

# **EACO Guideline**

## **Construction Worker Hygiene Practices**

### **2014**

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#### **Foreword**

This guideline has been prepared to assist building owners, building managers, constructors, contractors, subcontractors and workers, who have duties under the Occupational Health and Safety Act and its Regulations, to safely perform work activities. The guideline promotes safe work practices, the use of personal protective equipment, worker awareness and training and is based on a thorough review of regulatory and guidance materials available to March 2014, as well as professional experience of the abatement and construction industry in Ontario.

We believe that this guideline will not only help employers fulfill their responsibilities and due diligence under the Occupational Health and Safety Act but will also assist them to better address the challenges involved with implementing the appropriate level of construction worker hygiene practices during abatement and construction activities.

#### **Disclaimer**

EACO disclaims any liability or risk resulting from the use of the work practices and recommendations discussed in the guideline. It is the user's responsibility to ensure that these apply to the specific workplaces and to ensure compliance with all other applicable federal, provincial and local acts and regulations.

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#### **1. INTRODUCTION**

##### 1.1 Introduction

The Environmental Abatement Council of Ontario (EACO) has recognized the need for a comprehensive guidance document to detail construction worker hygiene practices that should be implemented during abatement and construction activities.

##### 1.2 General Points and Limitations

This guideline is intended for the environmental abatement industry, and the construction industry, in general. The procedures identified in this guideline are based on Regulatory requirements, practical experience and industry standard best practices.

The procedures identified in this guideline are intended to be supplementary to specific health and safety precautions that may be required for any particular type of abatement activity (e.g. asbestos, mould, etc.) or general construction activity (e.g. housekeeping, abrasive blasting, etc.).

EACO is not responsible for the interpretation or use of the information contained within this document. It is the responsibility of the user to ascertain whether the information contained herein is appropriate to the scenario to which it is applied. Use your professional judgement and if in doubt, please contact a health and safety professional with experience in developing a comprehensive site-specific health and safety plan.

#### **2. REGULATORY REVIEW AND RESPONSIBILITIES**

##### 2.1 Occupational Health and Safety Act

The Occupational Health and Safety Act (OHSA), and associated regulations, provides the framework and tools that are used to create and maintain safe and healthy workplaces in Ontario.

It is the responsibility of the owners, employers, constructors, suppliers of equipment and supervisors to comply with the provisions of the OHSA, and applicable regulations, in order to protect workers from hazards in the workplace. Such hazards may include those resulting from exposure to physical, chemical and biological agents, and infectious diseases.

The following is a summary of responsibilities outlined in the OHSA. Refer to the entire OHSA for comprehensive details.

##### a) Constructor Responsibility

Constructors shall ensure that every employer and every worker performing work on a project complies with this Act (and regulations) and that the health and safety of workers on the project is protected (OHSA, Section 23).

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Additionally, Constructors shall ensure that each prospective contractor and subcontractor for the project has received a copy of the list of Designated Substances identified on the project (OHSa, Section 30).

#### b) Employer Responsibility

Employers shall ensure that, in part; protective devices are provided and are maintained in good condition, measures and procedures prescribed for a project are carried out; equipment, materials and protective devices are used properly; information, instruction and supervision to protect the health and safety of the worker is provided; competent supervisors are assigned to a project; workers and supervisors on a project take every precaution reasonable in the circumstances for the protection of a worker; prepare and post a health and safety policy (OHSa, Section 25).

#### c) Supervisors Responsibility

Supervisors shall ensure that; a worker works in the manner, and with the protective devices, measures and procedures required by the OHSa; a worker uses or wears the equipment, protective devices or clothing that the employer requires to be used or worn; a worker is advised of the existence of any potential or actual danger to the health or safety; a worker is provided written instructions as to the measures and procedures to be taken for protection; and take every precaution reasonable in the circumstances for the protection of a worker (OHSa, Section 27).

