Dental Assistant Program

Infection Control:
Clinical and Preclinical Asepsis Protocols and Procedures

Emergency Procedures and Safety Protocols

Standard Operating Procedures Guide

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INFECTION CONTROL PROGRAM
SAFETY GOALS AND OBJECTIVES STATEMENT

PURPOSE:

This manual on infection control has been developed to ensure that each person involved with direct patient care as well as indirect patient care-services involving the use of personal protective equipment, materials or chemicals is aware of the possibility of cross-contamination from patient contact and will have a resource for infection control protocols that include:

- barrier techniques,
- vaccinations,
- cleaning, disinfection and sterilization of:
    a) work surfaces
    b) equipment
    c) lab areas
    d) radiology labs
    e) classroom
- handling and disposal of hazardous waste products
- proper operating procedures relating to lab equipment asepsis
- proper use and protocols utilizing personal protective equipment

GOALS OF INFECTION CONTROL:

1) reduce number of available pathogenic microbes to the level where normal host; resistance mechanisms may prevent infection;
2) minimize risk of cross-contamination;
3) treat every patient as though infected with emerging disease(s) - standard precautions;
4) provide safe working environment for all involved in direct patient care;
5) provide guidelines for standard operations procedures; and
6) break the chain of infection and eliminate cross contamination.

REGULATIONS/RESPONSIBILITIES:

It is the responsibility of the dental healthcare team to maintain a safe level of practice for the protection of the patient and staff from possible contamination from infection that may be encountered during patient care duties and functions.

It is the responsibility of the dental healthcare team to ensure that all patients be treated within the standard precautions provision of Cal-DOSH Bloodborne Pathogens Standards and the Dental Board of California Infection Control Regulations as though infected with emerging diseases to avoid discrimination of any person(s).

It is the responsibility of the dental healthcare team that standard operational procedures for sterilization, disinfection, and decontamination meet or exceed the standards set by Cal-DOSH/CDC and comply with OSHA general policies on safety control.

Each assistant involved with direct patient care shall have formalized training on measures to protect the patient, staff and dental healthcare workers from the hazards of possible infection and hazardous materials. All dental healthcare workers shall be responsible for enforcing infection control policies described in this manual.

The contents of this manual shall be reviewed annually by the Infection Control Officer and all clinical staff involved in clinical care and shall be updated at least each year as needed.

INFECTION CONTROL REGULATIONS AS REQUIRED BY THE DENTAL BOARD OF CALIFORNIA

§ 1005. Minimum Standards for Infection Control (effective 8/2011)

(a) Definitions of terms used in this section:
(1) "Standard precautions" are a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered. These include hand hygiene, use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure, and safe handling of sharps. Standard precautions shall be used for care of all patients regardless of their diagnoses or personal infectious status.
(2) "Critical items" confer a high risk for infection if they are contaminated with any microorganism. These include all instruments, devices, and other items used to penetrate soft tissue or bone.
(3) "Semi-critical items" are instruments, devices and other items that are not used to penetrate soft tissue or bone, but contact oral mucous membranes, non-intact skin or other potentially infectious materials (OPIM).
(4) "Non-critical items" are instruments, devices, equipment, and surfaces that come in contact with soil, debris, saliva, blood, OPIM and intact skin, but not oral mucous membranes.
(5) "Low-level disinfection" is the least effective disinfection process. It kills some bacteria, some viruses and fungi, but does not kill bacterial spores or mycobacterium tuberculosis var bovis, a laboratory test organism used to classify the strength of disinfectant chemicals.
(6) "Intermediate-level disinfection" kills mycobacterium tuberculosis var bovis indicating that many human pathogens are also killed. This process does not necessarily kill spores.
(7) "High-level disinfection" kills some, but not necessarily all, bacterial spores. This process kills mycobacterium tuberculosis var bovis, bacteria, fungi, and viruses.

(8) “Germicide” is a chemical agent that can be used to disinfect items and surfaces based on the level of contamination.
(9) "Sterilization" is a validated process used to render a product free of all forms of viable microorganisms.
(10) *“*Cleaning*”* is the removal of visible soil (e.g., organic and inorganic material) debris and OPIM from objects and surfaces and shall be accomplished manually or mechanically using water with detergents or enzymatic products.
(11) "Personal Protective Equipment" (PPE) is specialized clothing or equipment worn or used for protection against a hazard. PPE items may include, but are not limited to, gloves, masks, respiratory devices, protective eyewear and protective attire which are intended to prevent exposure to blood, body fluids and OPIM, and chemicals used for infection control. General work attire such as uniforms, scrubs, pants and shirts, are not considered to be PPE.
(12) "Other Potentially Infectious Materials" (OPIM) means any one of the following:

(A) Human body fluids such as saliva in dental procedures and any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

(B) Any unfixed tissue or organ (other than intact skin) from a human (living or dead);

(C) Any of the following, if known or reasonably likely to contain or be infected with HIV, HBV, or HCV:

(i) Cell, tissue, or organ cultures from humans or experimental animals;

(ii) Blood, organs, or other tissues from experimental animals; or

(iii) Culture medium or other solutions.

(13) “Dental Healthcare Personnel” (DHCP) are all paid and non-paid personnel in the dental health-care setting who might be occupationally exposed to infectious materials, including body substances and contaminated supplies, equipment, environmental surfaces, water, or air. DHCP includes dentists, dental hygienists, dental assistants, dental laboratory technicians (in-office and commercial), students and trainees, contractual personnel, and other persons not directly involved in patient care but potentially exposed to infectious agents (e.g., administrative, clerical, housekeeping, maintenance, or volunteer personnel).

(b) All DHCP shall comply with infection control precautions and enforce the following minimum precautions to minimize the transmission of pathogens in health care settings mandated by the California Division of Occupational Safety and Health (Cal/OSHA).

(1) Standard precautions shall be practiced in the care of all patients.
(2) A written protocol shall be developed, maintained, and periodically updated for proper instrument processing, operatory cleanliness, and management of injuries. The protocol shall be made available to all DHCP at the dental office.
(3) A copy of this regulation shall be conspicuously posted in each dental office.

