

NFPA 1581

Fire Department Infection Control Program

1991 Edition



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The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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NFPA 1581

Standard on

Fire Department Infection Control Program

1991 Edition

This edition of NFPA 1581, *Standard on Fire Department Infection Control Program*, was prepared by the Technical Committee on Fire Service Occupational Safety and Health and acted on by the National Fire Protection Association, Inc. at its Annual Meeting held May 19-23, 1991 in Boston, MA. It was issued by the Standards Council on July 19, 1991, with an effective date of August 16, 1991.

The 1991 edition of this standard has been approved by the American National Standards Institute.

Origin and Development of NFPA 1581

This document was developed to address measures to provide infection control practices. These practices are necessary for persons providing emergency medical care and who come in contact with potentially infectious victims or other persons in both emergency and nonemergency settings.

The requirements were developed to be compatible with guidelines and regulations from the U.S. Centers for Disease Control and the U.S. Department of Health and Human Services that apply to public safety and emergency response personnel.

The Committee began its work in 1988, and the proposed document was entered into the 1992 Annual Meeting standards cycle.

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NFPA 1581**Standard on****Fire Department Infection Control Program****1991 Edition**

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in Appendix A.

Information on referenced publications can be found in Chapter 6 and Appendix B.

Chapter 1 Administration**1-1 Scope.**

1-1.1 This standard contains minimum requirements for a fire department infection control program.

1-1.2 These requirements are applicable to organizations providing fire suppression, rescue, and other emergency services including public, military, private, and industrial fire departments.

1-1.3 This standard does not apply to industrial fire brigades that also may be known as emergency brigades, emergency response teams, fire teams, or plant emergency organizations.

1-2 Purpose.

1-2.1 The purpose of this standard is to provide minimum criteria for infection control in the fire station, at an incident scene, and at any other area where fire department members are involved in routine or emergency operations.

1-2.2 The requirements in this standard are designed to provide minimum levels of protection for fire department members.

1-2.3 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1-3 Definitions.

Body Fluids. Fluids that the body makes including, but not limited to, blood, semen, mucus, feces, urine, vaginal secretions, breast milk, amniotic fluids, cerebrospinal fluid, synovial fluid, pericardial fluid, and fluids that might contain concentrated HIV or HBV viruses.

Cleaning. The physical removal of dirt and debris. This is generally accomplished with soap and water and physical scrubbing.

Cleaning Gloves. See "Gloves."

Contaminated. Having come in contact with body fluids.

Disease Transmission. The process that includes a sufficient quantity of an infectious agent, such as a virus or bacteria; a mode of transmission, such as blood for HBV and HIV or airborne droplets for tuberculosis; a portal of entry, such as a needle stick injury, abraded skin, or mucous membrane contact; and a susceptible host.

Disinfection. The process used to inactivate virtually all recognized pathogenic microorganisms but not necessarily all microbial forms, such as bacterial endospores. Disinfection is not the same as sterilization.

Emergency Medical Care. The provision of treatment to patients, including first aid, cardiopulmonary resuscitation, basic life support (EMT level), advanced life support (Paramedic level), and other medical procedures that occur prior to arrival at a hospital or other health care facility.

Emergency Medical Operations. Delivery of emergency patient care and transportation prior to arrival at a hospital or other health care facility.

Environmental Surface. Interior patient care areas, both stationary and in vehicles, and other surfaces not designed for intrusive contact with the patient or contact with mucosal tissue.

Exposure. Contact with an infectious agent, such as body fluids, through inhalation, percutaneous inoculation, or contact with an open wound, nonintact skin, or mucous membrane.

Eyewear. See "Splash-Resistant Eyewear."

Fire Department. An organization providing rescue, fire suppression, and related activities. For the purposes of this standard, the term "fire department" shall include any public, private, or military organization engaging in this type of activity.

Fire Department Member. See "Member."

Fluid-Resistant Clothing. Clothing that provides a barrier against splashing or spraying of body fluids or other potentially infectious material.

Gloves.

Cleaning gloves: Gloves that provide limited protection from abrasion, cuts, snags, and punctures during cleaning and that are designed to provide a barrier against body fluids and disinfectants.

Medical gloves: Gloves that are designed to provide a barrier against body fluids meeting the requirements of ASTM D 3578, *Standard Specification for Rubber Examination Gloves (non-sterile)*.

Structural fire fighting gloves: Gloves meeting the requirements of NFPA 1973, *Standard on Gloves for Structural Fire Fighting*.

Health Data Base. A compilation of records and data relating to the health experience of a group of individuals, maintained in a manner such that it is retrievable for study and analysis over a period of time.

Immunization. The process or procedure by which a person is rendered immune.

Industrial Fire Department. An organization similar to municipal fire departments providing fire suppression, rescue, and related activities but that is intended for service at a single profit, nonprofit, or governmental facility including such occupancies as industrial, commercial, mercantile, warehouse, and institutional. The industrial fire department is generally trained and equipped for specialized operations based on site specific hazards present at the facility.

Infection Control Liaison. The person or persons within the fire department who are responsible for coordinating efforts surrounding the investigation of an exposure.

Leakproof Bags. Bags that are sufficiently sturdy to prevent tearing or breaking and can be sealed securely to prevent leakage. Such bags are red in color or display the universal biohazard symbol.