#### d) Worker Responsibility

Workers shall; work in compliance with the provisions of this Act and the regulations; use or wear the equipment, protective devices or clothing that the worker's employer requires to be used or worn; report to his or her employer or supervisor the absence of or defect in any equipment or protective device of which the worker is aware and which may endanger himself, herself or another worker; and report to his or her employer or supervisor any contravention of this Act or the regulations or the existence of any hazard of which he or she knows (OHSa, Section 28).

#### e) Owner Responsibility

Owners of a project shall; determine whether any designated substances are present at the project site and shall prepare a list of all designated substances that are present at the site; ensure, if any work on a project is tendered, that a copy of the designated substances list shall be provided (OHSa, Section 30).

#### f) Suppliers Responsibility

Suppliers have a duty to ensure that any machine, device, tool or equipment provided for use for a project to be in good condition and to be in compliance with OHSa requirements (OHSa Section 31).

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### **3. TRAINING REQUIREMENTS**

The Occupation Health and Safety Act (OHSA) requires that all workers and supervisors complete adequate training prior to starting work. Ontario Regulation 297/13 (coming into effect July 1, 2014) will require health and safety awareness training for every worker and supervisor under OHSA.

The mandatory health and safety awareness training focuses on the health and safety rights and responsibilities of workers, supervisors and employers. This training serves as a general introduction to workplace health and safety and provides a foundation for additional training that is necessary for project-specific work (e.g. personal protective equipment, asbestos operations, working at heights, etc.).

Refer to the entire OHSA for comprehensive details related to training requirements.

### **4. PROJECT-SPECIFIC HAZARDS AND RISK ASSESSMENTS**

#### **4.1 Potential Hazards at Construction Sites**

Construction workers may be exposed to various hazards at their work sites. Hazards may include physical, chemical and biological agents, and infectious diseases that pose a level of risk to life, health, property or environment. The hazard potential may be dependent on several factors, which may interact together to create a risk.

Details related to the protection against exposure to various hazardous physical or chemical agents, such as asbestos, lead, silica dust, organic solvents, sewer gases, welding fumes, radiation, noise and vibration, etc., are detailed in the Occupation Health and Safety Act (OHSA) and related regulations.

There is a multiplicity of biological hazards that may be present on a construction site. These hazards could lead to workers getting sick if precautions are not taken to reduce the risks. Some of these hazards may include infectious agents that cause serious or fatal diseases.

It is important to note that not all construction sites will contain biological hazards. Generally, sites where groundwork, refurbishment, or demolition work is taking place are more likely to have biological hazards. Common hazards leading to potential exposure to infectious agents include:

- (i) Bird droppings. Inhaling dust or water droplets containing contaminated bird droppings, for example, in refurbishment or demolition sites, can lead to several diseases, including pneumonia.
- (ii) Rat infestation. Exposure to rat urine, or water contaminated rat urine, can cause Leptospirosis / Weil's disease if it enters a cut or gets into the nose, mouth or eyes.

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- (iii) Sewage or animal faeces. Contamination of the site with sewage or animal faeces can lead to infection with *Escherichia coli* (*E.coli*), a bacterium which can cause stomach problems or more serious ill health. Sewage could also be contaminated with Hepatitis A.
- (iv) Discarded needles. Needles improperly discarded after substance abuse can cause injuries that can lead to exposure to blood borne viruses including Hepatitis B and C and HIV.
- (v) Stagnant water. Water systems that have not been drained or disinfected, containing stagnant water, could contain bacteria which can cause 'Legionnaires' disease if spray or fine droplets contaminated with the bacteria are inhaled.

If any of these, or other, potential hazards are present on a construction site, a risk assessment should be conducted to determine the precautions to be followed when working on the site.