Personal Protective Equipment:

(4) All DHCP shall wear surgical facemasks in combination with either chin length plastic face shields or protective eyewear whenever there is potential for aerosol spray, splashing or spattering of the following: droplet nuclei, blood, chemical or germicidal agents or OPIM. Chemical-resistant utility gloves and appropriate, task specific PPE shall be worn when handling hazardous chemicals. After each patient treatment masks shall be changed and disposed. After each patient treatment, face shields and protective eyewear shall be cleaned, disinfected, or disposed.

(5) Protective attire shall be worn for disinfection, sterilization, and housekeeping procedures involving the use of germicides or handling contaminated items. All DHCP shall wear reusable or disposable protective attire whenever there is a potential for aerosol spray, splashing or spattering of blood, OPIM, or chemicals and germicidal agents. Protective attire must be changed daily or between patients if they should become moist or visibly soiled. All PPE used during patient care shall be removed when leaving laboratories or areas of patient care activities. Reusable gowns shall be laundered in accordance with Cal/OSHA Bloodborne Pathogens Standards (Title 8, Cal. Code Regs., section 5193).

Hand Hygiene:

(6) All DHCP shall thoroughly wash their hands with soap and water at the start and end of each workday. DHCP shall wash contaminated or visibly soiled hands with soap and water and put on new gloves before treating each patient. If hands are not visibly soiled or contaminated an alcohol based hand rub may be used as an alternative to soap and water. Hands shall be thoroughly dried before donning gloves in order to prevent promotion of bacterial growth and washed again immediately after glove removal. A DHCP shall refrain from direct patient care if conditions are present that may render the DHCP or patients more susceptible to opportunistic infection or exposure.

(7) All DHCP who have exudative lesions or weeping dermatitis of the hand shall refrain from all direct patient care and from handling patient care equipment until the condition resolves.

Gloves:

(8) Medical exam gloves shall be worn whenever there is contact with mucous membranes, blood, OPIM, and during all pre-clinical, clinical, post-clinical, and laboratory procedures. When processing contaminated sharp instruments, needles, and devices, DHCP shall wear heavy-duty utility gloves to prevent puncture wounds. Gloves must be discarded when torn or punctured, upon completion of treatment, and before leaving laboratories or areas of patient care activities. All DHCP shall perform hand hygiene procedures before donning gloves and after removing and discarding gloves. Gloves shall not be washed before or after use.

Needle and Sharps Safety:

(9) Needles shall be recapped only by using the scoop technique or a protective device. Needles shall not be bent or broken for the purpose of disposal. Disposable needles, syringes, scalpel blades, or

other sharp items and instruments shall be placed into sharps containers for disposal as close as possible to the point of use according to all applicable local, state, and federal regulations.

Sterilization and Disinfection:

(10) All germicides must be used in accordance with intended use and label instructions.

(11) Cleaning must precede any disinfection or sterilization process. Products used to clean items or surfaces prior to disinfection procedures shall be used according to all label instructions.

(12) Critical instruments, items and devices shall be discarded or pre-cleaned, packaged or wrapped and sterilized after each use. Methods of sterilization shall include steam under pressure (autoclaving), chemical vapor, and dry heat. If a critical item is heat-sensitive, it shall, at minimum, be processed with high-level disinfection and packaged or wrapped upon completion of the disinfection process. These instruments, items, and devices, shall remain sealed and stored in a manner so as to prevent contamination, and shall be labeled with the date of sterilization and the specific sterilizer used if more than one sterilizer is utilized in the facility.

(13) Semi-critical instruments, items, and devices shall be pre-cleaned, packaged or wrapped and sterilized after each use. Methods of sterilization include steam under pressure (autoclaving), chemical vapor and dry heat. If a semi-critical item is heat sensitive, it shall, at minimum, be processed with high level disinfection and packaged or wrapped upon completion of the disinfection process. These packages or containers shall remain sealed and shall be stored in a manner so as to prevent contamination, and shall be labeled with the date of sterilization and the specific sterilizer used if more than one sterilizer is utilized in the facility.

(14) Non-critical surfaces and patient care items shall be cleaned and disinfected with a California Environmental Protection Agency (Cal/EPA)-registered hospital-grade disinfectant (low-level disinfectant) labeled effective against HBV and HIV. When the item is visibly contaminated with blood or OPIM, a Cal/EPA-registered hospital-grade intermediate-level disinfectant with a tuberculocidal claim shall be used.

(15) All high-speed dental hand pieces, low-speed hand pieces, rotary components and dental unit attachments such as reusable air/water syringe tips and ultrasonic scaler tips, shall be packaged, labeled and heat-sterilized in a manner consistent with the same sterilization practices as a semi-critical item.

(16) Single use disposable items such as prophylaxis angles, prophylaxis cups and brushes, tips for high-speed evacuators, saliva ejectors, air/water syringe tips, and gloves shall be used for one patient only and discarded.

(17) Proper functioning of the sterilization cycle of all sterilization devices shall be verified at least weekly through the use of a biological indicator (such as a spore test). Test results shall be documented and maintained for 12 months.

Irrigation:

(18) Sterile coolants/irrigants shall be used for surgical procedures involving soft tissue or bone. Sterile coolants/irrigants must be delivered using a sterile delivery system.

Facilities:

(19) If non-critical items or surfaces likely to be contaminated are manufactured in a manner preventing cleaning and disinfection they shall be protected with disposable impervious barriers. Disposable barriers shall be changed when visibly soiled or damaged and between patients.

(20) Clean and disinfect all clinical contact surfaces that are not protected by impervious barriers using a California Environmental Protection Agency (Cal-EPA) registered, hospital-grade low- to intermediate-level disinfectant after each patient. The low-level disinfectants used shall be labeled effective against HBV and HIV. Use disinfectants in accordance with the manufacturer's instructions. Clean all housekeeping surfaces (e.g. floors, walls, sinks) with a detergent and water or a Cal-EPA registered, hospital-grade disinfectant. Products used to clean items or surfaces prior to disinfection procedures shall be clearly labeled and follow all material safety data sheet (MSDS) handling and storage instructions.

(21) Dental unit water lines shall be anti-retractive. At the beginning of each workday, dental unit lines and devices shall be purged with air or flushed with water for at least two (2) minutes prior to attaching handpieces, scalers, air water syringe tips, or other devices. The dental unit lines and devices shall be flushed between each patient for a minimum of twenty (20) seconds.

(22) Contaminated solid waste shall be disposed of according to applicable local, state, and federal environmental standards.

