Component I: **CORE**

Module 4: **Safe Environment**

Purpose: **To prepare the learner with the information regarding safety in the workplace including infection control practices, biological hazards & wastes, electrical safety, fire safety, radiation safety, chemical safety, first aid, and self protection.**

Suggested Time Frame: **4.25 hours**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Describe infection control practices
2. Discuss biological hazards and wastes
3. Describe electrical safety practices
4. Discuss and demonstrate fire safety practices
5. Describe radiation safety practices
6. Describe chemical safety practices
7. Describe and demonstrate first aid practices
8. Describe self-protection practices

Resources:

References:

Davis, Bonnie K. (2002). Phlebotomy: A Customer Service Approach. Albany, NY: Delmar, a division of Thompson Learning, Inc.

Flynn, Jr. John C. (1999). Procedures in Phlebotomy. Philadelphia, Pennsylvania: W.B. Saunders Company.

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

Hoeltke, Lynn (2000). The Complete Textbook of Phlebotomy, 2nd edition. Albany, NY: Delmar, a division of Thompson Learning, Inc.

Kovanda, Beverly (1998). Phlebotomy Collection Procedures. Albany, NY: Delmar, a division of Thompson Learning, Inc.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, , Williams & Wilkins.

Pendergraph, Garland & Pendergraph, Cynthia (1998). Handbook of Phlebotomy and Patient Service Techniques. Baltimore, Maryland: Williams & Wilkins.

Component I: **CORE**

Module 4: **Safe Environment**

Topic 1: **Infection Control**

Purpose: **To prepare the learner with the information regarding infection control in the workplace**

Suggested Time Frame: **1 hour**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to infection control.
2. Define the term "infection control".
3. Define the term "pathogenic microorganism".
4. Discuss the 4 types of microorganisms, and give examples of each.
5. Describe the organizations that regulate infection control.
6. Discuss the components of an effective infection control program.
7. Describe effective infection control methods
8. Describe the different types of infections and give examples of the organisms that cause each.
9. Discuss the chain of infection, including source, modes of transmission, hosts, and how to break the chain.
10. Discuss the types of isolation
11. Discuss disinfection, asepsis, and sterilization

Vocabulary:

Antiseptic	HBV	Sharp
AFB	HCV	Strict isolation
Blood borne pathogens (BBP)	PPE	Reverse isolation
	HIV	
Contact isolation	Needlestick safety and	Universal body substance
CDC	prevention act	precautions
Disinfectant	Nosocomial infection	Wound or skin isolation
Engineering controls	OSHA	Enteric isolation

References:

Davis, Bonnie K. (2002). Phlebotomy: A Customer Service Approach. Albany, NY: Delmar, a division of Thompson Learning, Inc.

Flynn, Jr. John C. (1999). Procedures in Phlebotomy. Philadelphia, Pennsylvania: W.B. Saunders Company.

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

Hoeltke, Lynn (2000). The Complete Textbook of Phlebotomy, 2nd edition. Albany, NY: Delmar, a division of Thompson Learning, Inc.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, , Williams & Wilkins.

Pendergraph, Garland & Pendergraph, Cynthia (1998). Handbook of Phlebotomy and Patient Service Techniques. Baltimore, Maryland: Williams & Wilkins.

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to infection control A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Define the term "infection control". A. Infection is the invasion of a body by a pathogenic microorganism, resulting in injury or disease. B. Infection control is a mandated method to prevent an infection.	Lecture
3. Define the term "pathogenic microorganism." A. Small, living organisms capable of causing disease. B. Some found normally living on the skin, in the urinary, gastrointestinal, and respiratory tract.	Lecture
4. Discuss the 4 types of microorganisms, and give examples of each. A. Bacteria 1. Unicellular identified by shape and appearance (cocci, bacilli & spirilla) 2. Most bacteria are inhibited or destroyed by antibiotics. 3. Some bacteria have become resistant to antibiotics due to overuse or misuse. 4. *Staphylococcus aureus* (cocci) a. Methicillin resistant Staph. aureus (MRSA) 5. *Streptococcus faecalis* AKA Enterococcus (cocci) a. Vancomycin resistant Enterococcus (VRE) 6. E. coli (bacilli) 7. Syphillis (spirilla) B. Fungi 1. Fungus means "mushroom" in Latin 2. Depends on other life forms for nutrition like dead or decaying organic material. 3. Thrives on antibiotics so if you have a bladder infection and you are treated with an antibiotic, you are more susceptible to getting a yeast infection. 4. Yeast 5. *Tinea pedis* (athlete's foot) C. Protozoa 1. One-celled organisms that can move with cilia (hair-like projections) or false feet. 2. Malaria 3. Trichomonas	Lecture Germs - Appendix 4.1 (a) Staphylococcus Aureus - Appendix 4.1 (b) Staphylococcus Bacterium - Appendix 4.1 (c) E-Coli & Cultures - Appendix 4.1 (d) Malaria & Albicans - Appendix 4.1 (e) Moneran & Glive - Appendix 4.1 (f) Giardia - Appendix 4.1 (g)

Objectives & Content	Recommended Teaching Strategies & Evaluation
4. Giardia D. Virus 1. Smallest of microorganisms (need electron microscope to view) 2. Needs a living cell to multiply 3. Thrives on antibiotics but can be destroyed by heat. 4. HIV 5. Hepatitis 6. Common cold 7. Influenza	
5. Describe the organizations that regulate infection control. A. Occupational Safety and Health Administration (OSHA) 1. Bloodborne pathogens standards (29 CFR 1910.1030) 2. Designed to reduce the risk of exposure to HIV and Hepatitis 3. Exposure control plan a. Determine in which job classifications, employees have or may have occupational exposure to blood borne pathogens. b. Require employees to comply with universal precautions. c. Provide engineering controls. d. Determine work practice controls. e. Provide personal protective equipment. f. Determine housekeeping schedule & methods. g. Offer Hepatitis B vaccination & provide post-exposure follow-up. h. Communicate hazards to employees by using warning labels & signs. i. Train & inform employees regarding blood borne pathogens. j. Maintain confidential medical records on all employees with occupational exposure. k. Maintain training records. B. Centers for Disease Control and Prevention - Standard (Universal) precautions 1. Designed to reduce the risk of exposure to HIV and Hepatitis 2. Describes safety devices to be used in the laboratory 3. Engineering controls a. Self-sheathing needles	Lecture

Objectives & Content	Recommended Teaching Strategies & Evaluation
b. Vented safety hoods c. Sterilize infectious materials d. Hard plastic specimen disposal units e. Needlestick Safety & Prevention Act (2000). f. Use of plastic capillary tubes & blood collection tubes g. Transportation of specimens in sealed plastic bags h. Puncture resistant containers for sharps disposal 2. Work practice controls a. Wear protective barrier equipment b. Wear gloves at all times c. Change gloves after each patient or procedure, wash hands d. Wash hands after glove removal e. Do not allow contaminated equipment or linens to come in contact with your skin f. Wear gown (over lab coat) when there is a risk of splashing or splattering of body fluids g. Wear mask if the patient has an airborne disease h. Use collection devices with safety features i. No recapping of needles j. Dispose of needles and holders in appropriate sharps containers k. Report all needlestick & sharps-related injuries. l. Report any needle related hazards observed in the work environment m. Participate in Blood Borne Pathogens (BBP) training n. Handwashing to prevent spread of nosocomial infections o. Avoid mouth to mouth breathing (use mechanical device or mask). p. Use a solution of 10% household bleach to disinfect environmental surfaces 3. Personal protective equipment (PPE) a. Gloves i. Worn when potential to be exposed to blood, body fluids, secretions, excretions, and contaminated items exist ii. Always worn performing phlebotomy iii. Use clean gloves before touching	

Objectives & Content	Recommended Teaching Strategies & Evaluation
mucous membranes or non-intact skin iv. Change gloves between tasks and procedures v. Remove gloves promptly after use, discard in biohazard container and wash hands b. Eye, nose and mouth protection i. Use masks, face shields, mouth pieces, respirators and/or goggles ii. Needed for procedures that are likely to generate splashes or sprays of blood, body fluids, secretions or excretions c. Gowns and/or Lab coats i. Used to protect skin and prevent soiling of clothes for procedures when there is a potential of being exposed to blood, body fluids, secretions or excretions ii. Remove soiled coats or gowns promptly after use and place in designated containers 4. Housekeeping a. Disinfect equipment & work surfaces including beds, bed rails, and other frequently touched surfaces. b. Do not pick up broken glass with hands – use brush & dustpan, tongs, forceps. c. Use sharps containers (80% full only). d. Place contaminated PPE in specified containers e. Recognize biohazard signs 5. Hepatitis B vaccination a. Available at no charge. b. Highly recommended c. 3 injections over 6 months d. Must have signed declination in personal file if employee chooses not to have vaccination 6. Patient care equipment a. Handle all soiled equipment in a manner that prevents exposure to skin, mucous membranes and clothes b. Use single use items and dispose in biohazard containers c. Cleanse and reprocess any reusable equipment	

Objectives & Content	Recommended Teaching Strategies & Evaluation
6. Discuss the components of an effective infection control program. A. Purpose 1. Required by Joint Commission on Accreditation of Healthcare Organizations (JCAHO) 2. Designed to break the chain of infection. 3. Aimed at protecting employee, patient, visitors, & others. B. Functions 1. Screening a. PPD or TB skin test b. Chest x-ray 2. Immunizations a. Measles, mumps, rubella (MMR) b. Tetanus c. Hepatitis B Virus (HBV) 3. Evaluation and treatment a. Needlestick b. Other routes of infection	Lecture
7. Describe effective infection control methods A. Handwashing 1. Effective barrier to infection as the first defense against the spread of disease. 2. Procedure a. Remove jewelry b. Stand at sink without allowing clothes to touch sink. Turn water on and, using paper towel adjust temperature. Discard paper towel. c. Wet hands under running water and place liquid soap (size of a nickel) into palm of hand. Work soap into lather by moving it over palms, sides and backs – the entire surface of both hands, including wrists, for 15 seconds singing Happy Birthday (to yourself!). Remove debris under fingernails using a brush or orange stick. d. Rinse hands in a downward motion from wrists to fingers. e. Repeat washing. f. Dry hands with a clean paper towel and discard. g. Use a clean paper towel to turn off faucet. B. Order in which to put on protective clothing. 1. Gown a. Wash hands thoroughly b. Put the gown on with the opening in the back; if a sterile gown is needed, only the inside of the gown should be touched as it	Lecture Demonstration and practice Black light - detecting materials