#### 4.2 Risks Associated with Poor Sanitary Conditions at Construction Site

Construction workers are also at risk from exposure to infectious agents due to poor sanitary conditions associated with toilets and other clean-up facilities. A variety of microorganisms can be found in such facilities. In many cases, the risk of illness or infection has been associated with exposure to microorganisms of faecal and non-faecal origin. Sanitation generally refers to the provision of adequate facilities for the safe disposal of human urine and waste that are properly serviced and sanitized. Inadequate sanitation is a major cause of disease and a serious health risk. Inadequate disposal or exposure to the hazardous agents poses a health risk not only to workers but also to the public from environmental contamination.

Containment and safe disposal of human excreta is the primary barrier to transmission of excreta-related diseases.

The following are some of the hazardous agents that workers can be exposed to on a construction site due to poor sanitary conditions.

- (i) Bacteria such as *Salmonella*, *Escherichia coli* (*E.coli*), and *Listeria*
- (ii) Viruses, including rotavirus and norovirus, hepatitis A virus, and poliovirus
- (iii) Parasites such as *Cryptosporidium*, *Echinococcus* (tapeworm), and *Giardia*
- (iv) *Ascaris* (roundworm)

To prevent infectious diseases associated with poor sanitation, adequate and well serviced sanitation must be provided at a construction site. Portable sanitation on construction sites in Ontario is regulated by the Occupation Health and Safety Act (OSHA), under Regulation 213/91 – Construction Projects. Refer to the regulation to determine the toilet and washing facility requirements that are applicable to a specific project.

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Toilets, urinals and clean-up facilities should be established before work on a project starts and facilities should be reasonably accessible.

#### 4.3 Risk Associated With Construction in Health Care Facilities

In a health care construction site, infection risks exist for both the patients and the construction workers. Patients can easily be infected by opportunistic pathogens, such as *Aspergillus fumigatus*, that can cause invasive Aspergillosis. In a hospital environment, construction workers are also likely to be exposed to highly contagious microorganisms including viruses.

The majority of the health issues associated with construction are due to contamination of the air as a result of the dust and dirt raised during construction, demolition or renovation projects within or adjacent to health care facilities. Examples of specific construction/maintenance activities may include:

- (i) general construction and renovation work,
- (ii) disturbance of soil resulting from earth works associated with building construction and site development,
- (iii) removal of suspended ceiling tiles,
- (iv) removal of fibrous insulation material,
- (v) opening of service distribution shafts.

Aspergillosis outbreaks can also occur from improper operation and poor maintenance of sophisticated air ventilation systems. Furthermore, any dust generating activities such as maintaining the ventilation system, cleaning, vacuuming and dry mopping can render *Aspergillus* spp. airborne.

Infection control health and safety procedures required for work completed in a health care facility should be consistent with industry standard documents (e.g. latest edition of CSA Standard Z317.13: “*Infection control during construction, renovation, and maintenance of health care facilities*”) and facility-specific requirements.

#### 4.4 Risk Assessment

Not all sites will contain biological hazards and no two projects are likely to have the same level of health and safety risks. Some hazards are project-specific and the hazards and risk may change depending on the activities conducted during a project. It is therefore important to perform a risk assessment prior to commencement of each project.

The risk assessment should be completed by a competent person with adequate training and experience in completing such assessments. The results of the risk assessment becomes the basis for developing a comprehensive health and safety plan to be implemented on each specific project.

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#### **5. HOUSEKEEPING GUIDELINES**

Housekeeping is the continuous process of ensuring that work areas remain in a clean and organized manner at all times. Housekeeping is a cooperative function between managers, supervisors and workers.

Housekeeping includes ensuring that various tools, equipment, supplies and materials used during a project are properly stored, used, cleaned-up and disposed of. Housekeeping also includes keeping pathways clear, well defined and properly illuminated.