Lab Areas:

(23) Splash shields and equipment guards shall be used on dental laboratory lathes. Fresh pumice and a sterilized or new ragwheel shall be used for each patient. Devices used to polish, trim, or adjust contaminated intraoral devices shall be disinfected or sterilized, properly packaged or wrapped and labeled with the date and the specific sterilizer used if more than one sterilizer is utilized in the facility. If packaging is compromised, the instruments shall be re-cleaned, packaged in new wrap, and sterilized again. Sterilized items will be stored in a manner so as to prevent contamination.

(24) All intraoral items such as impressions, bite registrations, prosthetic and orthodontic appliances shall be cleaned and disinfected with an intermediate-level disinfectant before manipulation in the laboratory and before placement in the patient's mouth. Such items shall be thoroughly rinsed prior to placement in the patient's mouth.

(c) The Dental Board of California and Dental Hygiene Committee of California shall review this regulation annually and establish a consensus.

STANDARD OPERATING PROCEDURES/PROTOCOLS

The purpose of this section of the manual is to provide an overview of each area defined in OSHA and Infection Control Regulations for dental healthcare workers. Based on guidelines by the CDC, the Dental Board and OSAP, the dental team shall follow all necessary regulations and recommendations as noted below:

HANDWASHING

The type of handwashing agents used shall be antibacterial/antimicrobial utilizing the following method:

a) Wet hands under running water
b) Apply antibacterial/antimicrobial soap and lather for 15 seconds
c) Rinse under running tap water
d) Use a one-time use paper towel to blot hands dry.

Times for handwashing:

a) At the beginning of each work day for 30 seconds.
b) When there is direct contact with patient
c) Before applying gloves
d) Before any invasive procedure
e) After the dental procedure
f) Any time gloved hands become soiled with blood or saliva and when new gloves are needed
g) After changing gloves or before leaving the operatory or returning to the procedure.

INSTRUMENT PROCESSING/OPERATORY DISINFECTION

1. Sterilize **everything** that can be sterilized.

    A. Methods of sterilization:
        - Steam under pressure - autoclave
        - Chemical vapor under pressure - chemicalve
        - Dry heat - autoclave

2. Utilize phenolic solution, iodophors, or equivalent for disinfection of designated equipment and clinical contact surfaces not covered by impervious barriers:

    1. Chairs
    2. Headrest
    5. Dental carts
    6. Operating controls for chairs

3. Trays
4. Light handles
7. Operating control for x-ray equipment

All surfaces are to be pre-cleaned before disinfection using the **"SPRAY-WIPE-SPRAY-WAIT"** method to ensure proper disinfection. The purpose of precleaning is to remove all contamination, both seen and unseen, as well as any bioburden that may be on clinical contact or housekeeping surfaces. Change all surface disinfectants according to manufactures directions.

3. Instruments are NOT to be submerged in any surface disinfectant solution. This solution is contained in spray bottles or wipes, properly labeled, and is to be used for surface disinfection only. Surface disinfection solutions are generally not intended to be used for immersion or "cold" sterility.

Submersion solution may be used solely for pre-soaking of contaminated instruments waiting ultrasonic cleaning. Holding baths are to be utilized for the presoaking of instruments using a **DETERGENT** solution. Solutions should be mixed and changed according to manufacturer's directions.

4. The **ULTRASONIC UNIT** is used for gross removal of bioburden and material from armamentarium.

The ultrasonic unit is used and located in the central sterilization area and is used for the purposes of mechanical cleaning of instruments. It is required to cover the unit while running a 10-minute cycle, then rinse instruments under running water.

Heavy duty **NITRILE UTILITY GLOVES** must be used when handling dirty instruments, clearing trays, placing dirty instruments into ultrasonic solution, rinsing instruments and bagging instruments/items for autoclaving.

5. **DISPOSABLE ITEMS** are used whenever possible to eliminate microbes from area and to prevent additional handling during the clean-up procedure. The use of disposable items also saves valuable time.

Disposable items are single-use only and are **not to be reused.** This includes autoclave bags, high volume evacuators, saliva ejectors and other items marked as **DISPOSABLE.**

6. **BARRIERS** are used whenever possible to prevent contamination of surfaces as well as saving valuable set-up and break downtime. Proper disposal of these barriers is enforced.

A. Utilize acceptable barrier techniques:
   - Wash hands thoroughly before after treatment using a liquid soap.
   - Gloves must be worn at all times when working within the oral cavity and are for **single** use only.
   - Masks must be worn, covering the nose and mouth when performing clinical duties.

- Protective eyewear must be worn and contain attached side shields. Normal prescription eyewear is not sufficient protection.
- Gloves, masks, and protective eyewear must be worn during all dental procedures.
- Gloves must be worn when exposing radiographs and processing contaminated films.

- Overgloves are worn when:
    - leaving the operatory
    - obtaining additional equipment or supplies from drawers or tubs
    - obtaining supplies from dispensary
    - entering an uncontaminated area
- Reusable lab coats/gowns must be removed prior to leaving the treatment area and before entering any area of the office considered to be a non-patient care area.
- The laundering of reusable gowns must be handled within the facility or sent out to a laundry service. Dental healthcare workers are encouraged to use disposable gowns during all clinical procedures and dispose of according to state regulations.
- Gowns/lab coats are **never** to be worn outside any patient treatment area or the facility.

Plastic sleeves, adhesive wrap, or aluminum foil should be used on all items/surfaces that may be touched during the procedure:

a. chairs
b. instrument trays
c. light handles
d. bracket table/mobile carts
e. drawer pulls
f. x-ray equipment
g. handpieces, water syringes & HVE's

ALL SURFACES MUST BE DISINFECTED BETWEEN PATIENTS

All contaminated materials must be disposed of safely. Paper products and the like must be placed in a properly labeled waste receptacle. Bloodborne materials are to be placed in a **red biohazardous waste bag**.

Sharps: are defined as any contaminated object that can penetrate skins such as:		
Syringes	Needles	Scalpel Blades
Burs	Orthodontic Wires/Brackets/Bands	Matrix/Toffelmire Bands
Other Sharp Items/Broken Glassware/Ampoules	Unattached Tissue	Carpules

These items must be discarded in a manner which renders them unusable such as an OSHA-approved sharps container (red) or state-approved disposal system. Sharps containers will be disposed of in a manner consistent with local, state and federal guidelines.