Medical Gloves. See "Gloves."

Medical Waste. Items to be disposed of that have been contaminated with human waste, blood, or body fluids; or human waste, human tissue, blood, or body fluids for which special handling precautions are necessary.

Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. For the purposes of this standard, a fire department member may be a full-time or part-time employee, a paid or unpaid volunteer, may occupy any position or rank within the fire department, and may or may not engage in emergency operations.

Mucous Membrane. A moist layer of tissue that lines the mouth, eyes, nostrils, vagina, anus, or urethra.

Needle. A slender, usually sharp, pointed instrument used for puncturing tissues, suturing, drawing blood, or passing a ligature around an artery.

Patient. An individual, living or dead, whose body fluids, tissues, or organs may be a source of exposure to the member.

Pocket Mask. A double lumen device that is portable, pocket-size, and designed to protect the emergency care provider from direct contact with the mouth/lips or body fluids of a patient while performing artificial respiration.

Protective Clothing. Garments primarily intended for structural fire fighting and rescue operations including, but not limited to, coat, trousers, gloves, hoods, footwear, and helmets.

Resuscitation Equipment. Respiratory assist devices such as bag-valve masks, oxygen demand valve resuscitators, pocket masks, and other ventilation devices that are designed to provide artificial respiration or assist with ventilation of a patient.

Shall. Indicates a mandatory requirement.

Sharps Containers. Containers that are closable, puncture-resistant, disposable, leakproof on the sides and bottom, that are red in color or display the universal biohazard symbol and that are designed to store sharp objects after use.

Should. This term, as used in the Appendix, indicates a recommendation or that which is advised but not required.

Splash-Resistant Eyewear. Safety glasses, prescription eyewear, goggles, or chin-length face shields that, when properly worn, provide limited protection against splashes, spray, spatter, droplets, or aerosols of body fluids or other potentially infectious material.

Sterilization. The destruction of all microorganisms in or about an object, as by steam, chemical agents, high-velocity electron bombardment, or ultraviolet light radiation.

Structural Fire Fighting Gloves. See "Gloves."

Chapter 2 Program Components

2-1 Policy.

2-1.1* The fire department shall have a written infection control policy with the goal of identifying and limiting the exposure of members to infection during the performance of their assigned duties and in the fire department working and living environment.

2-1.2 As part of the overall fire department safety and health program, the fire department shall implement an infection control program that meets the requirements of this standard.

2-1.3 The fire department shall provide for the cleaning and disinfection or disposal of contaminated protective clothing and equipment, station/work uniforms, other clothing, and emergency medical equipment.

2-1.4 Members with infections that constitute, in the course of performing their duties, a risk of infection to patients or other members shall be evaluated by a physician to determine what functions the member can perform.

2-1.5 Members with extensive skin lesions or severe dermatitis on hands, arms, head, face, or neck shall not engage in direct patient contact, handle patient care equipment, or handle medical waste.

2-2 Training and Education.

2-2.1* The fire department shall conduct training and education programs for all members who are involved in emergency medical operations on infectious diseases that pose a potential occupational health risk.

2-2.2 The training program shall include proper use of personal protective equipment, standard operating procedures for safe work practices in infection control, proper methods of disposal of contaminated articles and medical waste, and exposure management and medical follow-up.

2-2.3 The education program shall provide information on epidemiology, modes of transmission, and prevention of diseases including, but not limited to, meningitis, childhood communicable diseases, herpes viruses, hepatitis A,

hepatitis B, hepatitis non-A/non-B or hepatitis C, human immunodeficiency virus, tuberculosis, lice, and scabies. Information on applicable government regulations shall also be provided.

2-2.4 Members that engage in emergency medical operations shall be educated in the potential reproductive health risks to the individual as well as to the fetus.

2-3 Infection Control Liaison.

2-3.1 The fire department shall designate one or more members or other qualified persons as the infection control liaison.

2-3.2 The infection control liaison shall be responsible for maintaining communications among the fire department, the health care facility, and other appropriate health care professionals.

2-3.3 When notified of an exposure, the infection control liaison shall investigate the incident, notify all members who were potentially exposed, and ensure that those members receive appropriate medical follow-up. The infection control liaison shall also ensure that proper documentation of the exposure is recorded as specified in Section 2-5 of this standard.

2-4 Immunization and Testing.

2-4.1* The fire department shall make available or ensure that members have access to an appropriate immunization program, including vaccination against hepatitis B.

2-4.2 The fire department shall ensure that all members have adequate immunity, as determined through consultation with a physician, to tetanus, diphtheria, rubella, measles, polio, mumps, and influenza.

2-4.3 The fire department shall make available or ensure that members have access to tuberculosis screening at least annually.

2-5 Exposures.

2-5.1 If a member has sustained an exposure, the exposed area shall be thoroughly washed immediately using water on mucosal surfaces, and soap and running water on skin surfaces. If soap and running water are not available, alcohol or other skin cleaning agents that do not require running water shall be used until soap and running water can be obtained.

2-5.2 The fire department shall have an established procedure for members to report an exposure immediately and for the infection control liaison to be notified within 3 hr of the exposure.