Housekeeping programs should be developed for each project to ensure that specific hazards are identified. The following are general housekeeping principles for maintaining a safe and efficient work site

- a) Keep tools and materials in storage bins or lockers.
- b) Gather up and remove debris to keep the work site orderly.
- c) Prevent rubbish from falling freely from any level of the project. Use chutes or other approved devices for rubbish material.
- d) Prevent throwing tools or other materials.
- e) Prevent the raising or lowering of any tool or equipment by its own cable or supply hose.
- f) Plan for the adequate disposal of scrap, waste and surplus materials frequently and on a regular basis.
- g) Keep the work area and all equipment tidy. Designate areas for waste materials and provide suitable containers.
- h) Keep stairways, passageways, ladders, scaffold and gangways free of material, supplies and obstructions.
- i) Secure loose or light material that is stored on roofs or on open floors.
- j) Keep materials at a safe distance from openings, roof edges, excavations or trenches.
- k) Remove or bend over nails protruding from lumber.
- l) Keep hoses, power cords, welding leads, etc. from laying in heavily travelled walkways or areas.
- m) Ensure structural openings are covered/protected adequately or that guard rails are installed to prevent falls (e.g. sumps, shafts, floor openings, etc.).

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#### **6. HYGIENE GUIDELINES AND GENERAL PRECAUTIONS**

If working with or handling chemicals, read the Material Safety Data Sheet (MSDS) and Workplace Hazardous Material Information System (WHMIS) labels to review skin hazard potential (in addition to other hazards that may exist). Phrases such as “may cause skin sensitization” or “skin irritant” may indicate that the material can cause skin ailments. Ingredients with a “skin” notation indicate that absorption of that agent through intact skin can be a significant source of exposure. Extra care should be taken when using or handling products or chemicals that have warnings about skin contact. Additional precautions may include; the use of appropriate gloves or protective equipment, immediate removal of contaminated clothing, and immediately washing any skin with soap and water that comes in direct contact with these chemicals.

Regardless if chemicals are being used or handled during a project, and even if gloves are worn, all workers should wash their hands prior to eating, drinking, smoking, before and after using the washroom, after coughing or blowing their nose and before leaving the job site. This is an effective way to reduce illness and injury.

Employers, supervisors and workers all have responsibilities to ensure the adequate personal hygiene guidelines and precautions are established and maintained as necessary.

Employer responsibilities include;

- To inform, instruct and supervise workers on the proper procedures when using clean-up facilities and stress the importance of hand washing and sanitary conditions to the workers,
- To advise workers on the dangers of health and safety hazards, health risks and infectious diseases associated with poor hand hygiene and poor sanitation of toilet facilities,
- To ensure that workers follow proper procedures and report hazards.

Supervisor responsibilities include;

- Ensure on behalf of their employer that the construction projects have adequate facilities and that facilities are adequately serviced and sanitized,
- Advise workers on the dangers of health and safety hazards, health risks and infectious diseases associated with poor hand hygiene and poor sanitation of toilet facilities.

Worker responsibilities include;

- Follow safe practices and good personal hygiene,
- Report any unsafe condition to their supervisor.

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a) Additional requirements for project-specific hazards

The Occupation Health and Safety Act (OSHA), under Regulation 213/91 – Construction Projects, requires that workers who handle or use corrosive, poisonous or other substances likely to endanger their health, shall be provided with washing facilities with clean water, soap and individual towels (or paper towels). If workers are handling agents or materials that are toxic by ingestion, such as lead (e.g. during demolition of building materials that contain lead-based paint), then workers must ensure that hands and face are washed prior to eating, drinking and smoking to avoid accidental ingestion of the toxic material.

b) Monitoring programs

In order to minimize the risk of worker exposure to infectious disease when using toilets and clean-up facilities, the employer should ensure that the toilets and clean-up facilities are ventilated, adequately heated (if possible), illuminated and are regularly serviced, cleaned and sanitized. Records should be kept that indicates the date and time of when the facilities are serviced.