HANDPIECES, HANDPIECE ATTACHMENTS AND BURS

All handpieces and attachments must be removed from the motor attachment and sterilized between patients. Motor units and tubing shall be wiped down using a surface disinfectant, utilizing the **spray-wipe-spray-wait** technique. Plastic barriers are used on handpieces whenever possible to ensure proper infection control. After the procedure, the handpiece tubing must be laid on top of the mobile cart and sprayed with surface disinfectant.

All **stones and burs** must be ultrasonically cleaned, rinsed, bagged, and sterilized in the autoclave.

AIR AND WATER SYRINGE

A plastic, disposable or autoclavable metal syringe tip is used for each patient. Plastic barriers cover the air/water syringe handle and control buttons. A new tip is placed after each use, making sure that **no plastic material** is trapped over the orifice. The syringe is then purged by spraying water through the lines at the beginning of the day and end of the day for **2 minutes** to remove all potential microbial material that may have built up in the syringe lines **(see Self Contained Water Systems protocol for purging protocols).**

Between patients the air/water syringe must be purged 20 seconds. When the dental procedure is completed, all disposable and plastic barriers are disposed of properly and the handpiece tubing is **spray-wipe-sprayed** with an intermediate level disinfectant.

HIGH-VOLUME AND LOW-VOLUME EVACUATION SYSTEM

A disposable HVE or HVE tip is inserted into their respective hose for each patient. When the procedure is completed, the disposable tips must be thrown away. The evacuation housing is removed and prepared for autoclaving. All tubing is laid on top of the mobile cart and disinfected using the **spray-wipe-spray** technique**.** Replace handpieces in holders.

VACUUM SYSTEM

All vacuum systems must be cleaned by running a suction detergent agent after all invasive procedures and/or at the end of each day. The operator must wear appropriate personal protective equipment (PPE) including safety eyewear and utility gloves. After use, eyewear and utility gloves are rinsed well and disinfected. All other PPE are disposed of properly.

LABORATORY MATERIALS AND PROCEDURES

Dental healthcare workers must wear personal protective equipment (PPE) at all times when working with contaminated laboratory materials. All materials which are used intra orally must be properly disinfected and labeled before sending to another lab or section of the lab.

Laboratory materials and equipment which are contaminated must be carefully disinfected or sterilized according to established protocol.

PROTOCOL FOR DISINFECTING DENTAL IMPRESSIONS/BITE REGISTRATIONS

- Use all PPE
- Remove impression or bite registration from the mouth of the patient/student and place on paper towel
- Using overgloves, take impression over to the sink
- Rinse impression or bite registration with cool water for 20 seconds to remove saliva, blood or other body fluids
- Gently shake impression or registration to remove excess water and place on paper towel
- Using a plastic covered spray disinfectant, spray the impression with intermediate level disinfectant
- Rinse with water while engaging faucet with foot control
- Gently shake excess water from impression
- Re-spray impression using intermediate level surface disinfectant
- Place impression into ziplock bag
- Remove overgloves, exam gloves and wash hands thoroughly at sink After drying hands, seal ziplock bag and label with BIOHAZARD sticker
- After 10 minutes, put on exam gloves and safety goggle
- Open ziplock bag and remove impression or bite registration
- Rinse immediately under cool water at sink using foot controls to engage faucet; gently shake off excess water

PERSONAL PROTECTIVE EQUIPMENT

Gloves

Significant risks exist for dental healthcare personnel and patients when gloves are not used. Ungloved hands are the mechanism by which dental personnel have acquired HBV infections from their patients. Transmission of infectious agents including herpes virus from ungloved provider to patient has also been documented. Gloves must be worn whenever you anticipate contact with blood, saliva, mucous

membranes, or blood-contaminated objects or surfaces. Two categories of gloves routinely used in the dental clinic include (1) thin latex or vinyl exam gloves used during patient treatment and (2) heavy-duty or utility gloves used for cleaning operations.

Many types of exam gloves are on the commercial market. Factors to consider when choosing gloves include the type of procedure, tactical sensitivity required for the procedures, and comfort of the wearer. The following are categories of exam gloves:

1. Latex gloves (sterile and nonsterile)
2. Vinyl gloves (sterile and nonsterile)

No data currently exist to indicate differences in barrier effectiveness between vinyl and latex gloves. Sterile gloves (often marketed as sterile surgical gloves) are recommended specifically for surgical procedures, such as oral and periodontal surgery involving contact with penetrated or injured tissues.

Non-sterile gloves (often marketed as examination gloves) provide an adequate level of protection for operative or general dentistry procedures. Gloves must be changed between patients, whether they are worn for treatment or examination. Exam or surgical gloves used in patient care should not be washed. Hands should always be washed after removing gloves because the potential for damage to a glove during dental procedures is high.

Allergic reactions to gloves or glove powder may be corrected by trying a different brand of gloves or by using hypoallergenic gloves.

General-purpose utility gloves are thicker gloves that are only appropriate for use during cleanup and disinfection procedures. Whereas, the typical dishwashing glove is acceptable, gloves made of rubber are more puncture- and disinfectant-resistant and are strongly recommended. Unlike gloves used during patient care, utility gloves can be washed and reused. However, be sure to replace them if they become cracked, worn, or show other evidence of deterioration.

<u>Masks</u>

Spatter containing blood and saliva is generated during dental procedures from equipment such as the handpiece, air-water syringe, or ultrasonic scaler. A mask must be worn to protect the mucous membranes of the nose and mouth from exposure to the airborne blood and saliva. Several guidelines for the use of masks include the following:

1. Choose a style that can be adjusted to fit your face comfortably and tightly.
2. Keep your beard and mustache groomed so that the mask fits well and can be worn effectively.
3. Always change the mask between patients and if it gets wet.
4. Remove the mask when treatment is over. Do not leave it dangling around your neck; either wear it properly or take it off.

5. Never leave the operatory with a mask in place or around your neck.
6. When removing a mask, handle it only by the elastic or cloth tie string; never touch the mask.

Protective Eyewear

Protective eyewear must be worn to protect the mucous membranes of the eyes from projectiles and spatter of blood and saliva. The risk of exposing the tissues of the eyes to blood and body fluids is well documented. Viruses such as hepatitis B and herpes simplex have been transmitted to dental staff whose eyes were spattered with saliva or blood.