2-5.3* The fire department shall ensure that a member who has sustained an exposure receives medical guidance, evaluation, and, where appropriate, treatment as soon as practical but at least within 48 hr. Appropriate, confidential, postexposure counseling and testing shall be made available.

2-5.4* All exposures shall be recorded in writing as soon as possible after the incident using a standardized form designed to allow for efficient follow-up. Included in the

record shall be a description of the tasks being performed when the exposure occurred, the means of transmission, the portal of entry, the infection control garments and equipment utilized, and the disposition of medical management.

2-5.5 The record of exposure form shall become part of the member's confidential permanent health file as specified in Section 8-2 of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

2-5.6 A complete record of the member's exposures shall be available to the member upon request.

2-5.7 Exposure data, without personal identifiers, shall also be added to the fire department health data base as specified in 8-2.2 of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

2-5.8 Due to the hazardous nature of some communicable diseases, members shall be required to report to the infection control liaison when the member has received a confirmed exposure that has occurred off-duty or is being medically treated or tested due to presenting signs or symptoms. Verbal notification shall be followed up with a note or letter from the member's physician describing the disease exposed to, treatment required, and fitness for regular fire department duties relative to communicability hazard to fellow workers and civilians at emergency incidents.

Chapter 3* Fire Department Facilities

3-1 Facilities for Disinfecting.

3-1.1* Fire departments that provide emergency medical operations shall provide or have access to disinfecting facilities for the cleaning and disinfecting of emergency medical equipment. Medical equipment shall only be disinfected at a fire station when a disinfecting facility that meets the requirements of this section is provided. Disinfection shall not be conducted in fire station kitchen, living, sleeping, or personal hygiene areas.

3-1.2 Disinfecting facilities in fire stations shall be properly lighted, vented to outside environment, fitted with floor drains connected to a sanitary sewer system, and designed to prevent contamination of other fire station areas.

3-1.3 Disinfecting facilities shall contain a minimum of 2 sinks with hot and cold water faucets and a sprayer attachment, and with drains connected to a sanitary sewer system. Sink faucets shall not require the user to grasp, with hands, to turn on or off. All surfaces shall be nonporous material with continuous molded counter top and splash panel surfaces.

3-1.4 Disinfecting facilities shall be equipped with rack shelving of nonporous material. Shelving shall be provided above sinks for drip-drying of cleaned equipment. All drainage from shelving shall either go into a sink or drain directly into a sanitary sewer system.

3-2 Cleaning Areas.

3-2.1 A designated cleaning area shall be provided in each fire station for the cleaning and disinfecting of protective clothing, protective equipment, portable equipment,

and other clothing. This cleaning area shall have proper ventilation, lighting, and drainage connected to a sanitary sewer system.

3-2.2 The designated cleaning area shall be physically separate from areas used for food preparation, cleaning of food and cooking utensils, personal hygiene, sleeping, and living areas, and shall be physically separate from the emergency medical disinfecting facility.

3-3 Storage Areas.

3-3.1* Emergency medical supplies and equipment stored in fire stations, other than that stored on vehicles, shall be stored in a dedicated, enclosed room protected from the outside environment.

3-3.2 Protective clothing and protective equipment stored in fire stations shall be stored in a dedicated, well-ventilated area or room.

3-3.3 Reusable emergency medical supplies and equipment, protective clothing, and protective equipment shall not be stored in kitchen, living, sleeping, or personal hygiene areas, nor shall it be stored in personal clothing lockers.

Chapter 4 Emergency Medical Operations Protection

4-1 Personnel.

4-1.1 Prior to any contact with patients, members shall cover all areas of abraded, lacerated, chapped, irritated, or otherwise damaged skin with adhesive dressings, provided the member is not constrained by the requirements of 2-1.5 of this standard.

4-1.2* Any member who has skin contact with body fluids shall thoroughly wash the exposed area immediately using water or saline on mucosal surfaces and soap and running water on skin surfaces. If soap and running water are not available, alcohol or other skin cleaning agents that do not require running water shall be used until soap and running water can be obtained.

4-2 Infection Control Garments and Equipment.

4-2.1 Medical gloves shall be single-use, disposable, and meet the requirements of ASTM D 3578, *Standard Specification for Rubber Examination Gloves (non-sterile)*.

4-2.2 Members engaging in any emergency patient care shall don medical gloves prior to initiating such care due to the variety of diseases, modes of transmission, and unpredictable nature of the work environment. Medical gloves shall be a standard component of emergency response equipment.

4-2.3 Medical gloves shall be removed as soon as possible after the termination of patient care, taking care to avoid skin contact with glove exterior surface and shall be disposed of in accordance with 5-5.2 of this standard. Hands shall be washed as specified in 5-1.3 of this standard following removal of medical gloves.

4-2.4 Structural fire fighting gloves shall meet the requirements of NFPA 1973, *Standard on Gloves for Structural Fire Fighting*.

4-2.5 Structural fire fighting gloves shall be worn by members in any situation where sharp or rough surfaces are likely to be encountered, such as victim extrication.

4-2.6 Cleaning gloves shall be reusable, heavy-duty, mid-forearm length, and designed to provide limited protection from abrasions, cuts, snags, and punctures, and provide a barrier against body fluids and disinfectants.