#### 6.1 Washroom and Wash-up Facilities

It is the responsibility of employers, owners, constructors, suppliers of equipment, and supervisors to ensure that all workplace parties comply with the provisions of the Occupation Health and Safety Act (OHSA), and the regulations, in order to protect workers from hazards in the workplace including the protection of workers from infectious diseases due to inadequate sanitation on construction projects.

a) Using established or off-site facilities

Washing facilities that are not under the constructor's control will satisfy the requirements of this section only if the constructor has received permission to use the washing facilities. When established or off-site washing facilities are used, additional procedures may be required to ensure that the washing facilities remain suitable for use by others (i.e. if not dedicated to the construction project).

b) Using portable or temporary facilities

Portable or temporary facilities that are constructed should have adequate washing, showering (if necessary), and change facilities for workers to clean prior to breaks and at the completion of each work shift. Such facilities should be a separate area, or a combination of linked areas, that allow for the storage of clean clothing (i.e. 'clean room'), washing / showering area, and an area for the storage of dirty or contaminated work clothes (i.e. 'dirty room').

Refer to Appendix I for an example of a typical change room and washing area configuration. Projects that involve hazardous materials (e.g. microbial contamination, asbestos, lead, silica, etc.) may require a different configuration and/or additional decontamination features.

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Washing areas that include sinks or showers should include adequate supplies of soap from dispensers (not soap bars), clean and fresh towels or individual disposal paper towels and/or air dryers, nail brushes, mirrors, appropriate lighting, posted washing instructions, and appropriate receptacles for waste.

#### 6.2 Hand Washing

Proper hand washing procedures is a construction issue as well as a public health issue. Hand washing is the single most important means of preventing the spread of infection and can be a useful tool in reducing exposures to toxic agents.

Construction workers are often at risk from exposure to infectious diseases or toxic agents on construction projects due to poor sanitary conditions or lack of access to toilets and clean-up facilities. Poor sanitation and personal hygiene practices are a major cause of disease and can be a serious occupational health risk.

There are typically three major routes of exposure of toxic substances that can occur on a job site; inhalation, skin contact and ingestion. Two of these routes of exposure, skin contact and ingestion, can be controlled or minimized through effective hand washing and cleaning.

Some chemical agents have the potential to be absorbed directly through the skin (e.g. specific solvents), resulting in an exposure to the agent even if the risk of inhalation is not significant. Other agents can cause damage to skin during direct contact (e.g. acids or caustic material). Contaminated hands may also result in accidental ingestion and exposure to toxic agents if a worker is to eat, drink, smoke or even touch the mouth or lips without properly cleaning their hands. In addition, handling material with contaminated hands may also spread contamination to other objects (e.g. the steering wheel of your car when leaving the job site).

Part of an effective strategy for reducing exposure to toxic materials and infectious diseases is a well maintained hand washing facility and ensuring that these facilities are used by the workers as needed.

Hand washing procedures should be posted within or adjacent to the washing facility. Refer to Appendix II for an example of hand washing procedure that is suitable for posting on a project.

##### a) Use of soap and sanitizer

The most effective way to clean your hands is using soap from a dispenser (not a soap bar) and water to physically remove the contaminants. Although sanitizers may help kill germs and other biological agents, it is not as effective as hand washing and will not remove contamination from the hands. Therefore, even if hand sanitizer is provided on a construction site, soap and water is recommended to remove dirt, grease and other contaminants.

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In cases where it is not possible to provide facilities for hand washing, it is permissible to use hand cleanser that can be used without water or towels.

#### **6.3 Eating Facilities**

Establishing a separate room or area, which is isolated from work, is required for the storage of food and to establish a safe area to eat, drink and smoke. Prior to entering the designated room or area, workers should remove dirty clothing and wash hands and other exposed skin as necessary. The eating facilities should be established in a manner that access does not require workers to re-enter the work area after changing from work clothes and washing. Refer to Appendix I for an example of a typical change room and washing area configuration. Projects that involve hazardous materials (e.g. microbial contamination, asbestos, lead, silica, etc.) may require a different configuration and/or additional decontamination features.

