IMAGE

Infection-control practices should be a part of your normal routine as well as for those who work with you. This way, you and your coworkers can project a steadfast professional image. The following are some simple guidelines that will keep the salon looking its best.

1. Keep floors and workstations dust-free. Mop floors and vacuum carpets every day.
2. Keep trash in a covered waste receptacle to reduce chemical odors and fires.
3. Clean fans and humidifiers at least once each week. Keep the ceiling and wall vents clean and free from dust, which can blow from dirty vents and escape into the salon. Ventilation ducts should be thoroughly cleaned on a yearly basis.
4. Keep all work areas well lit.
5. Keep rest rooms, including door handles, clean.
6. Provide toilet tissue, paper towels, liquid soap, properly disinfected soft-bristle nail brushes, and a container for used brushes in the restroom.
7. Do not allow the salon to be used for cooking or living quarters.
8. Never place food in the same refrigerator used to store salon products.
9. Prohibit eating, drinking, and smoking in areas where services are performed or where product mixing occurs (i.e., a back bar area).
10. Empty waste receptacles regularly throughout the day. A metal waste receptacle with a self-closing lid works best to help control vapors and prevent accidental fires.




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11. Make sure all containers are properly marked and stored.
12. Never place any tools or implements in your mouth or pockets.
13. Properly clean and disinfect all tools before reuse, including any implements brought into the salon by a client.
14. Store clean and disinfected tools in a clean, covered container. Clean drawers may be used for storage if only clean items are stored in them. Always isolate used/dirty implements from disinfected implements.
15. Avoid touching your face, mouth, or eye areas during services.
16. Clean and disinfect all work surfaces after every client. This includes manicure tables, workstations, and pedicure foot spas and basins.
17. Have clean, disposable paper towels available for each client.
18. Always properly wash your hands before and after each service.
19. Never provide a nail service to clients who have not properly washed their hands and carefully scrubbed under their nails with a disinfected nail brush.

Use effective exhaust systems in the salon. Replacing the air in the salon with fresh air at least four times every hour is the recommended minimum, not maximum. This will help ensure proper air quality in the salon.

Your Professional Responsibility

You have many responsibilities as a salon professional, but none is more important than protecting your clients' health and safety. Never take shortcuts for cleaning and disinfection. You cannot afford to skip steps or save money when it comes to safety.

- Remember, *it is your professional and legal responsibility to follow state laws and rules.*
- Keep your license current and notify the licensing agency if you move or change your name.
- Check the state website regularly (monthly, for example) for any changes to the rules.  **LO7**