Objectives & Content	Recommended Teaching Strategies & Evaluation
is being put on. c. Tie the strings in the back at the neck and the waist. d. Pull the sleeves down to the wrists. e. To remove, untie the neck and then the waist of the gown. f. The gown should be removed and folded with the contaminated side facing inward. g. Place the folded gown in the specified receptacle. 2. Mask a. Remove mask from box b. Place mask over nose & mouth c. First tie upper tie high on the head to keep the mask in place; then tie the lower tie. Place the strings over the ears. d. Touching only the strings, remove the mask after removing the gown and washing hands thoroughly. e. Discard in the designated receptacle 3. Gloves a. Gloves are put on last and removed first. b. Gloves need not be sterile. c. Pull the ends of the gloves over the sleeves of the gown if a gown is required. d. Jewelry, such as rings, that might puncture a glove, should be removed. . e. Gloves should be discarded after each patient. f. Hands should be washed after the gloves are removed. 4 Reverse the order to remove personal protective equipment. a. Gloves b. Mask c. Gown C. Use and disposal of "sharps." 1. Never recap needles 2. Use puncture proof, sealable containers marked for use of sharps. (Sharps Container) 3. Sharps Container a. Never fill more than 80% (to fill line). b. Never mount it on a wall higher than the shortest person's eye level. c. Never reach inside of the sharps container. 4. Never pick up broken glass with hands, use dustpan	

Objectives & Content	Recommended Teaching Strategies & Evaluation
or other mechanical device & place in sharps container. 5. Seal and label container before removal by disposal service.	
8. Describe the different types of infections and give examples of the organisms that cause each. A. Communicable infections. 1. Infections spread from person to person. 2. Common cold, sexcually transmitted diseases like HIV, gonorrhoeeae or chlymadia, and chicken pox. B. Nosocomial infections. 1. Hospital or health-care facility acquired. 2. Results from contact with infected personnel, other patients, visitors, or equipment. 3. Most common is urinary tract infections due to use of catheters. 4. Staph infection, MRSA and VRE.	Lecture
9. Discuss the chain of infection, including source, modes of transmission, hosts, and how to break the chain. A. Chain of infection. 1. Pathogen present a. People b. Equipment c. Water 2. Reservoir host or source (someone who has a pathogen to pass along to someone else.) a. An ill patient b. A healthy carrier of a potentially pathogenic organism (nurse that has *Staph. aureus* in the nasal passage.) 3. Portal of exit (an escape route for the organism) a. Excretions b. Secretions c. Droplets 4. Modes of transmission (how the organism moves from the reservoir host to the susceptible host) a. Contact i. Direct physical transfer of the organism from the reservoir host (source) to the susceptible host. ii. Indirect (fomites) is the transfer of the organism from an object (telephone or door knob) to the susceptible host. iii. Droplet is the transfer of the organism from the reservoir host	Lecture Chain of Infection - Appendix 4.2

Objectives & Content	Recommended Teaching Strategies & Evaluation
(source) to a susceptible host by coughing, sneezing or talking. b. Vehicle transfer occurs through contaminated items such as food, water, blood or body fluids. c. Vector transfer occurs through insects (malaria from mosquitoes) d. Airborne transfer occurs through coughing, sneezing or talking and droplets land on the mucous membranes of the susceptible host. 5. Portal of entry (a place where the organism can enter the body) a. Mucous membrane b. GI tract c. Respiratory tract d. Broken skin e. Reproductive system 6. Susceptible host (person that gets the unwanted organism) a. Immunocompromised patient b. Diabetic patient c. Burn patient d. Chemotherapy patient B. How to break the chain 1. Source (reservoir host) a. Immunization b. Transfusion c. Good nutrition d. Medication e. Proper exercise f. Rest or sleep g. Handwashing h. Sterilization i. Asceptic technique j. Wearing of gloves k. Proper waster disposal l. Appropriate laundry service m. Housekeeping 2. Mode of transmission a. Isolation procedures b. Handwashing c. Insect & rodent control d. Use of disposal equipment e. Proper decontamination of instruments f. Limiting use of common facilities	
10. Discuss the types of isolation A. Strict	Lecture

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Highly contagious diseases that can be spread by direct contact & through the air like chicken pox and tuberculosis (TB) 2. Requires wearing of gowns, gloves, & masks. B. Enteric 1. Intestinal infections that can be spread by ingestion like VRE 2. Requires masks & gowns where splashing or soiling may occur. C. Contact 1. Highly transmissible disease spread by contact caused by MRSA or Impetigo (caused by staphylococcus or streptococcus & characterized by vesicles, pustules and yellowish crusts.) 2. Requires wearing gloves, gowns if soiling is likely, & masks if in close contact with patient. D. Respiratory 1. Infections that can be spread by droplets or through the air (Whooping cough or tuberculosis). 2. Requires masks and gloves to be worn. E. Wound or skin drainage or secretion. 1. Skin infections, open wounds, or burns(MRSA, staphylococcus) 2. Requires masks & gowns where splashing or soiling may occur. F. Reverse or protective. 1. Designed to protect the patient from infection. 2. Organ transplant patients, AIDS patients, chemotherapy patients, and burn patients. 3. Requires masks, gowns, and gloves. G. AFB 1. For patients with active tuberculosis. 2. Requires masks or particulate respirators (fit tested), gowns, & gloves. H. Blood or body fluid 1. For HIV or Hepatitis B patients 2. Has been replaced by Standard (Universal) Precautions. I. Resterilization precautions - For Creutzfield-Jakob disease, which is due to infection of Bovine spongiform encehpalopathy. (Mad Cow Disease) J. Antibiotic-Resistant Organisms precautions - Methicillin-resistant *S. aureus* (MRSA), Vancomycin-resistant Enterococci (VRE), Penicillin-resistant *S. pneumoniae*	
11. Discuss disinfection, asepsis, and sterilization A. Disinfection 1. Use a disinfectant that is a Chemical compound used to remove or kill pathogenic	Lecture

Objectives & Content	Recommended Teaching Strategies & Evaluation
microorganisms. 2. Used on surfaces and instruments 3. 10% bleach (chlorine), Ethylene oxide, formaldehyde, glutaraldehyde, 1-2% phenol, chlorophenol. 4. Minimum contact time is 10 minutes. B. Asepsis (germ free) is applied in a hospital/laboratory setting to prevent the spread of nosocomial (hospital acquired) infections 1. An Antiseptic is a Chemical used to prevent sepsis (inhibit the growth and development of microorganisms) 2. Does not necessarily kill microorganisms 3. Used on human skin 4. Betadine (iodine) 70% ethyl alcohol, 70% isopropyl alcohol, hydrogen peroxide, hexachlorophene. 5. Air dry. C. Medical asepsis refers to the destruction of organisms after they leave the body by: 1. Handwashing 2. Use of disposable equipment 3. Wearing of gloves D. Sterilization uses physical (autoclave) or chemical procedures to destroy all microbial life	

Component I: **CORE**

Module 4: **Safe Environment**

Topic 2: **Biological Hazards and Waste**

Purpose: **To prepare the learner with the information regarding biological hazards and waste in the workplace**

Suggested Time Frame: **30 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to biological hazards and wastes.
2. Describe the common routes of entry for biohazards
3. Describe the 4 kinds of waste.
4. Describe methods for treating infectious waste.
5. Describe guidelines for handling biological specimens
6. Discuss waste removal

Vocabulary:

Airborne	Ingestion	Mucous membrane contact
Biohazard	Percutaneous inoculation	Skin contact
Infectious substance		

References:

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Kovanda, Beverly (1998). Phlebotomy Collection Procedures. Albany, NY: Delmar, a division of Thompson Learning, Inc.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to biological hazards & waste A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Describe the common routes of entry for biohazards A. Airborne 1. During centrifugation 2. Removal of stoppers 3. Improperly aliquoting specimens 4. Fumes from chemicals B. Ingestion 1. Due to improper handwashing 2. Licking fingers when turning pages. 3. Chewing on pens or pencils. C. Percutaneous inoculation 1. Needlesticks 2. Other sharps like broken blood tubes. D. Skin contact 1. Cuts, burns, sores, chapped skin. 2. Cover with waterproof tape even when wearing gloves. 7. Mucous membrane contact - Enter through mouth, nose, and eyes through splashes or rubbing eyes with contaminated hands.	Lecture
3. Describe the 4 kinds of waste. A. Infectious 1. Has the potential to carry disease 2. The three most dangerous infectious pathogens found are Hepatitus A Virus (HAV), Hepatitus C Virus (HCV), and Human Immunodeficiency Virus (HIV) B. Solid 1. Includes trash like paper goods, bottles, cardboard, cans. 2. Not hazardous but causes pollution 3. Mandatory recycling programs C. Chemical 1. Includes germicides, cleaning solvents, & pharmaceuticals 2. May cause fire & explosions 3. Do not pour toxic, inflammable, foul-smelling, or irritating chemicals down the drain, place in sturdy containers.	Lecture Biohazard Symbol - Appendix 4.3

Objectives & Content	Recommended Teaching Strategies & Evaluation
4. Refer to MSDS for detailed information D. Radioactive 1. Due to increase use of nuclear medicine techniques. 2. Include iodine 123, iodine 131, and thallium 201 3. Must be collected, labeled and stored in proper containers. 4. Must be removed by a licensed facility.	
4. Describe methods for treating infectious waste. A. Steam sterilization 1. Saturates waste with high-pressure steam in an autoclave. 2. Used for blood cultures, sharps, isolation wastes, pathology wastes, & dialysis unit wastes. B. Incineration	Lecture
5. Describe guidelines for handling biological specimens. A. Use Personal Protective Equipment (PPE) B. Use a biological safety hood C. No mouth pipetting D. All specimens treated as infectious E. Workstation disinfected before and after use.	Lecture
6. Discuss waste removal A. Usually arranged through a contractual agreement with an outside agency B. Any contamination is considered infectious C. Sharps containers must be rigid, leakproof, disposable, puncture-resistant, closed, sealed, marked “biohazard” and 80% filled D. Biohazardous wastes, such as specimens of blood, body fluid or tissue are placed in disposable, closeable, leakproof container or double bagged and labeled “biohazard” E. If the outside of a regulated waste container is contaminated or if leakage is possible, place the container in a second container that is upright, rigid, leakproof, disposable, puncture resistant and labeled “biohazard”	

Component I: **CORE**

Module 4: **Safe Environment**

Topic 3: **Electrical Safety**

Purpose: **To prepare the learner with the information regarding electrical safety.**

Suggested Time Frame: **15 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to electrical safety.
2. Describe guidelines for electrical safety.