Storing of food, eating, drinking and smoking is prohibited in the work area.

#### **6.4 Potable Drinking Water**

A reasonable supply of potable drinking water shall be kept readily accessible at a project. Drinking water shall be supplied from a piping system or from a clean, covered container with a drain faucet.

Workers must be provided a sanitary means of drinking the potable water.

#### **6.5 Removal of Equipment and Supplies**

Removal of equipment and supplies from work areas should be completed following appropriate cleaning and decontamination procedures (e.g. wet wiping/washing, sealing in plastic bags or bins, etc.). Procedures must be sufficient to ensure that dirt or hazardous materials do not leave the work area.

#### **6.6 Personal Protective Equipment (PPE)**

Personal Protective Equipment (PPE) provided to workers is required wherever there are health or safety risks that cannot be adequately controlled in other ways. PPE can reduce or prevent a worker's exposure to a health hazard in the workplace and may include respirators, hearing protection, protective clothing, footwear, face and eye shields, harnesses, etc.

Workers must wear protective clothing, and use personal protective equipment or devices, as necessary to protect the worker against the hazards to which the worker may be exposed.

Workers required to wear protective clothing, or use personal protective equipment or devices, must be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

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Non disposable PPE should be maintained and cleaned thoroughly at regular intervals, in accordance with the manufacturer's instructions.

Disposable items of PPE (e.g. protective clothing, foot coverings, ear plugs, etc.) should be used once only and then disposed of.

Conduct a visual inspection of the PPE prior to donning the equipment. PPE must be free of discoloration or physical damage.

If PPE has been contaminated, or is suspected of being contaminated, proper cleaning must be completed prior to donning the equipment.

#### a) Gloves

The selection of appropriate hand protection should be based upon an assessment of potential hazards for each project. Gloves should be used and maintained in accordance to the manufacturers written instructions.

#### b) Protective clothing

The selection of appropriate disposable protective clothing or "coverall" clothing should be selected based upon an assessment of potential hazards for each project.

Disposable protective clothing or coveralls should be used according to the manufacturers written instructions. In all cases, clothing shall be properly done up, have no missing or malfunctioning fasteners (such as zippers or buttons), should be repaired or discarded when damaged and be kept clean.

Reusable protective clothing (e.g. "coverall" clothing) should be washed routinely and in a frequency that corresponds to the level of use. Washing of reusable protective clothing should be completed in segregated locations from laundering of other clothing. Clothing that may be contaminated should not be taken home.

#### c) Respirators

The selection of appropriate respiratory protection should be based upon an assessment of potential hazards for each project. When used, respirator pre-screening should be completed to ensure a worker is able to perform duties while wearing respiratory protection. Respirators must be properly selected and fit-tested to ensure adequate protection from exposure to identified hazards. Respirators must be inspected, maintained, cleaned and stored in accordance to the manufactures recommendations and with any applicable guidelines (e.g. latest edition of CSA Standard Z94.4: "*Selection, use and care of respirators*").

Respirator cleaning procedures should be posted within or adjacent to the washing facility. Refer to Appendix III for an example of a respirator cleaning procedure that is suitable for posting on a project.

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#### 6.7 Washing-up When Leaving Work Areas

- a) Prior to entering a dedicated decontaminated enclosure or area (e.g. a 'dirty room'), remove gross dirt or contamination from protective clothing (e.g. disposable protective clothing and/or 'coverall' clothing).
- b) After entering the designated decontamination enclosure or area (e.g. a 'dirty room'), ensure the entrance is closed.
- c) Further decontaminate or clean disposable protective clothing and/or "coverall" work clothing using appropriate procedures. When working with hazardous materials (e.g. microbial contamination, asbestos, lead, silica, etc.), the use of vacuums equipped with HEPA filters and/or wet wiping with damp cloths would be appropriate.

**NOTE:** Refer to the EACO **DOP/PAO Testing Guideline** for details related to HEPA- filtered equipment on construction and abatement projects.