Choice of eyewear depends on the nature of the procedures that are being performed. However, prescription or safety glasses equipped with side shields are considered to be the minimal acceptable protective eyewear. Goggles afford the greatest eye protection. As an alternative to protective glasses or goggles and a mask, a face shield may be worn by the clinician. Because many dental procedures produce flying objects from materials such as amalgam restorations or crowns, protective eyewear for the patient should also be considered.

Clinic Uniforms

Coats and gowns provide additional protection from possible exposure to blood and other body fluids. When selecting a gown, consider those with the greatest coverage for your body. The isolation gown is ideal and recommended; because it fits closely around the neck and the long sleeves cover the arms. Gloves should overlap the sleeves of the clinic coat. Gowns should be changed whenever they have been sprayed with saliva or blood or are visibly soiled.

Like masks and gloves, clinic coats should only be worn in clinics and support areas. They should not be worn in nonclinical settings, such as staff lounges, office, or record supply room, or outside of the building.

INSTRUMENT PROCESSING

Ultrasonic Cleaner

As mentioned previously, special handling precautions must be followed prior to the use of an ultrasonic cleaner. Donne nitrile gloves and careful rinse and place instruments into ultrasonic bath, cover, and turn timer on for 10 minutes to clean and remove all bioburden from instruments. This method does not disinfect or sterilize instruments. Instruments must be removed from the device using the basket. Carefully rinse items and pat dry; bag for sterilization.

DAILY

a. Solutions are to be changed everyday
b. Drain used solution by loosing the clamp on the side of hose and drain solution into sink
c. Flush with fresh water, wipe with a towel to dry
d. Close clamp on hose
e. Add fresh solution
f. Agitate the freshly prepared solution by operation for 10 minutes before adding instruments

Cold Chemical Disinfection/High-Level Disinfection (Immersion Tray)

WEEKLY (Spray Bottle Disinfectant)

a. Dispose of old solution – glutaraldehyde products may **not** be poured down sink
b. Donne proper PPE
c. Rinse out bottles and pump excess solution from spray mechanisms
d. Mix following manufacturer's directions
e. Note mixing date on the bottle or in the log

WEEKLY (Immersion Tray)

a. Dispose of old solution by emptying into labeled plastic container
b. Put on proper PPE
c. Scrub, wash and dry trays
d. Activate glutaraldehyde products, if used
e. Mix following manufacturer's directions
f. Fill instrument soaking trays
g. Note mixing date on bottle
h. Note expiration date – 28 days

MAINTENANCE OF HVE SYSTEM (carts)

a. Dissolve 1 scoop (1ounce) of dry vacuum cleaner OR two pumps of liquid vacuum cleaner in a gallon of room temperature water.
b. Operator will distribute solution to each operatory on the designated day.
c. Run solution through HVE system and saliva ejector, if used, allowing air to flow through tubing every 5 seconds. DO NOT RUN ALL SOLUTION THROUGH SYSTEM AT ONCE. Allow air to enter into the system to ensure all solution is being properly evacuated.
d. Remove the cap from the collection trap at rear of cart. Check status of trap. Remove trap and dispose of or replace with new trap as needed. Traps may be disposed of in garbage if bagged in a sealed ziplock bag and there are no traces of amalgam in the trap.

STERILIZER SPORE TESTING (BIOLOGICAL)

Sterilizers are to be tested with viable spore or other biological testing method. All autoclave, regardless of type, are required to be spore tested weekly. Chemclaves use a different type of spore testing device than steam or dry heat autoclaves; however, the testing procedure is exactly the same regardless of type.

The spore test is to be sent to an authorized laboratory for readings and evaluation. Spore test laboratory reports are to be kept available in the facility.

If the results are unsatisfactory, the laboratory will call the office and notify the staff or doctor of the results. If the problem is thought to be the testing method, the test is repeated. If the problem is defective equipment, the sterilizer is rendered "non-functional" until checked/repaired by the dental repair service or manufacturer.

Remember:

a. Make sure sterilizer is being operated using correct time, temperature, and pressure and correct solutions.
b. DO NOT overload chamber.
c. DO NOT interrupt sterilizing cycle.
d. DO NOT stack instruments or over crowd instruments.
e. If any problem redo sterilization cycle.
f. DO NOT test the first load of the day – the machine has not had a chance to properly warm-up prior to testing.

PROTOCOL FOR SETTING UP/CLEANING DENTAL UNIT WATER LINES

All dental units in clinical areas are equipped with self contained water systems, allowing for the use of sterile/disinfected water to be used during treatment procedures. These special water lines are attached to the high speed handpiece lines, the ultrasonic scaler lines and the air/water syringe lines. Therefore, a protocol for setting up the water systems, purging the system and disengaging/cleaning the system must be established and reviewed.

SELF-CONTAINED WATER SYSTEM BOTTLES

Dental operatory cart/delivery systems may be connected to the municipal water supply or disconnected and attached to a self-contained water system. The ADA has established criteria stating that all dental offices shall deliver water into the patient's mouth using water with no more than 200 CFU (Colony Forming Units) of bacteria. In order to comply with this standard, dental offices often utilize water safety equipment.

LOADING OF WATER SYSTEM BOTTLES

Each bottle is especially made for the units, and must never be rinsed or cleaned using city water. ONLY BOTTLED WATER may be used for filling or cleaning of the bottles.

Load the empty bottle with distilled water. Fill the bottle to within 2 inches of the top. DO NOT OVERFILL. Attach the bottle by screwing into the bottled water delivery unit, making sure the tubing is inside the bottle.

Each cart/delivery system has a power button to turn on the cart and a "bottle" button to allow the cart to pull water from the detachable bottle. Make certain that the main power button in the back of the cart is turned on. Then, in the area of the bottle attachment, a button for "bottled water" should be located and the toggle switch turned on. A noticeable pressure sound should be heard, which indicates the bottle is attached properly and the pressure has engaged.

Test the system by placing the air/water syringe tip into the HVE tip and turning on HVE while engaging the air/water syringe. Water should begin flowing out of the syringe within 2 to 3 seconds. Continue allowing the water to flow, and following Infection Control Regulations, flush for 2 minutes. This allows the lines to properly hydrate.

PURGING

After each patient, air/water syringe and handpiece lines must be flushed for 1 minute. Place the syringe tip or handpiece line into the HVE and turn on the HVE valve. Step on the rheostat to engage the handpiece line or depress the water button on the air/water syringe line. The suction system allows for the operator to purge without spraying water throughout the operatory area.