Vocabulary:

Circuit breaker	Electrical shock	Non-conducting material
Electrical circuits	Grounded	

References:

Davis, Bonnie K. (2002). Phlebotomy: A Customer Service Approach. Albany, NY: Delmar, a division of Thompson Learning, Inc.

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to electrical safety A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Describe guidelines for electrical safety. A. Avoid use of extension cords. B. Do not overload electrical circuits. C. All plugs should be three pronged and not frayed. D. Unplug equipment when servicing. E. Unplug equipment that has liquid spilled on it. Make sure wiring is dry before replugging. F. Unplug & do not use equipment that is malfunctioning. G. Do not make an attempt to repair equipment unless trained to do so. H. Do not handle equipment with wet hands. I. Do not touch electrical equipment in patient's rooms especially when drawing blood. Electrical shock could pass through the phlebotomist and the needle and shock the patient.	Lecture

Component I: **CORE**

Module 4: **Safe Environment**

Topic 4: **Fire Safety**

Purpose: **To prepare the learner with the information regarding fire safety.**

Suggested Time Frame: **30 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to fire safety.
2. Describe the components of fire.
3. Describe the classes of fire.
4. Discuss and identify the types of fire extinguishers.
5. Demonstrate how to use a fire extinguisher.
6. Interpret the acronym RACE
7. List fire safety do's and don'ts.

Vocabulary:

Extinguisher(s)	NFPA	RACE
	PASS	

References:

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to fire safety A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Describe the components of fire. A. Oxygen B. Heat C. Fuel	Lecture
3. Describe the classes of fire. A. Class A 1. Ordinary combustible material 2. Paper, cloth, wood, plastic B. Class B 1. Flammable solvents and an interaction with air & vapors 2. Gases, oil, paint, & grease C. Class C - In or near electrical equipment D. Class D 1. Combustible material 2. Metals	Lecture NFPA - National Fire Protection Association - Appendix 4.4
4. Discuss and identify the types of fire extinguishers. A. Class A 1. Contain soda and water or acid 2. Used for ordinary combustible fires B. Class B 1. Contain foam, dry chemicals, or CO_2 2. Used for fires resulting from solvents & air-vapor mixes. C. Class C 1. Contain dry chemicals 2. Used for electrical fires D. ABC 1. Multipurpose 2. Used to avoid confusion over which extinguisher is appropriate.	Lecture
5. Describe how to use a fire extinguisher. A. **P**ull the pin on the extinguisher. B. **A**im the nozzle at the base of the fire. C. **S**queeze the trigger of the extinguisher. D. **S**weep the nozzle of the extinguisher over the fire.	Video

Objectives & Content	Recommended Teaching Strategies & Evaluation
6. Interpret the acronym RACE A. **R**emove the patients from the vicinity of the fire. B. **A**ctivate the alarm & alert other staff members. C. **C**ontain or confine the fire by closing the doors. D. **E**xtinguish the fire if it is safe to do so.	Lecture
7. List fire safety do's and don'ts. A. Do's 1. Sound alarm 2. Call assigned fire number 3. Attempt to extinguish 4. Close doors & windows 5. Use stairs for evacuation 6. Drop & roll if clothes are on fire 7. Crawl to exit, if caught in the fire B. Don'ts 1. Block entrances 2. Reenter the building 3. Panic 4. Run 5. Ignore an alarm 6. Use elevators	Lecture

Component I: **CORE**

Module 4: **Safe Environment**

Topic 5: **Radiation Safety**

Purpose: **To prepare the learner with the information regarding radiation safety.**

Suggested Time Frame: **15 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to radiation safety.
2. Describe 3 principles involved in radiation safety
3. Recognize the radiation safety symbol.
4. Describe radiation protective clothing.
5. Describe how to handle patients with radioactive implants.
6. Describe how to properly label radioactive specimens.

Vocabulary:

Radiation Radiation safety symbol Radioactive implants

References:

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

Module 4: Safe Environment **Topic 5: Radiation Safety**

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to radiation safety A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Describe 3 principles involved in radiation safety. A. Distance from the source. B. Shielding or protection from the source. C. Time exposed to the source.	Lecture
3. Recognize the radiation safety symbol.	Radiation Hazard Symbol - Appendix 4.5
4. Describe radiation protective clothing. A. Lead apron B. Gloves	Lecture
5. Describe how to handle patients with radioactive implants. A. First, ask nurse for instruction. B. Draw blood in a minimal amount of time.	Lecture
6. Describe how to properly label radioactive specimens. A. Clearly labeled with radiation hazard symbol. B. Type of radioactive material. C. Half-life and pick up date.	Lecture

Component I: **CORE**

Module 4: **Safe Environment**

Topic 6: **Chemical Safety**

Purpose: **To prepare the learner with the information regarding chemical safety.**

Suggested Time Frame: **1 hour**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to chemical safety.
2. Describe chemical hazards.
3. Define guidelines for working with and disposal of chemicals.
4. Discuss 4 organizations that have regulations for identifying chemicals.
5. Describe a Material Safety Data Sheet (MSDS).
6. Identify and label the parts of a MSDS.
7. Discuss the use of safety showers and eyewash stations.
8. Describe how to handle chemical spills.
9. Discuss general chemical safety rules

Vocabulary:

Chemical hazards	Eyewash station	NFPA
Chemical spills	Biosafety	OSHA
DOT	MSDS	Safety shower
EPA		

References:

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

Pendergraph, Garland & Pendergraph, Cynthia (1998). Handbook of Phlebotomy and Patient Service Techniques. Baltimore, Maryland: Williams & Wilkins

Module 4: Safe Environment **Topic 6: Chemical Safety**

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to chemical safety A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Describe chemical hazards. A. Caustic & cause severe burns 1. Strong acids (Hydrochloric acid or HCL) 2. Strong bases (Sodium hydroxide) B. Stored in fire cabinets	Lecture
3. Define guidelines for working with and disposal of chemicals. A. Add acid to water B. Read all labels C. Use chemical spill kits when necessary D. Dispose as required by the Material Safety Data Sheet (MSDS)	Lecture
4. Discuss 4 organizations that have regulations for identifying chemicals. A. Occupational Safety and Health Administration (OSHA) – Hazard Communication (HazCom). Standard requires labels that describe: 1. Warning 2. Nature of hazard 3. Special precautions 4. First-aid treatment 5. "Right to Know Rule" B. National Fire Protection Association (NFPA) – diamond shaped labeling system. 1. Four colored quadrants a. Blue diamond on left – health hazard b. Red diamond on top – fire hazard c. Yellow diamond on right – stability or reactivity hazards. d. White diamond on bottom - other specific hazards. 2. Hazard rating scale of 0 – 4 based on severity C. Department of Transportation (DOT) 1. Uses a diamond shaped warning sign 2. Incorporates the United Nations hazard class number, the hazard class designation or four-digit identification number & a symbol representing the hazard. D. Environmental Protection Agency (EPA) - Regulates disposal of chemicals	Lecture DOT Hazardous Materials Label - Appendix 4.6

Objectives & Content	Recommended Teaching Strategies & Evaluation
5. Describe a Material Safety Data Sheet (MSDS) A. Required by HazCom Standard. B. Contains general information, precautionary measures, & emergency information. C. All products with a hazardous warning on the label must have an MSDS available.	Lecture
6. Identify and label the parts of a MSDS. A. General information B. Precautionary measures C. Emergency information	Using an MSDS locate & identify specific information • 70% Isopropyl Alcohol in water - Appendix 4.7
7. Discuss the use of safety showers and eyewash stations. A. Know locations B. Know how to use C. Flush for 15 minutes D. Send to emergency room for evaluation.	Lecture
8. Describe how to handle chemical spills A. Notify all employees & evacuate area if needed. B. Notify supervisor, security and/or safety officer. C. Ensure proper ventilation, if needed. D. Review MSDS for special handling instructions. E. Use chemical resistant rubber gloves & protective wear, if needed. F. Use tongs for broken glass. G. Use spill kit according to directions, if available. H. Use appropriate neutralizing agent, if necessary. I. Absorb liquid with vermiculite or a large amount of paper towels. J. Place absorbent material into appropriate containers. K. Clean area and dry.	Lecture
9. Discuss general chemical safety rules. A. Always wear proper protective clothing when working with chemicals. 1. Lab coat 2. Apron 3. Gloves 4. Safety goggles B. Always use proper chemical clean-up materials for spills. C. Never store chemicals above eye level. D. Never add water to acid. E. Never indiscriminately mix chemicals together. F. Never store chemicals in unlabeled containers. G. Never pour chemicals into dirty containers. H. Never use chemicals in ways other than their intended use	Lecture

Component I: **CORE**

Module 4: **Safe Environment**

Topic 7: **First Aid**

Purpose: **To prepare the learner with the information regarding first aid**

Suggested Time Frame: **30 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to first aid
2. Discuss external hemorrhage.
3. Describe shock and its treatment
4. Recognize when CPR needs to be performed.
5. Discuss fainting (syncope).

