

Chapter 18

PATHOGENS & RADIATION EXPOSURE

‘The threat is real. Even workers who only render first aid in emergencies – such as on a construction jobsite – can be at risk.’

The world around us changes quickly and today, more than ever before, everyday workers – especially workers who could potentially find themselves in the position of rendering medical first aid while on duty – need to worry about bloodborne diseases as they carry out their regular day-to-day duties. Of course the risk for exposure varies greatly depending on your field of endeavor. As one might expect, the risk is much higher for those persons who work exclusively in the healthcare field, but even workers who may only randomly be forced into a situation where they may have to render first aid as an emergency response – such as often occurs on construction jobsites - may also find themselves at considerable risk.

Bloodborne Diseases

If you own a TV or computer, you’re no doubt aware of maladies like AIDS, hepatitis B, hepatitis C and more. These are all bloodborne diseases and are the result of infections by disease-causing micro-organisms called *pathogens*. The HIV/AIDS epidemic has been particularly well-documented in the media. The problems associated with HBV infection, and more recently hepatitis C virus (HCV), are less well known but can result in life-long health problems and carrier status for the infected individual. Workers who may be directly exposed to blood and other certain body fluids should be aware of methods employed to lessen the danger of exposure.

Risk Assessment - Pathogens

On construction sites, the following situations can result in accidental exposure:

- During treatment of injured or sick workers (emergency response workers and first responders)
- Accidental contact with discarded needles (e.g., buried in or on ground, in water, in portable bathrooms, left on equipment) due to inappropriate disposal
- Inadequate cleaning or care of re-usable personal protective equipment (e.g., SCBA)
- Use of shared construction tools or equipment after a worker has sustained a cut or is working with an open wound
- Inadequate cleaning of an injury location after an accident



- Emergency Responders (first aiders, first responders) are most at risk and must follow established procedure.
- Although first aiders are trained and equipped to respond to site emergencies, co-worker first responders may not be adequately protected. Workers must be informed during orientation and reminded in subsequent safety meetings of the importance of following established Emergency Response Procedures and the ECP to minimize the risk of exposure.
- **What To Do When You're Faced With Potential Pathogen Exposure:**
- When faced with an emergency, as a rule it's best to assume that ALL blood and/or body fluids are infected and could potentially contain harmful pathogens. Better safe than sorry.
- If first on the scene of an injury accident, first ensure that there is no danger to yourself or others.
- Isolate and protect injured worker as much as possible.
- Summon first aid (most often this means call 911). Contact your immediate supervisor.
- Only treat the injured worker if you have been properly trained and are equipped to do so (e.g., have available applicable protective equipment to avoid potential contamination). Otherwise, your role is to keep the injured party as comfortable as possible until help arrives.
- If you do come into contact with body fluids, wash contacted area thoroughly with soap and running water. It is then essential to receive medical attention as soon as possible, preferably within a 2-hour window of being exposed.
- If an exposure incident occurs, supervisor to document/ investigate to determine if a change in procedure(s) would prevent recurrence. E.g., review preventative controls in use at the time, work practices followed, devices and/or PPE used, location of incident, procedure being performed at the time, and training.
- Universal precautions, as outlined and defined by the Centers for Disease Control and Prevention (CDC), are to be used to prevent contact with blood or other potentially infectious materials. The term universal precautions refers to a method of bloodborne disease control which requires that all human blood and other potentially infectious materials be treated as if known to be infectious with HIV, HBV or other bloodborne pathogens regardless of the perceived low risk of a patient or patient population.
- If your clothes do come in contact with potential pathogens, normal washing with laundry detergent and warm water should be sufficient to decontaminate clothing. A solution of household bleach and water (1:10 to 1:100) added to the detergent may also be used to ensure decontamination but is not required. Alternative clothing should be provided for the employee to change into as soon as feasible after contamination takes place.
- Know and understand established Emergency Response Procedures and ECP. If unclear or subject not adequately covered during Orientation or in subsequent Safety Meetings, ask your supervisor for further training. Report all personal injuries and location of incident to supervisor immediately to permit proper clean-up. Report all observed potential contaminants to supervisor immediately to allow for isolation and clean-up.

Personal protective equipment

- The standard states that the exposure determination must be made without regard to the use of personal protective equipment. Does this mean that all employees must be protected without using PPE?
- No. PPE must still be used in cases where engineering and work practice controls cannot entirely eliminate the change of exposure to blood or other potentially infectious materials. All this means is that an employer cannot say an employee uses PPE and therefore is not exposed and not covered by the standard. Such an employee must be covered because without the PPE there would be exposure. This rule takes into account that even the best PPE may occasionally fail.
- A sales representative of a company manufacturing PPE visited our office and stated that her PPE is “approved by OSHA.” Does this mean that we should purchase only such equipment?
- **OSHA does not approve or endorse any product, including PPE.** In choosing PPE the employer must determine whether or not it will fulfill the requirements for that particular item. For example, is a bag that must hold contaminated waste really leakproof? Despite any sales pressure, it may be best to compare quality and prices of several lines of a given item before deciding.
- Occupational exposure through collateral first aid duties: employees who are required by their employer to be trained in first aid and cardiopulmonary resuscitation (CPR) and are designated by their employer to provide this type of medical assistance as a collateral job duty are considered by have “occupational exposure” as defined in the standard. They, too, are covered by all of the provisions of the BBP standard including, but not limited to, the requirement to make the hepatitis B vaccine series available to the employee at no cost and on a pre-exposure basis.
- An exemption to pre-exposure hepatitis B vaccination is allowed for employees whose only exposure to blood would be as the result of responding to injuries caused by workplace incidents as long as this was only a collateral duty of the employee and certain other requirements have been met. However, this exception does not apply to designated first aid providers who render assistance on a regular basis, for example, at a first aid station, clinic, dispensary or other location where injured employees routinely go for assistance; nor does it apply to any healthcare, emergency or public safety personnel who are expected to render first aid in the course of their work. These employees must be offered the vaccine prior to exposure.

Radiation

- All subcontractors and workers, using, storing, handling, transporting or disposing of radioactive substances, must comply with the applicable Federal and Provincial or State regulations. A safe work permit may be required.
- Supervisors and subcontractors must ensure all equipment capable of producing ionizing (e.g., x-ray machines) or non-ionizing (e.g., lasers, infrared) radiation is located, shielded and operated such that no worker is exposed either directly or indirectly to radiation in excess of safe quantities. Establish and post procedure.
- Supervisors and subcontractors must ensure all workers exposed to radiation receive pre-job instruction and training in the safe usage of the equipment generating or using ionizing or non-ionizing radiation.
- Radiographer must wear a dosimeter and know emergency procedures. Loss, theft or over-exposure must be reported.

- Equipment used for the generation and use of radiation must be equipped with adequate safety interlocks and shielding; located and maintained to minimize the hazard to workers; inspected regularly and labeled appropriately (date, status, etc.).
- All crews using radioactive materials at a fixed location must post warning signs and, if possible, erect barriers or rope off the area at a safe distance from and around the source of radiation to warn other workers about the hazards of entering this work location.
- Workers must observe all radiation warning signs and stay out of or away from such posted areas.
- If passing or approaching an area where radioactive materials are being used, workers must follow the directions of the crew using the radioactive materials. If in doubt as to your own safety, stop and wait for a signal to proceed.
- All crews using radioactive materials at a non-permanent (not fixed) location, must have a signaler directing vehicular and pedestrian traffic.
- Supervisors and subcontractors should try to schedule radiography testing to evening and off-shift times to minimize the potential exposure of workers.