Following the completion of the days work, the bottle system must be purged and the bottles removed from each cart. NO WATER SHALL REMAIN IN DENTAL UNIT LINES OVERNIGHT. The sole purpose of using a bottled water system is to eliminate the possibility of **BIOFILM** developing in the lines where water is allowed to sit stagnant. This water encourages growth of microorganisms and, if not purged, develops into pathogenic microorganisms, capable of passing disease to the patient such as Legionella.

To accomplish this, turn off the "bottle water" toggle switch on the unit. Operator will hear the unit de-pressurize. REMOVE the water bottle and empty all water remaining in the bottle down the sink. REPLACE the bottle on the unit as before. Now the "bottle water" toggle switch is turned back on and repressurized.

Purge all lines using water during the delivery of care (handpiece lines, ultrasonic scaler lines, air/water syringe) as before. When only air is flowing from the lines, the purge process is accurately completed.

No water remains in the lines and the bottle is completely empty. This empty bottle remains on the cart to protect the unit and the tubing. Turn the "bottle water" toggle switch off and the main power button on the back of the unit. The unit is properly purged for the evening/weekend.

At the beginning of the next work day, follow the set up procedure indicated earlier, making sure to hydrate the lines for a full two (2) minutes.

PROTOCOL FOR HANDPIECES AND AIR/WATER SYRINGES

HANDPIECES

- In the morning - purge handpieces for two (2) minutes into operating HVE. This eliminates spraying of water into a sink, cup or onto the floor.
- After each patient purge handpiece into operating HVE for 30 seconds.
- Remove barrier, if used, and properly disinfect motor and tubing using the spray-wipe-spray method.

AIR / WATER SYRINGE

- Between each patient flush water from air/water syringe into operating HVE for 20-30 seconds.
- Remove air/water syringe barrier and sterilize tip, if not disposable.
- Disinfect connectors and tubing for air/water syringe and all suction lines with disinfectant.
- Cover with plastic barriers.

Cal-OSHA REGULATIONS FOR SAFETY AND PREVENTION OF ACCIDENTS

COMMUNICABLE DISEASES

Dental healthcare workers caring for individuals/patients with any communicable disease shall be instructed as to proper precautions according to Center for Disease Control (CDC) and Federal Occupational Safety and Health Administration (OSHA) Guidelines.

Requirements to comply with health and safety guidelines include:

- Vaccinations for Tetanus and Hepatitis B (HBV) and testing for Tuberculosis.

- Comprehensive instruction on infection control, universal precautions, and handling of hazardous materials and wastes in clinical setting.

- Course studies as they pertain to dental office microbiology, pathology and medical emergencies; the methods of preventing transmissions of communicable diseases such as asepsis, sterilization and disinfectants, and barriers.

- Handling and disposing of “sharps” and solutions.

EXPOSURE CONTROL PLAN/EXPOSURE CONTROL FOR BLOODBORNE PATHOGENS

All dental healthcare workers are required to comply with the current Cal-DOSH Bloodborne Pathogens Standard. Standard precaution guidelines must be observed by all clinical staff. This protocol has been developed for all laboratory and clinical procedures. Methods of expose prevention include but are not limited to:

- Engineering Controls: proper means of disposal of contaminated equipment and maintenance of sterilization facilities.

- Hand washing facilities are readily available in x-ray operatories and darkroom, lab areas and sterilization room.

- Contaminated needles and other sharps shall be disposed of in a puncture resistant container designed for this purpose. Sharps containers are located in the lab area/at the point of use.

- Skill practice areas shall be separate from personal care areas. There shall be no smoking, eating or drinking in any skill or patient care area. Only bottled water with a screw top is allowed.

- All procedures involving blood or other potential infectious materials (OPIM) shall be performed in such a manner so as to minimize splashing, spraying, and splattering of materials or body fluids.

- Warning labels shall be affixed to containers of regulated waste and containers of solutions.

- Personal Protective Equipment (PPE) such as gloves, masks, safety eye wear, and uniform/ lab coat shall be utilized for all clinical procedures.

PROTOCOL FOR NEEDLESTICK OR PUNCTURE WOUND

All needlesticks, punctures and cuts which occur during the course of treating patients or while cleaning instruments should be treated as potentially infectious.

Immediately report student injury to instructor who will assist in obtaining emergency care.

DO NOT make a personal judgment call concerning the seriousness of the injury. Instead **immediately** administer first aid treatment by:

a) Squeezing - bleeding the wound;
b) Cleanse - by running under cool tap water;
c) Disinfect - with iodophor or bleach;
d) Dress - the wound with bandage.

The person to whom the incident is reported will advise the injured party as to what actions are needed.

ACCIDENTS INVOLVING FOREIGN BODY OR CHEMICAL/EYE EXPOSURE

In this event, the student or faculty member will **immediately use eye wash station** located at the sink in the facility. A fellow student shall notify the instructor and/or the program coordinator of the incident, nature of the substance, time and duration of the exposure**.** The student or faculty member will be taken to a local hospital or doctor of choice. Hospital costs will be the injured party's responsibility. The incident will be recorded and kept in the program providers files.

HAZARDOUS WASTE DISPOSAL

Protocol for dealing with infectious waste within the department:

- Disposal of all infectious waste shall be in accordance with applicable Federal, State and Local regulations.
- **ALL** infectious waste shall be placed in leak proof containers that will be tightly closed or placed in bags that are color-coded or tagged.

Items Requiring Sharps Disposal:		
Syringes	Needles	Scalpel Blades
Burs	Orthodontic Wires/Brackets/Bands	Matrix/Toffelmire Bands
Other Sharp Items/Broken	Unattached Tissue	Carpules

Glassware/Ampoules

The above items shall be placed in puncture-resistant containers for disposal which is located in the sterilization area and in the operatories (at the point of use).

- All puncture-resistant sharps containers shall be easily accessible to dental healthcare workers/faculty.

- Double- bagging prior to handling, storing, and /or transporting infectious waste is necessary if the outside of a bag is contaminated with blood or other potentially infectious materials.

- Lab specimens of body fluids shall be transported in a container that will prevent leaking and disposed of in accordance with institutional policies and regulatory requirements.

SHARPS

Sharps are defined as any contaminated object that can penetrate the skin.

Injection Needles: All injection needles shall be handled with care using the one handed "scoop" technique or an approved re-sheathing device.