Vocabulary:

Syncope	Fainting	Shock
CPR	Hemorrhage	

References:

Flynn, Jr. John C. (1999). Procedures in Phlebotomy. Philadelphia, Pennsylvania: W.B. Saunders Company.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

McCall, Ruth E. & Tankersley, Cathee M. (1997). Phlebotomy Exam Review. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to first aid A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Discuss external hemorrhage A. Apply direct pressure to the wound using a clean cloth or compress (do not remove a blood soaked compress, add a new one on top). B. If pressure does not work, apply strong finger pressure on the main artery above the area. C. Elevate affected part above the level of the heart (not a broken extremity).	Lecture
3. Describe shock and its treatment A. Insufficient return of blood flow to the heart resulting in inadequate supply of oxygen. B. Common Symptoms 1. Pale, cold, clammy skin 2. Rapid, weak pulse 3. Increased, shallow breathing rate 4. Expressionless face & staring eyes C. What to do? 1. Maintain an open airway 2. Call for assistance 3. Keep victim lying down with head lower than the rest of the body. 4. Attempt to control the bleeding or other cause of shock, if known. 5. Keep the victim warm 6. Never give fluids if unconscious or semiconscious.	Lecture
4. Recognize when CPR needs to be performed. A. Cardiopulmonary resuscitation. B. Recognize and treat foreign body airway obstruction. C. Certification required by most health care institutions. D. Offered by the American Heart Association. E. Certification renewed every 2 years.	Lecture
6. Discuss fainting (syncope) A. Insufficient flow of blood to the brain. B. Caused by fatigue, sudden decrease in blood volume, cardiac arrhythmia, hypoglycemia, or hyperventilation. C. Primary cause is psychological due to having blood	Lecture

Objectives & Content	Recommended Teaching Strategies & Evaluation
collected. 1. Observe patient. 2. Engage in conversation to keep patients mind off the procedure. 3. When phlebotomy is completed, ask patient how they feel. D. What to do? 1. If the patient is in the chair before phlebotomy has begun: a. Place head between knees b. Use a cold compress on the back of the neck. c. Can use ammonium salts with care d. Lie patient down for phlebotomy 2. In chair during phlebotomy a. Remove tourniquet b. Carefully remove needle c. Call for help d. Never leave the patient e. Place head between knees f. Uses a cold compress on the back of the neck g. Lie patient down for phlebotomy	

Component I: **CORE**

Module 4: **Safe Environment**

Topic 8: **Personal Safety**

Purpose: **To prepare the learner with the information regarding personal safety.**

Suggested Time Frame: **30 minutes**

Objectives: **Upon completion of this topic, the learner will be able to:**

1. Define key terms related to personal safety.
2. Discuss latex allergies.
3. List safety rules in the laboratory
4. List safety rules when in various patient settings
5. Discuss ergonomics

Vocabulary:

Ergonomics Latex allergy

References:

Davis, Bonnie K. (2002). Phlebotomy: A Customer Service Approach. Albany, NY: Delmar, a division of Thompson Learning, Inc.

Fremgen, Bonnie & Blume, Wendy (2001). Phlebotomy Basics with other Laboratory Techniques. Upper Saddle, New Jersey: Prentice Hall.

Garza, Diana & Becan-McBride, Kathleen (2002). Phlebotomy Handbook: Blood Collection Essentials. Upper Saddle, New Jersey: Prentice Hall.

Hoeltke, Lynn (2000). The Complete Textbook of Phlebotomy, 2nd edition. Albany, NY: Delmar, a division of Thompson Learning, Inc.

McCall, Ruth E. & Tankersley, Cathee M. (1998). Phlebotomy Essentials. Philadelphia, Pennsylvania: Lippincott, Williams, & Wilkins.

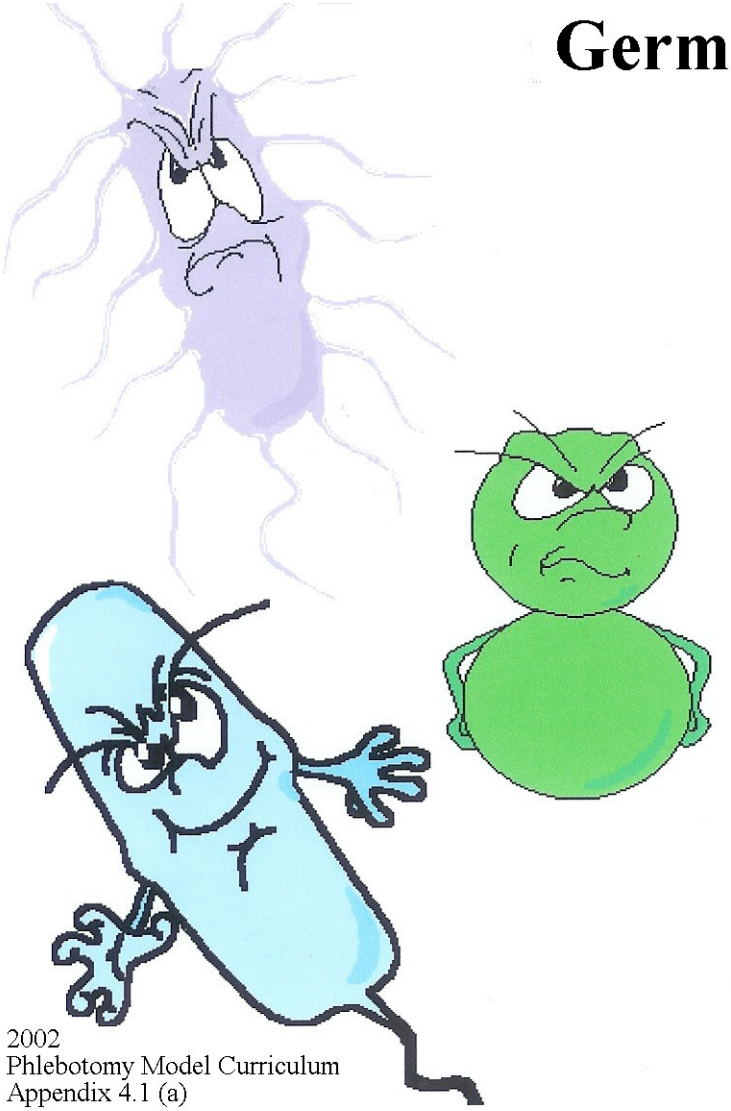
Pendergraph, Garland & Pendergraph, Cynthia (1998). Handbook of Phlebotomy and Patient Service Techniques. Baltimore, Maryland: Williams & Wilkins

Objectives & Content	Recommended Teaching Strategies & Evaluation
1. Define the key terms related to personal safety A. Review the terms listed in the vocabulary section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context	Lecture
2. Discuss latex allergies. A. Allergy to latex proteins B. Causes contact dermatitis C. Products containing latex 1. Blood pressure cuffs 2. Disposable gloves 3. Tourniquets 4. Syringes 5. Goggles 6. Tops of the blood collection tubes D. Use non-latex gloves E. Many institutions are latex free C. Symptoms may include rash; hives; nasal, eye, or sinus irritation; and sometime shock. G. No cure only prevention H. Can inhale latex from powder in gloves.	Lecture
3. List safety rules in the laboratory A. Never eat, drink, smoke or chew gum. B. Never put pens or pencils in the mouth. C. Never place food or beverages in refrigerators used for storage of specimens or reagents. D. Never wear long chains, large or dangling earrings, or loose bracelets. E. Always wear a fully buttoned lab coat when engaged in lab activities. Never wear a lab coat to lunch, on break, or to go home. Never wear PPE outside the designated area of use. F. Always tie back hair that is over shoulder length G. Always keep fingernails short and well manicured and never bite nails. H. Always wear a face shield when performing specimen processing or any activity that might generate splashes or aerosol of body fluids. I. Always wear comfortable, sturdy shoes with nonslip soles. Never wear sandals, open toed shoes, slippers, or high heals. J. Always wear gloves for phlebotomy procedures and when specimen processing. K. Know the locations of fire extinguishers, safety showers, eye washes, fire blankets, and emergency exits.	Lecture

Objectives & Content	Recommended Teaching Strategies & Evaluation
4. List safety rules when in various patient settings. A. Handle all specimens following standard (universal) precautions. B. Properly dispose of used and contaminated specimen collection supplies and return all equipment to the specimen collection tray before leaving the patient's room. *Do not* recap needles! C. Replace bedrails let down during patient procedures. D. Do not touch electrical equipment in patient rooms. E. Report IV problems to nursing personnel. F. Report unresponsive patients to nursing personnel. G. Watch out for and report food, liquid, and other items spilled or dropped on the floor to nursing or housekeeping personnel. H. Report unusual odors to nursing personnel. I. Be careful when entering and exiting patient rooms. Watch out for housekeeping equipment, dietary carts, x-ray machines, and other pieces of equipment that are often left in the halls outside patient rooms. J. Avoid running. It is alarming to patients and may cause an accident. K. Avoid radiation areas if pregnant. L. Know the locations of fire extinguishers, safety showers, eyewashes, fire blankets, and emergency exits throughout the hospital. M. Look for isolation signs and special precaution notices. N. Be aware of any hazards in hallways or corridors like spills, trays, carts, ladders, etc.	Lecture Isolation Precaution Sign - Appendix 4.8
5. Discuss ergonomics A. Ergo = work; nomics = study B. Study of the capacities and requirements of workers and their interaction with the equipment they use, work processes, and the environment. C. Minimize employee exposure to hazards that lead to cumulative trauma disorders. 1. Tendonitis 2. Trigger finger 3. Carpal Tunnel Syndrome 4. Back disorders D. Prevention 1. Use good posture 2. Use computer at proper distance and height. 3. Use a foot rest if necessary 4. Exercise (once an hour) eyes, head, neck, shoulders, back, arms, wrist, & feet. 5. Use PPE such as back braces, anti-fatigue mats, anti-glare screens, & wrist braces (only with	Lecture Physical exercises

Objectives & Content	Recommended Teaching Strategies & Evaluation
physician's orders). 6. Use proper lifting techniques. 7. Optimum work height is at elbow height.	

Germs!