4-2.7 Cleaning gloves shall be worn by members during cleaning or disinfecting of clothing or equipment involved in emergency medical operations.

4-2.8 Members shall not eat, drink, smoke, apply cosmetics or lip balm, or handle contact lenses while wearing gloves.

4-2.9 Masks, splash-resistant eyewear, and fluid-resistant clothing shall be present on all fire department vehicles that provide emergency medical operations. Prior to any patient care situations during which large splashes of body fluids can occur, such as situations involving spurting blood or childbirth, masks, splash-resistant eyewear, and fluid-resistant clothing shall be donned by the members who will be providing treatment.

4-2.10 Resuscitation equipment, including pocket masks, shall be available on all fire department vehicles that provide emergency medical operations. This equipment shall be used by members performing airway management.

4-3 Handling of Sharp Objects.

4-3.1 All members shall take precautions during procedures to prevent injuries caused by needles, scalpel blades, and other sharp instruments or devices.

4-3.2 All used sharp objects, such as needles, scalpels, catheter stylets, and other contaminated sharp objects, shall be considered infectious and shall be handled with extraordinary care.

4-3.3 Needles shall not be recapped, bent, or broken. Following use, all sharp objects shall be immediately placed in sharps containers. These sharps containers shall be in all patient transport vehicles and readily available in such areas as drug boxes, trauma kits, and IV kits.

Chapter 5 Cleaning, Disinfecting, and Disposal

5-1 Skin Washing.

5-1.1 Skin surfaces that were not covered by clothing, protective clothing or equipment, or infection control garments shall be washed after providing emergency patient care.

5-1.2 Hands shall be washed after each emergency medical incident, after cleaning and disinfecting emergency medical equipment, after cleaning protective clothing or equipment, after any cleaning function, before and after using the bathroom, before and after handling food or cooking and food utensils, and before and after handling cleaned and disinfected emergency medical equipment.

5-1.3* Hands and contaminated skin surfaces shall be washed with soap and water by lathering the skin and vigorously rubbing together all lathered surfaces for at least 10 sec, followed by thorough rinsing under running water.

5-2 Disinfectants.

5-2.1* All disinfectants shall be approved by and registered with the U.S. Environmental Protection Agency and shall also be registered as tuberculocidal.

5-2.2 Care shall be taken in the use of all disinfectants. Members shall be aware of the flammability and reactivity of disinfectants and shall follow the manufacturer's instructions. Disinfectants shall only be used with adequate ventilation and while wearing appropriate infection control garments and equipment including, but not limited to, cleaning gloves, splash-resistant eyewear, and aprons.

5-2.3 Disinfecting shall take place in the designated disinfecting facility as specified in Section 3-1 of this standard.

5-3 Emergency Medical Equipment.

5-3.1 When emergency medical equipment cleaning is performed by members, it shall take place in the designated disinfecting facility as specified in Section 3-1 of this standard, and appropriate protective infection control garments and equipment shall be available.

5-3.2 Dirty or contaminated emergency medical equipment shall not be cleaned or disinfected in fire station kitchen, living, sleeping, or personal hygiene areas.

5-3.3 Infection control garments and equipment for cleaning and disinfecting shall include splash-resistant eyewear, medical gloves, and fluid-resistant clothing. Infection control garments and equipment shall be used whenever there is a potential for exposure to body fluids or potentially infectious material during cleaning.

5-3.4 Prior to cleaning, dirty or contaminated emergency medical equipment shall be stored, separated from cleaned and disinfected emergency medical equipment.

5-3.5 Disinfectants meeting the requirements specified in 5-2.1 of this chapter shall be used. The disinfectant manufacturer's use instructions shall be followed.

5-3.6 Dirty or contaminated run-off from emergency medical equipment and cleaning and disinfecting solutions shall be disposed of into a sanitary sewer system.

5-3.7 Metal, electronic equipment, and emergency medical equipment shall be cleaned in a manner appropriate for the equipment and then disinfected. Only disinfectants that are chemically compatible with the equipment to be disinfected and that meet the requirements specified in 5-2.1 of this chapter shall be used. The disinfectant manufacturer's use instructions shall be followed.

5-3.8* Reusable emergency medical equipment that comes in contact with mucous membranes shall require cleaning and a high-level disinfection or sterilization after each use. The medical equipment manufacturer's instructions shall be followed.

5-3.9* Environmental surfaces shall be cleaned in a manner appropriate for the surface and then disinfected. Only disinfectants that are chemically compatible with the surface to be disinfected and that meet the requirements specified in 5-2.1 of this chapter shall be used. The disinfectant manufacturer's use instructions shall be followed.

5-4 Clothing.

5-4.1* All protective clothing shall be inspected and cleaned regularly.

5-4.2 Cleaning or disinfecting of contaminated protective clothing, station/work uniforms, or other clothing shall take place in the proper area as specified in either Section 3-1 or Section 3-2 of this standard. To avoid the possibility of spreading infectious diseases by cross-contamination, contaminated protective clothing, station/work uniforms, or other clothing shall not be taken home.

5-4.3* Protective coats, protective trousers, and structural fire fighting gloves shall be cleaned and dried according to the manufacturer's instructions at least every 6 months. Chlorine bleach or cleaning agents containing chlorine bleach shall not be used.