- d) Protective clothing may be removed. Removal of protective clothing shall be doffed by slowly rolling the protective clothing from head-to-toe, while turning/rolling the protective clothing inside out. Store for later reuse or place the used protective clothing into an appropriate waste receptacle for disposal or laundering.
- e) When respiratory protection is used, clean the exterior surface of the respirator and filters using a damp cloth, while maintaining the air-tight seal between the respirator and the user's skin.
- f) Where a shower unit has been established immediately adjacent to the decontaminated enclosure or area (e.g. a 'dirty room'), such as required for Type 3 asbestos operations, enter the shower stall while simultaneously removing respiratory protection. Prevent water from going directly inside respirator filters.
- g) Shower using soap from a dispenser.
- h) If a shower unit is not established immediately adjacent to the decontaminated enclosure or area (e.g. a 'dirty room'), the respirator may be removed and stored. Proceed to the washing facility to clean hands (including using nail brushes) and other exposed skin with soap from a dispenser.
- i) At completion of showering and/or washing, proceed to the 'clean room' or area for drying and dressing into street clothes.
- j) When respiratory protection is used, clean and store equipment following manufacturer's written instructions.

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## APPENDIX I



### Typical Change Room and Washing Area Configuration



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#### APPENDIX II



## Hand Washing Procedure

Wash hands frequently with soap and water for at least 20 seconds. Alcohol-based hand cleansers are useful when soap and water are not available, but hand washing with soap and water is preferred. In most cases antibacterial soap is not necessary for safe, effective hand hygiene.

### Using Soap

- a) Remove any hand or arm jewelry and wet hands with warm water. Add regular soap and rub hands together, ensuring that all surfaces have been lathered for at least 15 seconds.
- b) Wash the front and back of hands, as well as between fingers and under nails.
- c) Rinse hands under warm running water, using a rubbing motion, for at least 5 seconds.
- d) Wipe and dry hands gently with a paper towel or a clean towel. Drying hands vigorously can damage the skin.
- e) Turn off the tap using the paper towel so hands do not become re-contaminated.
- f) If skin dryness is a problem, use a moisturizing lotion.

If hands are visibly soiled, it is best to use soap and water. When washing hands with soap and water is not possible, use towelettes to remove the soil and then use an alcohol-based hand rub.

### Using Alcohol-Based Hand Rubs

- a) Use hand rubs according to the manufacturer's instructions.
- b) Make sure hands are dry (wet hands will dilute the product).
- c) Use enough of the product to cover all hand and finger surfaces.
- d) Rub hands together until the product has evaporated.
- e) If skin dryness is a problem, use a moisturizing lotion.

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#### APPENDIX III



## Respirator Cleaning Procedure

- a) Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- b) Wash components in warm water (up to 43 degrees Celsius) with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- c) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  - i. Hypochlorite solution (50 parts per million (ppm) of chlorine) made by adding approximately one milliliter of laundry bleach to one litre of water (up to 43 degrees Celsius) or,
  - ii. Aqueous solution of iodine (50 ppm of iodine) made by adding approximately 0.8 milliliters of tincture of iodine to one litre of water (up to 43 degrees Celsius) or,
  - iii. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- d) Rinse components thoroughly in clean warm (preferably running) water (up to 43 degrees Celsius). Allow components to drain after cleaning is complete. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- e) Components should be hand-dried with a clean lint-free cloth or air-dried.
- f) Reassemble face piece, replacing filters, cartridges and canisters where necessary.
- g) Test the respirator to ensure that all components work properly.

**\*\*The disinfecting solution must not damage the respirator and must not cause skin irritation to the respirator wearer. Proper rinsing of the respirator is important to ensure that this does not happen\*\***

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**70 Leek Crescent  
Richmond Hill ON, L4B 1H1  
(416) 499-4000  
[www.eacoontario.com](http://www.eacoontario.com)**