All **sharps** should be disposed of in the **one-way puncture-resistant** "sharps" container. When sharps container is full, they are covered and a call is made to the facility compliance provider for hazardous waste disposal.

HAZARDOUS MATERIALS/CHEMICAL HANDLING

X-RAY FIXER SOLUTION - Used **fixer solution** is placed in the labeled container found in the DA lab. When filled, the contracted hazardous waste hauling service is contacted for proper removal.

MERCURY - Scrap amalgam is placed in a dry, plastic/glass container located in the DA lab.
When filled, the contracted hazardous waste hauling service is contacted for proper removal.

CHEMICLAVE SOLUTION - After draining the chemical autoclave, the solution is placed in the plastic container located in the DA lab

DISPOSABLE ITEMS - All disposable items are put into trash container which is lined with a plastic trash bag. At the end of the day, seal all bags tightly and place in large trash container found in the back of

the lab area. Reline all trash containers. Place blood and saliva soaked item in **RED PLASTIC BAG** marked with a **BIOHAZARD INDICATOR LABEL** for proper removal.

STANDARDS FOR MATERIAL SAFETY DATA SHEETS

FOUR AREAS OF RESPONSIBILITY:

I. Inventory of hazardous substances

II. Obtaining Safety Data Sheets (SDS)

III. Labeling of chemical containers

IV. Training regarding hazardous chemicals and appropriate recordkeeping.

I. WHAT MAKES A MATERIAL HAZARDOUS?

Definition: A hazardous material can be defined as any substance which possesses the ability to cause the bodily injury or death to any person thought its chemical and /or physical properties.

Hazardous materials can cause immediate or long-term health problems if not handled properly, acute effects or chronic effects.

Hazardous materials may enter the body through:

- inhalation
- ingestion
- absorption

Hazardous materials can be:

- corrosive
- explosive
- flammable
- toxic
- carcinogenic
- an irritant

II. WHAT ARE SAFETY DATA SHEETS (SDS)?

Definition: A SDS is a descriptive, technical document that informs the healthcare worker of the chemical being used, why it is hazardous, and how to protect employees and the work environment.

The facility must obtain a SDS for each hazardous product that is used or stored in the office and it must be available to all employees.

The SDS are to be placed in a loose leaf binder in alphabetical order under common categories of dental materials.

STANDARD PRECAUTIONS GUIDELINES:
SPECIFIC ASEPSIS INSTRUCTIONS FOR DENTAL PROCEDURE

BEFORE PATIENT TREATMENT BEGINS

1. Obtain or update the medical/dental history. Review for any past or present infectious diseases.
2. Charts may become contaminated; be sure to utilize an overglove when writing on a chart. Generally, do not touch the chart once treatment begins.
3. Place disposable clean barriers to prevent contamination of surfaces: countertops, chair adjustments, headrest, saliva ejector hose, handpiece covering, handles of curing light, on/off switches, etc. Use plastic, moisture impervious barriers on counter tops, light handles, and bracket table. Patient chairs can be covered with plastic bags. Plastic sleeves should be placed on air/water syringe handles, handpieces/hoses, curing lights, and material gun devices.
4. The required sterile items should be presented in sterile, intact packages and not opened until the patient is seated.
5. Prepare the air/water syringe for use.
    a. Before each patient, and before the application of a new single-use, disposable air/water syringe tips, run water through the air/water syringe for at least two minutes.
    b. To place a new tip on to the syringe, loosen the nut and force and tip into the hole. Tighten the nut; check for leaks; then cover with a plastic barrier.
    c. To remove the air/water syringe type, loosen the nut. Pull the tip straight out.
6. Maintenance of handpieces, air-water syringes, and high speed evacuation.
    a. Procedures performed at beginning and end of day require that waterlines shall be flushed for 2 minutes.
    c. Between patients, flush waterlines for 20 seconds.
    d. At end of day, waterlines shall be purged with air for 2 minutes after flushing.
7. The appropriate armamentaria for treatment procedures must be pre-planned and sterilized for use. Once a bag is opened, all instruments within it must be re-sterilized before using again.
8. Always follow manufacturer's instructions when replacing the halogen bulb on curing light. Do not touch the bulb with bare or gloved hands.

DURING PATIENT TREATMENT

1. Handle body fluids of all patients as potentially infectious materials (OPIM).
2. Always wear personal protective equipment/attire (PPE), which includes mask, protective eyewear, gown/labcoat and gloves whenever treating patients. All patients are required to wear some type of eye protection: their own glasses or protective eyewear provided by the facility. If the patient is sensitive to the light, dark/shaded glasses are recommended.

3 Hands must be washed with soap and cool water before and after gloving.

4. Wear clean and appropriate clinical attire:
   a. Clinical attire is defined as reusable (cotton) labcoats or disposable gowns (recommended) and must be changed or disposed of daily or when it becomes visibly soiled or saturated with chemicals or body fluids (DBC Infection Control Regs 1005).
   b. Protective clothing must not be worn in non-dental treatment areas (i.e. staff's eating area, lounge, etc.)
   c. Protective attire includes face mask covering the mouth/nose, gloves, protective eye wear, approved clinical scrubs, reusable or disposable covering over scrubs.
5. Protective mask protocol:
   a. The operator shall wear a new mask for each patient.
   b. Mask must fit snugly to the face, especially around mouth and nose.
   c. If a mask becomes damp, visibly soiled, it must be replaced immediately.
   d. A mask must be changed after 1 hour of wear.
6. Examination glove protocol:
   a. The operator shall wear fresh gloves for each patient.
   b. Never wash or reuse gloves.
   c. Do not wear jewelry under gloves.
   d. If procedure extends more than one hour, change gloves.
   e. If gloves tear or become damaged during procedure, change immediately.
   f. When leaving operatory or touching unprotected surfaces, remove gloves and wash hands, or wear overgloves over gloved hands.
7. Overglove protocol:
   a. Overgloves can never replace examination gloves in treating patients.
   b. When leaving operatory or touching unprotected surfaces, wear overgloves over gloved hands.
   c. Overgloves are discarded after a single use.

8. Protective eye wear or face shield protocol:
   a. Protective eye wear shall be worn during all dental treatment.
   b. Eyewear must have side shields; over-goggles shall be used over prescription glasses.
   c. Eyewear and, if used, chin-length plastic face shields are washed after each patient.