5-4.4* Station/work uniforms and protective footwear shall be cleaned and dried according to the manufacturer's instructions as needed. Chlorine bleach or cleaning agents containing chlorine bleach shall not be used.

5-4.5 When protective clothing, station/work uniforms, or other clothing is contaminated, it shall be cleaned as soon as possible.

5-4.5.1 Small stains from body fluids shall be permitted to be spot cleaned and then disinfected. The stain shall initially be cleaned with a mild detergent and water. The affected area shall then be disinfected only with disinfectants that are chemically compatible with the clothing. Disinfectants

shall meet the requirements specified in 5-2.1 of this chapter. The disinfectant manufacturer's use instructions shall be followed.

5-4.5.2 Clothing that is contaminated with large amounts of body fluids shall be placed in leakproof bags, sealed, and transported for proper cleaning or disposal.

5-5* Disposal of Materials.

5-5.1 Sharps containers shall be disposed of following applicable federal, state, and local regulations.

5-5.2 Contaminated disposable medical supplies and equipment, contaminated disposable infection control garments, and contaminated wastes shall be placed in leakproof bags, sealed, and disposed of as medical waste.

5-5.2.1 If the exterior of the leakproof bag is contaminated, another bag shall be added.

5-5.3 Noncontaminated disposable medical supplies and equipment, noncontaminated disposable infection control garments, and noncontaminated wastes shall be permitted to be collected in closable waste containers and shall be disposed of properly. Such waste collection containers shall not be located in any fire station kitchen, living, or sleeping areas.

5-5.4 When it has been determined by the infection control liaison that normally nondisposable items cannot be disinfected, they shall be placed in leakproof bags, sealed, and disposed of as medical waste.

5-6 Linen.

5-6.1 Contaminated linen shall be placed in a leakproof bag and sealed at the location where it was used, and shall be transported for proper cleaning or disposal.

Chapter 6 Referenced Publications

6-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference shall be the current edition as of the date of the NFPA issuance of this document.

6-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1987 edition

NFPA 1973, *Standard on Gloves for Structural Fire Fighting*, 1988 edition

6-1.2 ASTM Publication. American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D 3578, *Standard Specification for Rubber Examination Gloves (non-sterile)*, 1988

Appendix A

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

A-2-1.1 Sample Policy Statements.

Example 1: The _____ Fire Department recognizes the potential exposure of its fire fighters, in the performance of their duties, to communicable diseases. To minimize the risk of exposure, the _____ Fire Department will implement an infection control program.

The infection control program will include standard operating procedures, initial training and continuing education in infection control practices, a vaccination program, the provision of proper infection control clothing and equipment, decontamination procedures for clothing and equipment, procedures for the disposal of medical waste, a system for reporting and managing exposures, a system for tracking exposures and ensuring confidentiality, monitoring of compliance with the standard operating procedures, the design of fire department facilities to minimize risk of infection, and a public information campaign.

Finally, exposure to communicable disease shall be considered an occupational health hazard, and any communicable disease contracted as the result of a documented workplace exposure shall be considered occupationally related.

Example 2: The _____ Fire Department recognizes the potential exposure of its members to communicable diseases in the performance of their duties and in the normal work environment. The _____ Fire Department is committed to a program that will reduce this exposure to a minimum and will take whatever measures are feasible to protect the health of its members.

In the emergency care setting, the infectious disease status of patients is frequently unknown by fire department personnel. All patients must be considered infectious. Blood and body fluid precautions must be taken with all patients.

To minimize the risk of exposure, the _____ Fire Department will provide its members with proper infection control protective equipment including disposable medical gloves, face masks, gowns, and eye-wear and will provide necessary cleaning and disinfecting supplies. The _____ Fire Department will also provide initial instruction and continuing education in preventative health care practices so that fire fighters possess a basic awareness of infectious diseases, understand the risks and severity of various types of exposures, and exhibit proper skills in infection control.

Standard prophylactic medical treatment will be given to exposed members, and necessary immunizations will be made available to protect members from potential exposure to infectious disease.

_____ Fire Department members will contact the fire department infection control representative after any actual or suspected exposure to a contagious disease. The infection control representative will contact the hospital to initiate patient follow-up and determine the need for treatment of the exposed individual. A contagious disease exposure tracking system is a component of the medical records system that is maintained for each member.

The _____ Fire Department believes that its members have the right to be fully informed if a patient is found to carry a communicable disease and if a probable exposure occurred. The responsibility for informing the _____ Fire Department should rest with the medical institution receiving the patient and should occur as soon as possible after the medical institution becomes aware of the condition.

The _____ Fire Department also recognizes the health concerns that may be involved in the station work environment, where a number of members share living quarters and work areas and, in some cases, use the same equipment. There is a particular need to isolate this environment from the infectious hazards that members may encounter in providing emergency care to the general public. There is also a need to provide facilities and equipment that do not expose members to additional health risks. This also extends to preventing the spread of health risks encountered in the work environment to a member's home, family, and friends.

The _____ Fire Department also believes that infectious disease exposure should be considered an occupational health hazard and supports the presumption that contracting a contagious disease should be considered an occupationally related condition.

Therefore, the _____ Fire Department hereby adopts NFPA 1581, *Standard on Fire Department Infection Control Program*.