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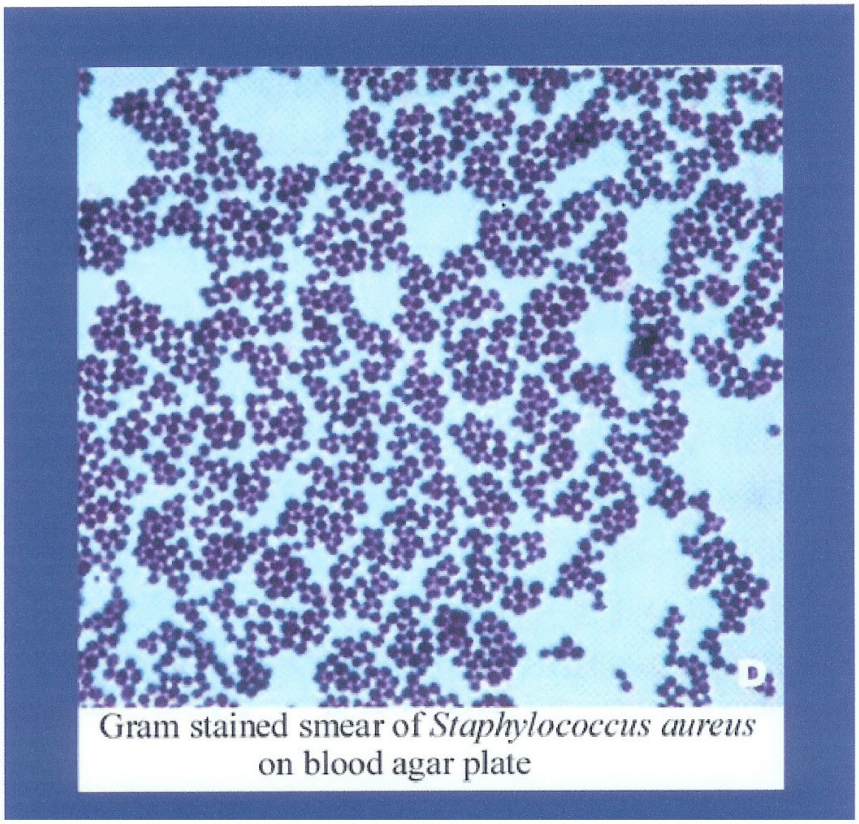
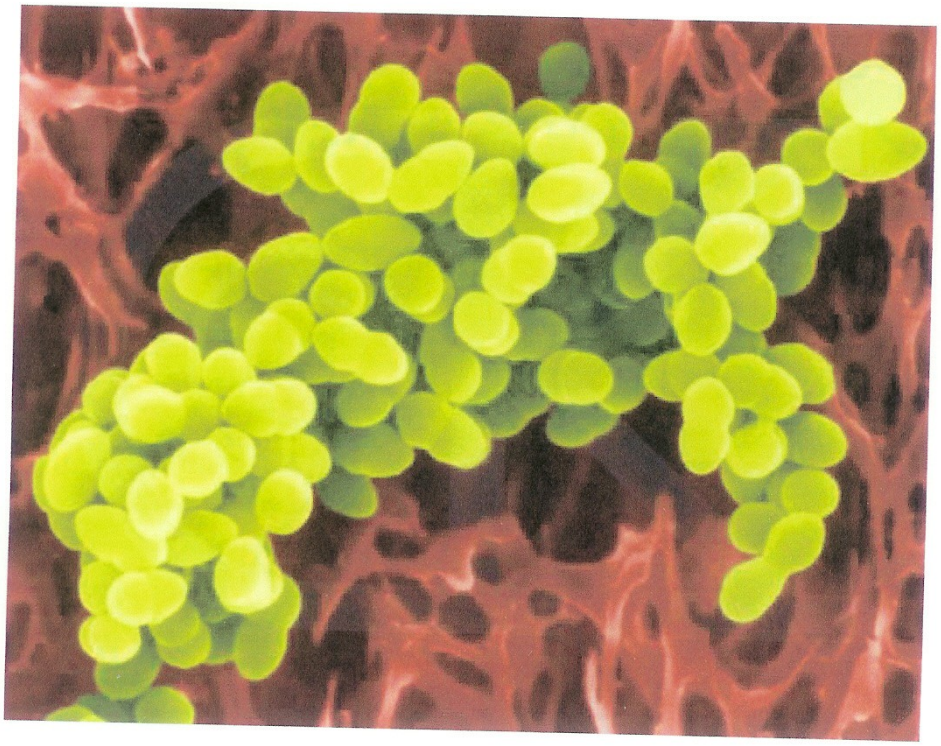
Phlebotomy Model Curriculum
Appendix 4.1 (a)



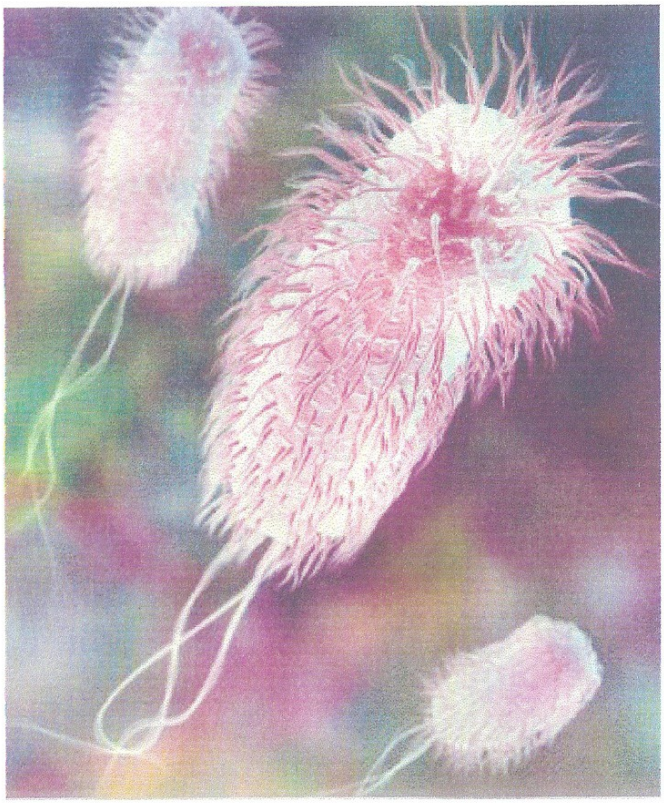
Gram stained smear of *Staphylococcus aureus* on blood agar plate

2002 Phlebotomy Model Curriculum - Appendix 4.1 (c)

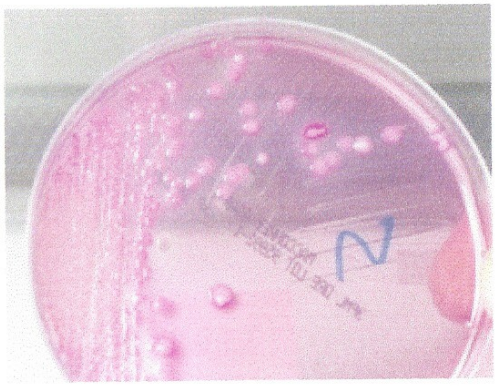
Staphylococcus Aureus & Staphylococcus Bacterium

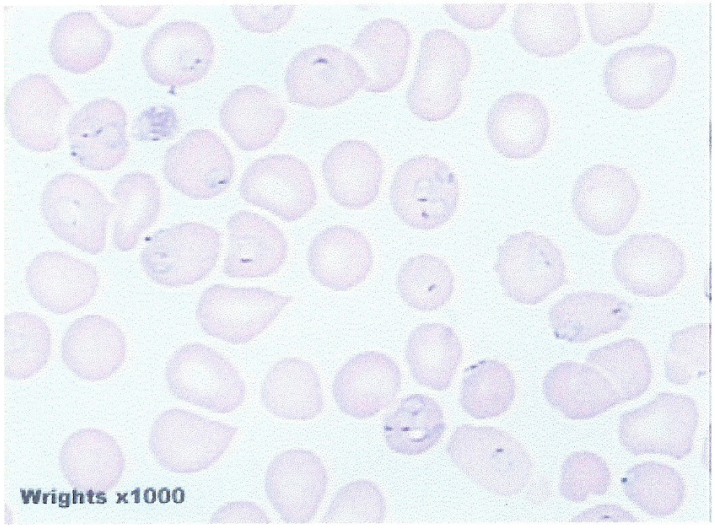


E-Coli & Cultures



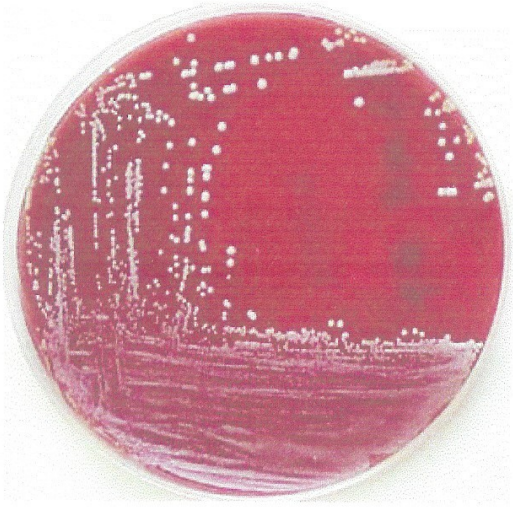
2002 Phlebotomy Model Curriculum - Appendix 4.1 (d)