9. Protective disposable or re-usable coat or covering protocol:
    a. Always worn during all dental treatment.
    b. Cannot be worn outside of dental facility.
    c. If disposable, place into biohazard-labeled regular trash after treatment has been completed.
    d. If re-usable, remove and place into special biohazard laundry bag/container and arrange transport out of facility for processing; employees of the facility are not allowed to handle laundry (Cal-OSHA Bloodborne Pathogens Standard; dental healthcare workers are not allowed to remove contaminated PPE from the facility.
10. Instrument and disposable item contamination.
    a. If an instrument is dropped and or contaminated, replace with sterilized instrument immediately. Place contaminated instrument into sealed transport container.
    b. If disposable item is dropped and or contaminated, discard and replace with fresh item.
11. Single-use disposable instruments (i.e. prophylaxis angles, prophylaxis cups and brushes, saliva ejectors, air-water syringe tips, etc.) shall be used for one patient only and discarded after use.
12. Pay special attention to the manufacturer's precautions for dental materials warning operators about exposure to the skin and eyes (i.e. etchant material). If etchant material gets on gloves, remove immediately; wash hands and re-glove.
13. Do not mix materials that might cause a chemical reaction or toxic fumes.
14. Always use a shield on the curing light and do not look directly into light.
15. If a chart must be touched during treatment, or a drawer opened, use an overglove; contact surface touching should be kept to a minimum.

IMMEDIATELY AFTER PATIENT TREATMENT

1. All used/contaminated barriers, gloves, cotton products, disposable single use air/water syringe tips and other single-use items must be discarded at the end of patient treatment.
2. Wearing heavy, puncture-resistant utility gloves, place contaminated instruments onto tray and cover with plastic to transport to sterilization area.
3. Plastic instrument tray is cleaned and disinfected.
4. Remove gloves, wash hands and make chart entry. If for some reason, a chart must be touched during dental treatment, overgloves must be used.

OPERATORY DISINFECTION AND CLEAN-UP

1. Wash hands and put on heavy, puncture-resistant utility gloves.
2. Dental unit disinfection:

a. Barriers shall be placed on all clinical contact surfaces.
b. Equipment housed in the dental unit should also be covered with barriers (i.e. handpieces, saliva ejector, etc.)
c. After the barriers are removed, any exposed surface is surface disinfected according to the protocol provided.

3. Flush high-evacuation system with tap water until the solids collector appears clear.

4. Flush all water lines for 2 minutes; air purge for two minutes after flushing.

5. Clean and disinfect the body of the air/water syringe, dental unit water system, sink and faucet, part of the dental chair, counter tops not covered by a barrier, operator-assistant stool, outside of covered trash can, biohazardous waste plastic can.

6. Disinfect all uncovered surfaces/equipment:
   a. Pre-clean the surface by spraying with an approved cleaning solution.
   b. Vigorously wipe surfaces with gauze/paper towel and discard. This is the cleaning stage.
   c. Spray disinfectant solution on the cleaned surface, making sure all the areas are completely covered.
   d. Allow area to dry or wait the required time based on the manufacturer's instructions for surface disinfection for HIV/HBV/TB. This is the disinfection stage.
   e. Wash the exterior of the utility gloves and spray disinfectant on them. Remove gloves and wash hands.

7. Handpiece sterilization:
   a. All handpieces are to be sterilized after each patient.
   b. Handpieces should be first wiped clean with disinfectant and placed into sterilizing bag, sealed and labeled including a process indicator.
   c. Appropriate lubrication should occur before and after each sterilization process according to manufacturer's directions.

8. Inspect operatory to secure a clean and disinfected work area before leaving.

STERILIZATION AREA

1. Soiled tray with instruments, used cotton products, etc. are removed from the dental operatory and placed in "contaminated area" of the sterilization area. These items are never stored or placed into the "clean area."

2. Put on clean, heavy, puncture-proof utility gloves, protective eyewear prior to processing instruments, trays, etc.

3. Disassemble tray and prepare for sterilization:
   a. Dispose of disposable cotton products and used etchant material, sealant material, etc. into a red biohazard bag.

b. Pre-rinse and place instruments into enzymatic solution housed in a plastic instrument holder.
c. Rinse off enzymatic solution under a steady stream of warm water for 30 seconds.
d. Place instruments into ultrasonic unit, cover, and set timer for prescribed processing time. This is the scrubbing stage of sterilization.
e. Remove from unit and rinse thoroughly under cool running water.
f. Check instruments for visible remaining debris.
g. Roll instruments from the ultrasonic unit out onto a paper towel, being careful not to touch instruments.
h. Using a second paper towel, carefully pat the instruments dry. Discard towels after use into waste receptacle.

4. Bagging instruments for sterilization:
   a. Dry instruments are placed with indicator tape into bag for sterilization.
   b. Instrument bag is labeled with classification and date.
   c. Consumable supplies, such as cotton products, may be added to the bag just before sterilization.

5. Sterilization and storage:
   a. Prepared bags are placed into sterilizer.
   b. Instrument bags are sterilized according to manufacturer's directions.
   c. Sterilized bags are stored in the clean area until needed for dental treatment.
   d. Routine spore testing of sterilizers are routinely performed in accordance with state laws.

TRASH/REGULATED WASTE/PPE MANAGEMENT

1. Remove mask, gown, and protective eyewear and process:
   a. Discard mask into biohazard-labeled receptacle.
   b. If gown is disposable, place into biohazard receptacle. If gown is reusable, place in special laundry bag/receptacle that is marked for transport.
   c. After washing with soap and water, place operators and patients protective eyewear into disinfectant solution.

2. Regular trash:
   a. In the sterilization area (contaminated side), a large paper bag is attached to the counter top. At the end of patient treatment, the student places the small bag from the operatory into this large trash bag. For this class, only products that have not been exposed to blood or saliva are disposed in this manner (i.e., charts, Kleenex, paperwork etc.)
   b. In the dental operatory, a small paper bag is attached to the cart
   c. The regular trash is picked up by the facility maintenance team.

3. Biohazardous waste:
    a. For this class, any disposables that come in contact with saliva are disposed of into biohazardous waste receptacles. Any disposable, such as cotton rolls, saturated with blood or OPIM other than saliva, shall be disposed of into biohazardous red bags.
    b. The biohazardous waste receptacles are picked up by regulated waste haulers.