It is possible that an existing program or policy may satisfy the requirements of this standard; if so, they may be adopted in whole or in part, in order to comply with this standard. An example of such an existing policy or program may be a corporate infection control program or an employee immunization program.

A-2-2.1 For infectious disease training guidelines, consult: *A Curriculum Guide for Public Safety and Emergency Response Workers, Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus*, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, February 1989.

A-2-4.1 Paragraph 8-3.1 of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, states: "The fire department shall actively attempt to identify and limit the exposure of members to contagious diseases in the performance of their assigned duties. When appropriate, inoculations, vaccinations, and other treatments shall be made available."

U.S. Department of Labor/Occupational Safety and Health Administration (OSHA) issued OSHA Instruction CPL 2-2.44B, *Enforcement Procedures for Occupational Expo-*

sure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) on 27 February 1990. This document, based upon *Guidelines for Prevention of Transmission of HIV and HBV to Health Care and Public Safety Workers* (issued by the Centers for Disease Control (CDC) in February 1989), states that all employees at substantial risk of directly contacting body fluids "... shall be offered hepatitis B vaccinations free of charge in amounts and at times prescribed by standard medical practices."

It is a legal responsibility of employers to provide appropriate safeguards for health care workers and public safety personnel who may be exposed to infectious diseases. Fire fighters, emergency medical technicians, and paramedics in states with federally approved state OSHA plans are covered under this advisory notice.

The U.S. Fire Administration (USFA), in the report, *Second Forum on Communicable Diseases*, recommends that all emergency response personnel be immunized against all vaccine-preventable diseases, in accordance with the CDC Immunization Practices Advisory Committee guidelines.

A-2-5.3 For appropriate postexposure guidelines, consult: The Department of Labor/The Department of Health and Human Services Joint Advisory Notice, *Protection against Occupational Exposure to the Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV)*, October 1987; *Guideline for Prevention of Transmission of HIV and HBV to Health Care and Public Safety Workers*, February 1989; and *Guideline for Infection Control in Hospital Personnel*, by Walter Williams, M.D., MPH, Hospital Infection Program, Center for Infectious Disease, Centers for Disease Control, Atlanta, Georgia.

For guidance on postexposure counseling consult: "Public Health Service Guidelines for Counseling and Anti-Body Testing to Prevent HIV Infection and AIDS," *Morbidity and Mortality Weekly Review*, Centers for Disease Control, 36: 509-515, 1987.

A-2-5.4 Record keeping should be done in accordance with the requirements of the DOL/HHS Joint Advisory Notice, *Protection Against Occupational Exposure to HBV and HIV*; October 1987.

Figure A-2-5.4 is an example of a report form.

A-3 The following are recommendations to be considered when building new fire stations or conducting major renovations on existing stations that would include these areas.

Bathrooms.

- Doors for egress from bathrooms should not require a pulling or sideward motion by user to gain egress.
- Bathroom sink faucets should not require user to grasp faucets, with hands, to turn on or off.
- All bathroom hand-drying materials should be of the disposable type.
- The flush valve on toilets and urinals should be of a foot operated or electric eye type that does not require the use of hands to operate.

**FIRE DEPARTMENT
INFECTIOUS EXPOSURE FORM**

Exposed Member's Name _____ Rank: _____

Soc. Sec. #: _____ Home Phone: _____

Field Inc. #: _____ Shift: _____ Company: _____ District: _____

Name of Patient: _____ Sex: _____

Age: _____ Address: _____

Suspected or Confirmed Disease: _____

Transported to: _____

Transported by: _____

Date of Exposure: _____ Time of Exposure: _____

Type of Incident (auto accident, trauma): _____

What were you exposed to:

Blood _____ Tears _____ Feces _____ Urine _____ Saliva _____

Vomit _____ Sputum _____ Sweat _____ Other _____

What part(s) of your body became exposed? Be specific: _____

Did you have any open cuts, sores, or rashes that became exposed? Be specific: _____

How did exposure occur? Be specific: _____

Did you seek medical attention? _____ yes _____ no

Where? _____ Date: _____

Contact Infection Control Officer: Date _____ Time: _____

Supervisor's Signature: _____ Date: _____

Member's Signature: _____ Date: _____

Figure A-2-5.4.

Kitchens.

- Where kitchens are provided, they should be equipped with at least a sink with a double basin or two sinks. A sprayer attachment should be provided.
- Sinks, adjacent dish drainage areas, splash guards, shelving, and countertops should be of a nonporous material.
- Refrigerators with freezers should be adequate to keep food in freezer at 0°F (−18°C) and cold storage of 38°F (3°C).
- Dishwashers should be provided and used in all kitchens.
- Hot water should be provided that is heated to at least 140°F (60°C).
- Cutting boards should be constructed of nonporous material.

Sleeping Areas.

- Where dormitories or other sleeping areas are provided, there should be a minimum of 60 sq ft (18.3 m²), with a minimum width of 7 ft (2.13 m), for each bed location.
- Separate bedding lockers should be provided for each member requiring a bed.
- Personal clothing lockers should be provided for each member requiring a bed.

General.

Fire stations should be provided with washing machines and dryers for washing protective clothing, station/work uniforms, and other clothing soiled while doing fire department work. Commercial models of washers and dryers (front loading washers) are recommended to prevent agitator damage to clothing.