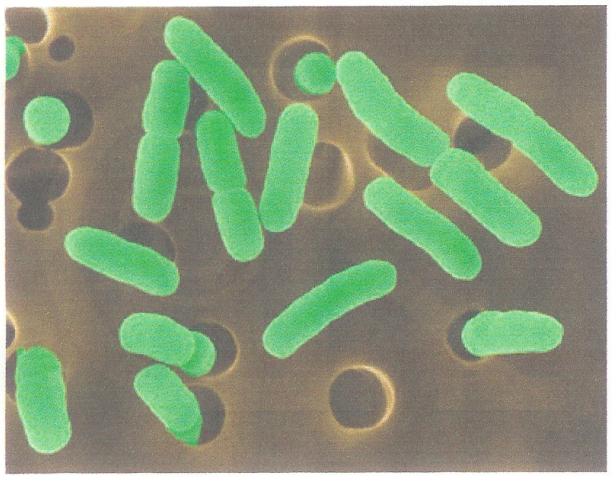


2002 Phlebotomy Model Curriculum - Appendix 4.1 (e)

Malaria & Albicans



Moneran & Glive



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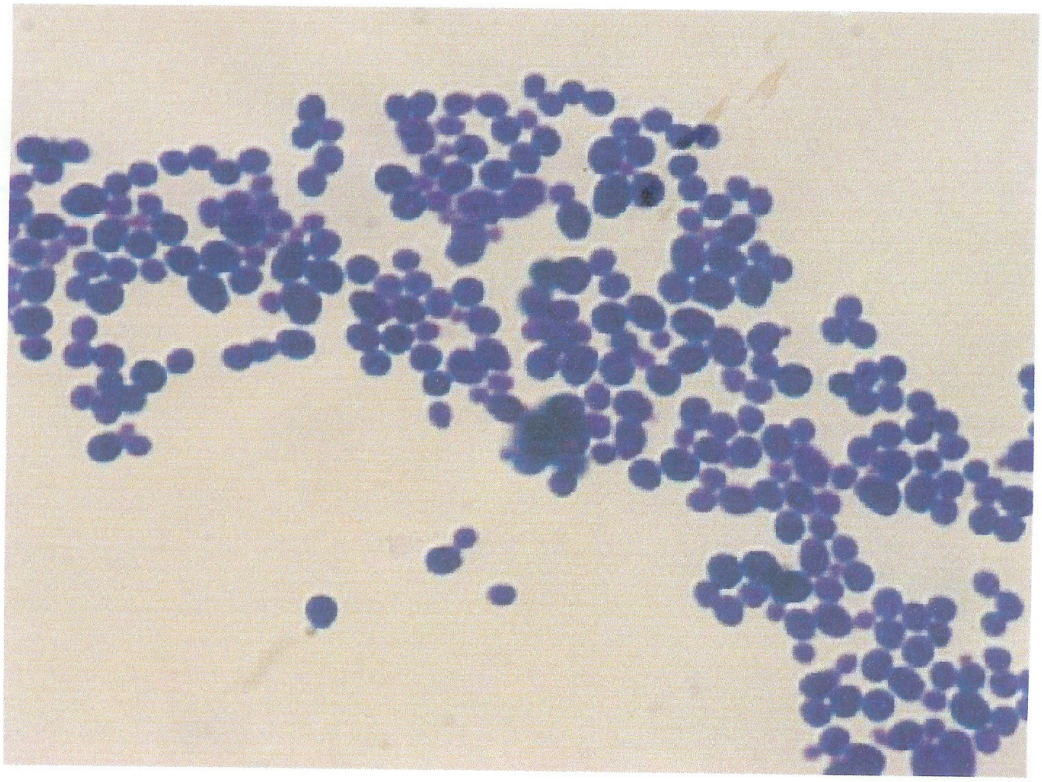
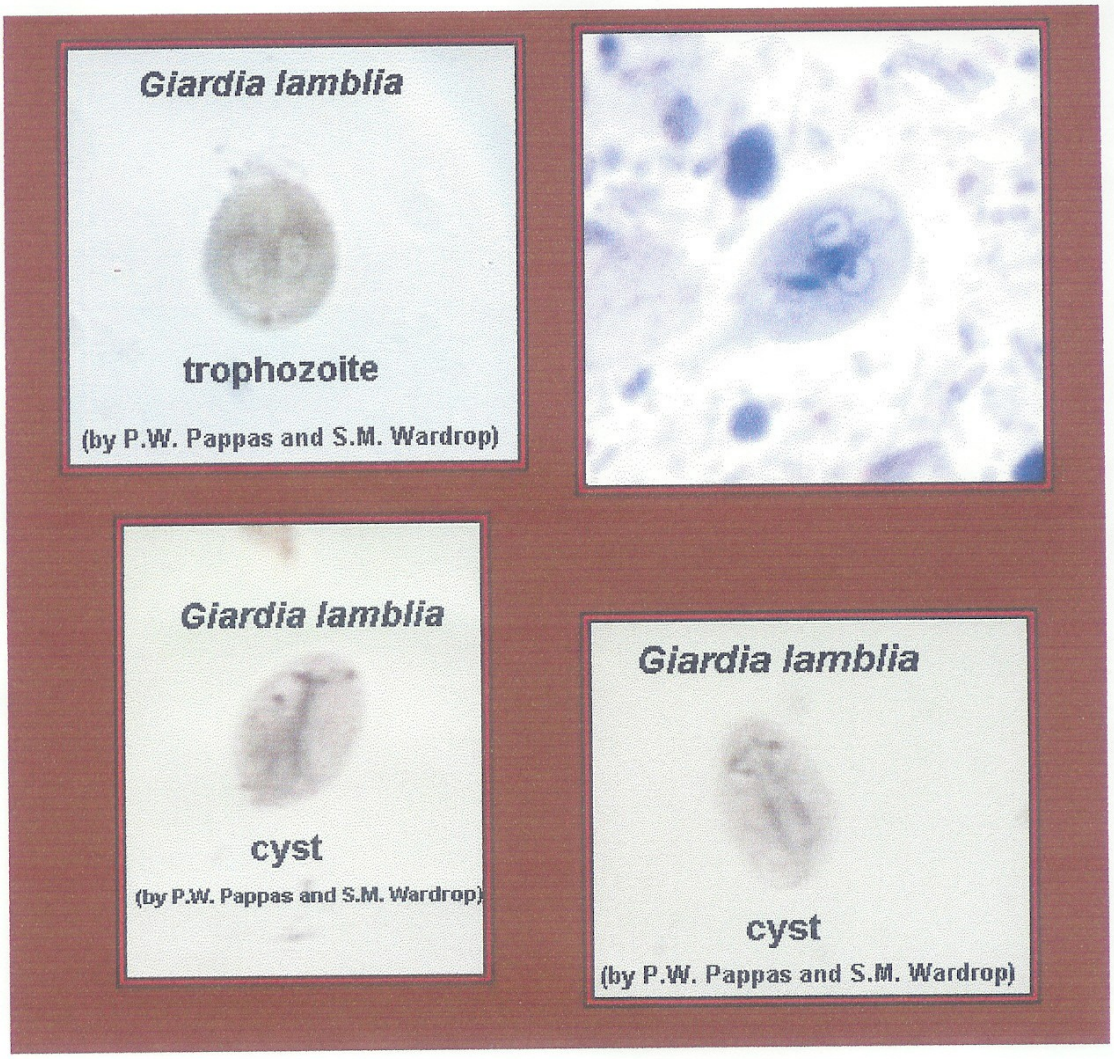
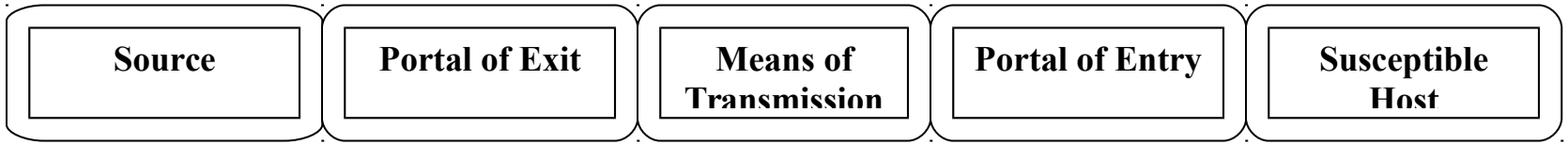


Giardia

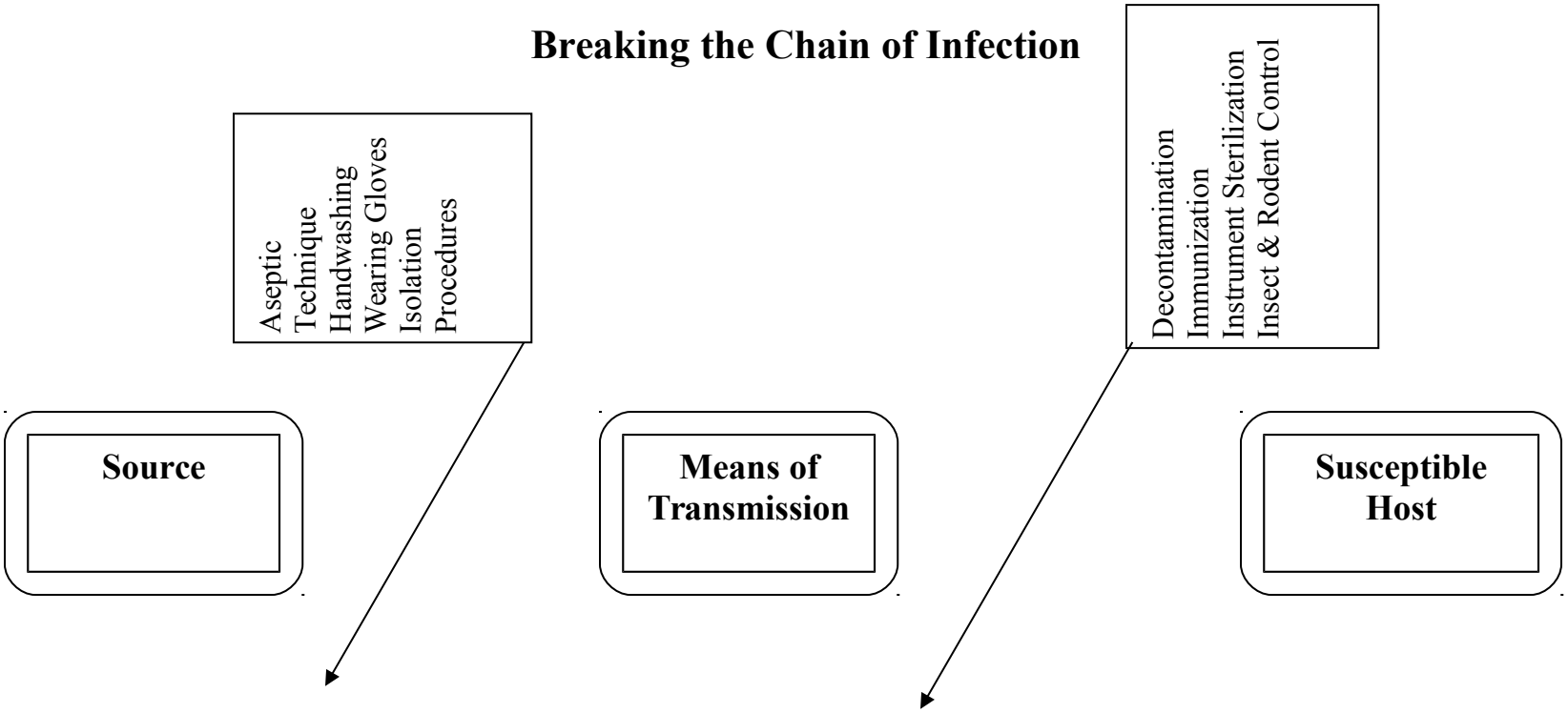


2002 Phlebotomy Model Curriculum - Appendix 4.1 (g)

Chain of Infection



Breaking the Chain of Infection



Biohazard Symbol

2002 Phlebotomy Model Curriculum - Appendix 4.3

NFPA - National Fire Protection Association

Definition

- The National Fire Protection Association, **NFPA**, a private non-profit organization, is the leading authoritative source of technical background, data, and consumer advice on fire protection, problems and prevention. Their web site is http://www.nfpa.org/.

  The primary goal of NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training, and education.

Health Hazard	
4	Very short exposure could cause death or serious residual injury even though prompt medical attention was given.
3	Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.
2	Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
1	Exposure could cause irritation but only minor residual injury even if no treatment is given.
0	Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

Flammability	
4	Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.
3	Liquids and solids that can be ignited under almost all ambient conditions.
2	Must be moderately heated or exposed to relatively high temperature before ignition can occur.
1	Must be preheated before ignition can occur.
0	Materials that will not burn.

Reactivity	
4	Readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.
3	Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation, or reacts explosively with water.
2	Normally unstable and readily undergo violent decomposition but do not detonate. Also: may react violently with water or may form potentially explosive mixtures with water.
1	Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.
0	Normally stable, even under fire exposure conditions, and are not reactive with water.

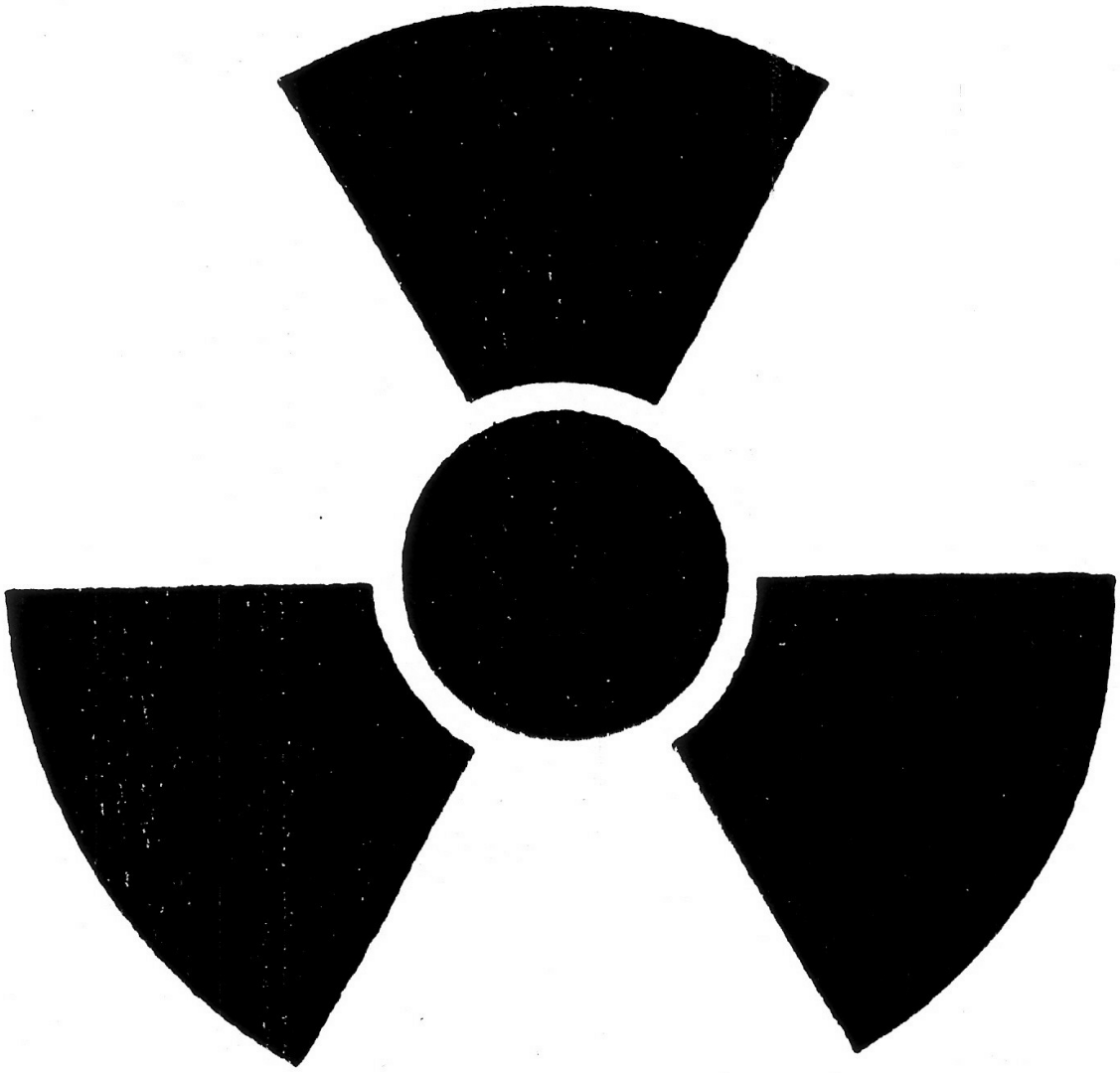
Special Hazards

This section is used to denote special hazards. One of the most common is unusual reactivity with water. The letter **W** with a horizontal line through it (as shown on the left) indicates a potential hazard using water to fight a fire involving this material.

Other symbols, abbreviations or words may appear here to indicate unusual hazards. Some examples include the following (not all of which are necessarily part of the NFPA system):

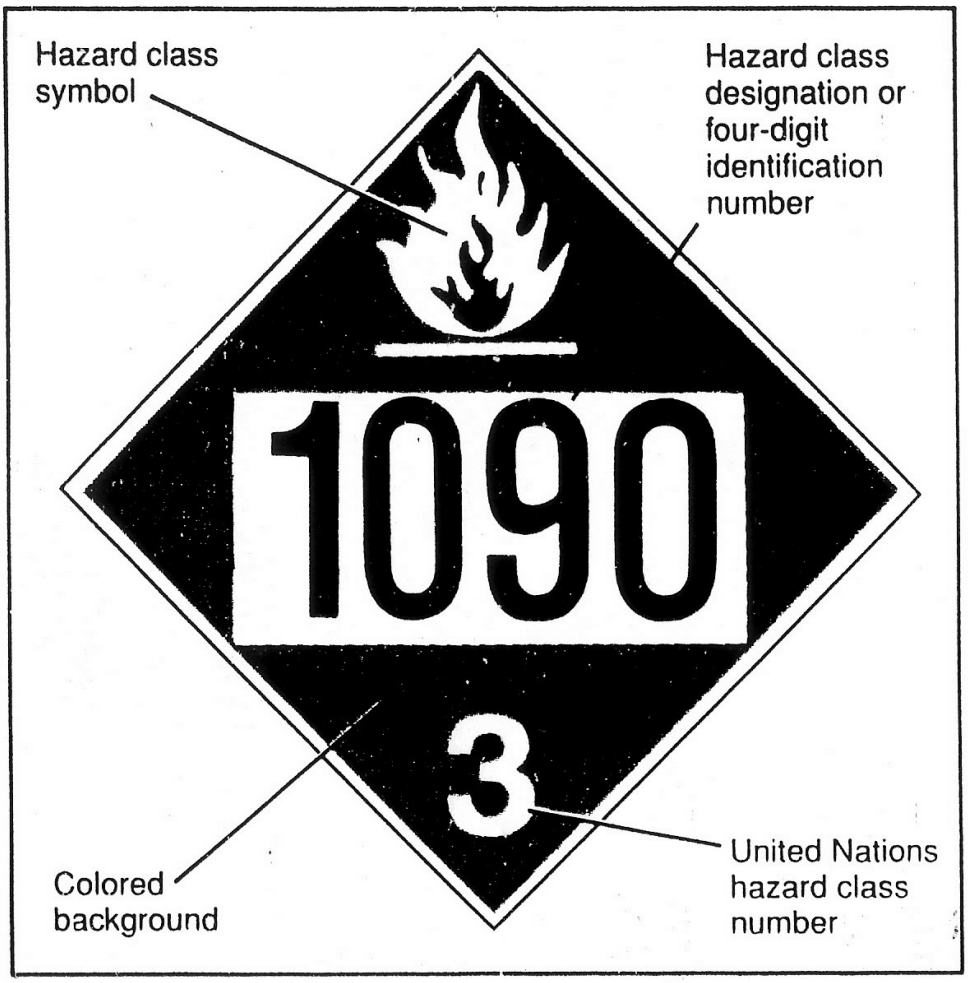
OX	This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.
ACID	This indicates that the material is an acid, a corrosive material that has a pH lower than 7.0
ALK	This denotes an alkaline material, also called a base. These caustic materials have a pH greater than 7.0
COR	This denotes a material that is corrosive (it could be either an acid or a base).
	This is another symbol used for corrosive.

		The skull and crossbones is used to denote a poison or highly toxic material.
		The international symbol for radioactivity is used to denote radioactive hazards; radioactive materials are extremely hazardous when inhaled.
		Indicates an explosive material. This symbol is somewhat redundant because explosives are easily recognized by their Reactivity Rating.



Radiation Hazard Symbol

DOT Hazardous Materials Label



2002 Phlebotomy Model Curriculum - Appendix 4.6

DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only

70% ISOPROPYL ALCOHOL IN WATER

Section 1 - Product and Company Identification
70% ISOPROPYL ALCOHOL IN WATER

Product Identification: 70% ISOPROPYL ALCOHOL IN WATER
Date of MSDS: 05/13/1992 **Technical Review Date:** 02/02/1999
FSC: 6505 **NIIN:** 00-655-8366
Submitter: D DG
Status Code: C
MFN: 03
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: DIAMOND DRUG INC, DBA DIVINA PRODUCTS
Manufacturer's Address1: 278 WASHINGTON AVE
Manufacturer's Address2: WEST HAVEN, CT 06516
Manufacturer's Country: US
General Information Telephone: 203-934-7969
Emergency Telephone: 800-872-7124
Emergency Telephone: 800-872-7124
MSDS Preparer's Name: UNKNOWN
Proprietary: N
Reviewed: Y
Published: Y
CAGE: DIVIN
Special Project Code: N

Item Description

Item Name: ISOPROPYL RUBBING ALCOHOL,USP
Item Manager:
Specification Number: NONE
Type/Grade/Class: NONE
Unit of Issue: BT
Unit of Issue Quantity: 1
Type of Container: GLASS BOTTLE

Contractor Information

Contractor's Name: DIAMOND DRUG INC, DBA DIVINA PRODUCTS
Contractor's Address1: 278 WASHINGTON AVE
Contractor's Address2: WEST HAVEN, CT 06516
Contractor's Telephone: 203-934-7969
Contractor's CAGE: DIVIN

Contractor Information

Contractor's Name: PURITAS HEALTH CARE INC
Contractor's Address1: 76 STONY HILL VILLAGE
Contractor's Address2: BROOKFIELD, CT 06804
Contractor's Telephone: 203-740-2001
Contractor's CAGE: 0P1Z5

Section 2 - Composition/Information on Ingredients
70% ISOPROPYL ALCOHOL IN WATER

Ingredient Name: ISOPROPYL ALCOHOL (SARA III)
Ingredient CAS Number: 67-63-0 **Ingredient CAS Code:** M
RTECS Number: NT8050000 **RTECS Code:** M

=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: UNKNOWN
% Environmental Weight:
Other REC Limits: NONE RECOMMENDED
OSHA PEL: 400 PPM **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 400 PPM/500STEL;9394 **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
70% ISOPROPYL ALCOHOL IN WATER

Health Hazards Acute & Chronic: BURNS AND INJURY DUE TO FIRE AND EXPLOSION, DIRECT LIQUID OR CONCENTRATED VAPOR IN CONTACT WITH EYES. INHALATION OF EXCESSIVE VAPOR OR AEROSOL CONCENTRATION.