A-3-1.1 Where the fire department only provides first aid and cardiopulmonary resuscitation emergency medical operations, there should be at least 1 disinfecting room available. Where the fire department provides basic life support or advanced life support emergency medical operations, there should be a disinfecting room in each fire station from where such services are provided.

A-3-3.1 Room temperature should be maintained between 68°F and 90°F (20°C and 32°C).

A-4-1.2 If germicidal agents are readily available they can be used in lieu of soap when washing skin surfaces.

A-5-1.3 For information regarding handwashing, the following publication is recommended: *Guideline for Handwashing and Hospital Environmental Control*, 1985, revised by Julia S. Garner, R.N., M.N. and Martin S. Favero, PhD, Hospital Infection Program, Centers for Disease Control, Atlanta, Georgia.

A-5-2.1 To obtain a list of disinfectants that are registered with the U.S. Environmental Protection Agency (EPA) that are listed as tuberculocidal, contact the EPA, Office of Pesticides and Toxic Substances, Registration Branch/Antimicrobial Branch, 703-557-3661.

A-5-3.8 Disinfection and Sterilization Methods for Equipment Used in Emergency Medical Operations.*Sterilization*

- Destroys:** All forms of microbial life including high numbers of bacterial spores.
- Methods:** Steam under pressure (autoclave), gas (ethylene oxide), dry heat, or immersion in an EPA-approved chemical sterilant for a prolonged period of time (e.g., 6–10 hr) or according to manufacturers' instructions. Liquid chemical sterilants should be used only on those instruments that are impossible to sterilize or disinfect with heat.
- Use:** For those instruments or devices that penetrate skin or contact normally sterile areas of the body (e.g. scalpels, needles, etc.). Disposable invasive equipment eliminates the need to sterilize these types of items. When indicated, however, arrangements should be made with a health care facility for sterilization of reusable invasive instruments.

High-Level Disinfection

- Destroys:** All forms of microbial life except high numbers of bacterial spores.
- Methods:** Hot water pasteurization [176°F–212°F (80°C–100°C) for 30 min] or exposure to an EPA-registered sterilant as above, except for a short exposure time (e.g., 10–45 min) or according to manufacturers' instructions.
- Use:** For reusable instruments or devices that come into contact with mucous membranes (e.g., laryngoscope blades, endotracheal tubes, etc.).

Intermediate-Level Disinfection

- Destroys:** Mycobacterium tuberculosis, vegetative bacteria, most viruses, and most fungi but does not kill bacterial spores.
- Methods:** EPA-registered hospital disinfectant, chemical-germicides that have a label claim for tuberculocidal activity; commercially available hard-surface germicides or solutions containing at least 500 ppm free available chlorine (a 1:100 dilution of common household chlorine bleach—approximately ¼ cup of chlorine bleach per gallon of tap water).
- Use:** For those surfaces that come into contact only with intact skin (e.g., stethoscopes, blood pressure cuffs, splints, etc.) and have been visibly contaminated with body fluids. Surfaces must be precleaned

of visible material before the germicidal chemical is applied for disinfection.

Low-Level Disinfection

- Destroys:** Most bacteria, some viruses, some fungi, but not *Mycobacterium tuberculosis* or bacterial spores.
- Methods:** EPA-registered hospital disinfectants (no label claim for tuberculocidal activity).
- Use:** These agents are excellent cleaners and can be used for routine housekeeping or removal of soiling in the absence of visible body fluid contamination.

Environmental Disinfection

Environmental surfaces that have become soiled should be cleaned and disinfected using any cleaner or disinfectant agent that is intended for environmental use. Such surfaces include floors, woodwork, ambulance seats, countertops, etc.

IMPORTANT

To assure the effectiveness of any sterilization or disinfection process, equipment and instruments must first be thoroughly cleaned of all visible soil.

A-5-3.9 A 1:100 dilution of household chlorine bleach (5.25 percent sodium hypochlorite) to water can be used as a general surface disinfectant; however, it is corrosive to metal and may interfere with the function of electronic equipment. (See also A-5-3.8.)

A-5-4.1 Clean protective clothing reduces health and safety risks. It is recommended that clothing be cleaned frequently to reduce the level of, and bodily contact with, contaminants. User agencies should establish guidelines for frequency and situations for garment cleaning. For gross contamination with products of combustion, fire debris, or body fluids, removal of contaminants by flushing with water as soon as practical is necessary, followed by appropriate cleaning.

Decontamination may not be possible when protective clothing is contaminated with chemical, radiological, or biological agents. When decontamination is not possible, garments should be discarded in accordance with local, state, and federal regulations.

A-5-4.3 Some components of these garments are inherently flame resistant but lose their physical integrity on exposure to chlorine bleach. Other components will actually lose their flame-resistant properties and thermal insulation on exposure to chlorine bleach. In either case, the protection provided by the garment will be compromised.

There are industrial cleaning products and facilities available for protective clothing that the user may wish to investigate. Contact your protective clothing manufacturer for additional information. Where not explicitly outlined by the manufacturer, the following procedures are recommended for cleaning fire fighter protective clothing.