Signs & Symptoms of Overexposure:
INHALATION-COUGHING, SHORTNESS OF BREATH, DIZZINESS OR DRUNKENESS. EYES-CAUSES MODERATE BURNING, TEARING AND REDNESS. INGESTION-SWALLOWING MAY RESULT IN TOXIC EFFECTS.

Medical Conditions Aggravated by Exposure:
NOT REPORTED.

LD50 LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN
Route of Entry Indicators:
Inhalation: YES
Skin: YES
Ingestion: YES
Carcinogenicity Indicators
NTP: NO
IARC: NO
OSHA: NO

Carcinogenicity Explanation: THIS PRODUCT IS NOT LISTED BY IARC, NTP OR OSHA AS A CARCINOGEN, MUTAGEN, TERATOGEN OR NEUROTOXIN.

Section 4 - First Aid Measures
70% ISOPROPYL ALCOHOL IN WATER

First Aid:
INHALATION-MOVE VICTIM TO FRESH AIR, ADMINISTER OXYGEN. EYES-FLUSH WITH CLEAN LOW PRESSURE WATER, 15 MINUTES. INGESTION-GIVE 1 PINT WARM WATER, IF COMPLETELY CONSCIOUS IN ALL CASES SEEK EMERGENCY MEDI CAL ATTENTION IMMEDIATELY.

Section 5 - Fire Fighting Measures
70% ISOPROPYL ALCOHOL IN WATER

Fire Fighting Procedures:
DO NOT ENTER FIRE AREA WITHOUT PROPER PROTECTION, USE WATER SPRAY TO COOL FIRE EXPOSED SURFACES AND TO PROTECT PERSONNEL.
Unusual Fire or Explosion Hazard:
RESPIRATORY PROTECTION REQUIRED FOR FIRE DEPT. PERSONNEL RELEASES FLAMMABLE VAPOR WHICH MAY BURN AND EXPLODE.
Extinguishing Media:
DRY CHEMICAL OR ALCOHOL TYPE FOAM. WATER SPRAY MAY BE INEFFECTIVE.
Flash Point: =21.1C, 70.F **Flash Point Text:**
Auto Ignition Temperature: =398.9C, 750.F
Auto Ignition Temperature Text:
Lower Limit(s): 2.0
Upper Limit(s): 12.0

Section 6 - Accidental Release Measures
70% ISOPROPYL ALCOHOL IN WATER

Spill Release Procedures:
RELEASE MAY CAUSE FIRE/EXPLOSION. EXTINGUISH ALL IGNITION SOURCES, HALT, RELEASE, NOTIFY FIRE/WATER SUPPLY POLLUTION CONTROL AUTHORITIES. BLANKET SPILL WITH FOAM TO LIMIT VAPOR EMMISION, MATERIAL IS S OLUBLE, WILL FLOAT. MAY BE TOXIC TO AQUATIC LIFE.

Section 7 - Handling and Storage
70% ISOPROPYL ALCOHOL IN WATER

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
70% ISOPROPYL ALCOHOL IN WATER

Respiratory Protection:
AIR SUPPLIED MASKS WHEN VAPOR CONCENTRATION IS HIGH OR ORANIC VAPOR CONSIST.
Ventilation:
LOCAL EXHAUST AS NECESSARY OR MECHANICAL (GENERAL) EXPLOSION-PROOF VENTILATION EQUIPMENT. NO SMOKING, OPEN LIGHTS.
Protective Gloves:
CHEMICALLY RESISTANT GLOVES.
Eye Protection: CHEMICAL SPLASH GOGGLES.
Other Protective Equipment: NOT APPLIED.
Work Hygienic Practices: NOT APPLICABLE
Supplemental Health & Safety Information: NONE.

Section 9 - Physical & Chemical Properties
70% ISOPROPYL ALCOHOL IN WATER

HCC: F2
NRC/State License Number: N/R
Net Property Weight for Ammo: N/R
Boiling Point: >82.2C, 180.F **Boiling Point Text:**
Melting/Freezing Point: Melting/Freezing Text: N/K
Decomposition Point: Decomposition Text: N/P
Vapor Pressure: N/K **Vapor Density:** N/K
Percent Volatile Organic Content:
Specific Gravity: 0.87
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: UNKNOWN
Evaporation Weight and Reference: N/K
Solubility in Water: COMPLETE
Appearance and Odor: CLEAR, COLORLESS LIQUID WITH MEDICINAL ODOR.
Percent Volatiles by Volume: N/K
Corrosion Rate: UNKNOWNN

Section 10 - Stability & Reactivity Data
70% ISOPROPYL ALCOHOL IN WATER

Stability Indicator: YES
Materials to Avoid:
ALUMINUM METAL KETONES, STRONG OXIDIZER.
Stability Condition to Avoid:
EXPOSURE TO AIR.
Hazardous Decomposition Products:
INCOMPLETE COMBUSTION WILL GENERATE HIGHLY POISONOUS CARBON MONOXIDE AND PERHAPS OTHER GASES.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NONE

Section 11 - Toxicological Information
70% ISOPROPYL ALCOHOL IN WATER

Toxicological Information:
N/P

Section 12 - Ecological Information
70% ISOPROPYL ALCOHOL IN WATER

Ecological Information:
N/P

Section 13 - Disposal Considerations
70% ISOPROPYL ALCOHOL IN WATER

Waste Disposal Methods:
CONSULT A DISPOSAL EXPERT AND ENSURE CONFOMITY TO LOCAL REGULATIONS. CONTAIN SPILLED LIQUID, RECOVER FREE LIQUID WITH SUITABLE ABSORBENT.

Section 14 - MSDS Transport Information
70% ISOPROPYL ALCOHOL IN WATER

Transport Information:
N/P

Section 15 - Regulatory Information
70% ISOPROPYL ALCOHOL IN WATER

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
70% ISOPROPYL ALCOHOL IN WATER

Other Information:
N/P

HMIS Transportation Information

Product Identification: 70% ISOPROPYL ALCOHOL IN WATER
Transportation ID Number: 80820
Responsible Party CAGE: DIVIN
Date MSDS Prepared: 05/13/1992
Date MSDS Reviewed: 07/20/1994
MFN: 07/20/1994
Submitter: D DG
Status Code: C
Container Information
- **Unit of Issue:** BT
- **Container Quantity:** 1
- **Type of Container:** GLASS BOTTLE
- **Net Unit Weight:** 0.9 LBS

Article without MSDS: N
Technical Entry NOS Shipping Number:
Radioactivity: N/R
Form:
Net Explosive Weight: N/R
Coast Guard Ammunition Code:

Magnetism: N/P
AF MMAC Code: NR
DOD Exemption Number: N/R
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information

DOT Proper Shipping Name: ALCOHOLS, N.O.S.
DOT PSN Code: AHF
Symbols:
DOT PSN Modifier:
Hazard Class: 3
UN ID Number: UN1987
DOT Packaging Group: II
Label: FLAMMABLE LIQUID
Special Provision(s): T8,T31
Packaging Exception:
Non Bulk Packaging: 202
Bulk Packaging: 242
Maximum Quantity in Passenger Area: 5 L
Maximum Quantity in Cargo Area: 60 L
Stow in Vessel Requirements: B
Requirements Water/Sp/Other:

IMO Detail Information

IMO Proper Shipping Name: ALCOHOLS, N.O.S. o
IMO PSN Code: AMT
IMO PSN Modifier:
IMDG Page Number: 3175
UN Number: 1987
UN Hazard Class: 3.2
IMO Packaging Group: II
Subsidiary Risk Label: -
EMS Number: 3-06
Medical First Aid Guide Number: 305

IATA Detail Information

IATA Proper Shipping Name: ALCOHOLS, N.O.S. *
IATA PSN Code: ARC
IATA PSN Modifier:
IATA UN Id Number: 1987
IATA UN Class: 3
Subsidiary Risk Class:
UN Packaging Group: II

IATA Label: FLAMMABLE LIQUID
Packaging Note for Passengers: 305
Maximum Quantity for Passengers: 5L
Packaging Note for Cargo: 307
Maximum Quantity for Cargo: 60L
Exceptions: A3

AFI Detail Information

AFI Proper Shipping Name: ALCOHOLS, N.O.S.
AFI Symbols: *
AFI PSN Code: ARF
AFI PSN Modifier:
AFI UN Id Number: UN1987
AFI Hazard Class: 3
AFI Packing Group: II
AFI Label:
Special Provisions: P5
Back Pack Reference: A7.3

HAZCOM Label Information

Product Identification: 70% ISOPROPYL ALCOHOL IN WATER
CAGE: DIVIN
Assigned Individual: N
Company Name: DIAMOND DRUG INC, DBA DIVINA PRODUCTS
Company PO Box:
Company Street Address1: 278 WASHINGTON AVE
Company Street Address2: WEST HAVEN, CT 06516 US
Health Emergency Telephone: 800-872-7124
Label Required Indicator: Y
Date Label Reviewed: 07/20/1994
Status Code: C
Manufacturer's Label Number: N/R
Date of Label: 07/20/1994
Year Procured: N/K
Organization Code: F
Chronic Hazard Indicator: Y
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: WARNING
Health Hazard: Slight
Contact Hazard: Slight
Fire Hazard: Moderate
Reactivity Hazard: None

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