A-5-4.4 Some components of these garments are inherently flame resistant but lose their physical integrity on exposure to chlorine bleach. Other components will actually lose their flame-resistant properties and thermal insulation on exposure to chlorine bleach. In either case, the protection provided by the garment will be compromised.

There are industrial cleaning products and facilities available for protective clothing that the user may wish to investigate. Contact your protective clothing manufacturer for additional information. Where not explicitly outlined by the manufacturer, the following procedures are recommended for cleaning fire fighter protective clothing.

Cleaning Procedures for Structural Fire Fighting Protective Clothing

Section 1 Washing Instructions

Protective clothing should be washed separately from other garments. All hooks and eyes should be fastened and the garment turned inside out or placed in a large laundry bag that can be tied shut to avoid damage to the wash tub. A stainless steel tub should be utilized if available.

These instructions can be used for cleaning any of the following wash loads in a large capacity (16-gal) top loading or front loading washing machine.

- (a) One protective coat and one protective trouser
- (b) Two protective coats
- (c) Two protective trousers.

Prior to washing, heavily soiled garments should be pretreated using procedures outlined in Section 2.

1. While the washing machine is filling with hot water [temperature between 120°F and 130°F (49°C and 55°C)] add ½ cup (4 oz) of liquid oxygenated bleach (do not use chlorine bleach) and 1 cup (8 oz) of liquid detergent. These products are readily available in supermarkets around the country.

2. Fill washing machine to highest water level.

3. Add garments to be washed.

4. Set washing machine for normal cycle, cotton/white, or similar setting.

5. Machine should be programmed for double rinse. If the machine will not automatically double rinse, a complete second cycle can be run without adding detergent or oxygenated bleach. Double rinsing helps remove any residual dirt and ensures detergent removal.

6. Remove garments from washing machine and dry by hanging in a shaded area that receives a good cross ventilation, or hang on a line and use a fan to circulate the air. A water extractor may be utilized.

Section 2 Spot Cleaning and Pretreating

Spot Cleaning. Precleaners can be used to clean light spots and stains on protective clothing. Squirt precleaner one or two times onto the soiled areas. Gently rub fabric together until a light foam appears on the surface. Carefully rinse off with cool water.

Pretreating. Apply liquid detergent directly from the bottle onto the soiled areas. Gently rub fabric together until a light foam appears on the surface. Place garment into washing machine as instructed in Section 1 and add the remaining amount of the recommended detergent. To clean garments that are heavily soiled, use a liquid detergent or precleaner solution, prior to laundering, in the following manner:

1. Air dry garment before applying product.
2. Squirt the liquid detergent or precleaner directly onto the stain and the surrounding areas (use 3-4 squirts). Make sure that the soiled area is soaked with the product.
3. Use a soft bristle brush (toothbrush or fingernail-type dipped in water) to gently scrub the soiled area for about 1½ min.
4. Reapply liquid detergent or precleaner onto the soiled areas again (use 1 or 2 squirts).
5. Place garment into washing machine as instructed in Section 1.

Laundering and Cleaning Products. Some examples of products that may be utilized for cleaning, spot cleaning, and pretreating include:

Cleaning:

Liquid Wisk	Liquid Cheer
Liquid Tide	Liquid Fab

Oxygenated Bleaches:

Liquid Clorox 2	Liquid Vivid
-----------------	--------------

**DO NOT USE CHLORINE BLEACH ON
FIRE FIGHTER PROTECTIVE CLOTHING**

Spot Cleaning and Pretreating:

Liquid Spray & Wash	Liquid Tide
Liquid Shout	

A-5-5 Needles and Sharps Disposal. For information regarding infectious waste management, the following publications are recommended: *EPA Guide for Infectious Waste Management*, U.S. Environmental Protection Agency, 1986, and *Guidelines for Handwashing and Hospital Environmental Control*, 1985, revised by Julia S. Garner, R.N., M.N. and Martin S. Favero, PHD, Hospital Infection Program, Centers for Disease Control, Atlanta, Georgia.

Appendix B Referenced Publications

B-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

B-1-1 NFPA Publication. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1987 edition

B-1-2 U.S. Centers for Disease Control Publications. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

A Curriculum Guide for Public Safety and Emergency Response Workers, Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus, February 1989.

Guideline for Prevention of Transmission of HIV and HBV to Health Care and Public Safety Workers, February 1989.

Guidelines for Infection Control in Hospital Personnel, July 1983.

Public Health Service Guidelines for Counseling and Anti-Body Testing to Prevent HIV Infection and AIDS, 1987, 36: 509-515.

Guideline for Handwashing and Hospital Environmental Control, 1985.

B-1-3 U.S. Environmental Protection Agency Publication. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

EPA Guide for Infectious Waste Management, 1986.

B-1-4 U.S. Department of Labor and U.S. Department of Health and Human Services Publication. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

DOL/HHS Joint Advisory Notice, *Protection Against Occupational Exposure to HBV and HIV*, October 1987.

OSHA Instruction CPL 2-2.44B, *Enforcement Procedures for Occupational Exposure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV)*, 27 February 1990.

B-1.5 U.S. Fire Administration Publication. USFA publications can be obtained from the Publications Office, U.S. Fire Administration, 16825 South Seton Avenue, Emmitsburg, MD 21727.

Second Forum on Communicable Diseases, November 1989.

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