

RESIDENTIAL CARE FACILITY GUIDELINE

This guideline has been established as a province wide standard in the administration of the public health protection licensing requirements for residential care facilities. This working document is based on existing licensing legislation, public health legislation and evidence based health protection standards, practice and consensus documents. The main purpose of the guideline is to serve as a reference standard for public health inspectors, licensing personnel, licensees, and care providers so that we can protect the health and safety of those in care.

This is only a guideline. Additional requirements may be required by the Public Health Inspector.

Introduction

The mission of the Health Protection Unit is to protect the health of Manitobans through education and intervention strategies designed to reduce health risks to the public. Public Health Inspectors (PHIs) are the field workers of this unit whose primary focus is to respond to environmental health concerns by investigating complaints and inspecting premises to ensure compliance with Regulations made under [The Public Health Act](#) and [The Smoking and Vapour Products Act](#)

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The mandate or legal authority for the administration of public health standards in relation to residential care facilities is also prescribed in Manitoba legislation specific to the type of residential care facility. [The Residential Care Facilities Licensing Regulation MR 484/88R](#) under [The Social Services Administration Act](#) outlines requirements for those facilities that are providing care to adults who are suffering from a disability or disorder which precludes them from living independently. The [Child Care Facilities \(Other than Foster Homes\) Licensing Regulation MR 17/99](#) under [The Child and Family Services Act](#) prescribes requirements for those providing care, supervision and assistance to children, in the temporary or permanent custody of a child caring agency. There are many common threads between both types of residential care facilities. One being that in order to receive and maintain a license to operate, the care facility must meet and maintain minimum public health standards.

All proposals for new construction, renovations to an existing facility, or conversion of an existing building to be used for a residential care facility must be reviewed for compliance by a Public Health Inspector prior to the construction, renovation or re-construction. The PHI shall provide a plan review letter to the facility owner and the provincial coordinator for either child care or adult group homes within 14 working days of receiving the submission. The letter shall indicate approval or disapproval and provide a detailed list of insufficient information or unsatisfactory items. The purpose of this review is to ensure that any new construction or renovations are completed in accordance with this guideline.

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Food Safety

Foodborne Illness

The Public Health Agency of Canada estimates that each year roughly one in eight Canadians (or four million people) get sick due to domestically acquired food-borne diseases.¹ Foodborne illness may occur by eating or drinking food that is contaminated.

Symptoms commonly include stomach cramps, nausea, vomiting, diarrhea and fever. Many microorganisms (germs) that cause foodborne illness can be transmitted from person to person. This makes it difficult to tell if an illness is caused by contaminated food, contamination from a foodhandler or from other sources.

The symptoms of foodborne illness can range from mild to severe. In most cases many people have mild symptoms and recover within a few days. However food borne illness may cause more serious health problems such as kidney failure or even death. If symptoms persist or become severe (i.e. blood or mucus in stool, worsening pain, high fever) contact Health Links-Info Santé at 788-8200 in Winnipeg or toll-free 1-888-315-9257 or seek medical care as soon as possible.

For a list of organisms and chemicals that can be transmitted by food or water see [Manitoba Health's Enteric Illness Protocol](#) page 23-28.

Residential care facilities are required to provide safe food for persons in care² and learning about safe food handling practices is crucial in achieving this. Most food related illness can be prevented by following the safe food handling practices outlined in this document. Additionally, safe food handling courses are offered throughout Manitoba. These food safety training courses are designed for the food service industry. Courses cover important food and worker safety information including: foodborne illness, receiving and storing food, preparing food, serving food, cleaning and sanitizing.

For more information see the following websites:

Manitoba Health Certified Food Handler Training Program

<http://www.gov.mb.ca/health/publichealth/environmentalhealth/protection/foodsafes.html>

Manitoba Food Safety Connection

<http://www.ciphi.mb.ca/FSC.html>

Canadian Partnership for Consumer Food Safety Education

[The Partnership for Food Safety Education | Fight BAC!](#)

Government of Canada: Food Safety

[Food Safety - Canada.ca](http://FoodSafety-Canada.ca)

BC Ministry of Health "*Caring About Food Safety*"

[Food Safety & Security - Province of British Columbia \(gov.bc.ca\)](http://FoodSafety&Security-ProvinceofBritishColumbia.gov.bc.ca)

¹ Public Health Agency of Canada **Estimates of Food-borne Illness in Canada** May 9, 2013 <http://www.phac-aspc.gc.ca/efwd-emoha/efbi-emoa-eng.php>

² [Residential Care Facilities Licensing Regulation](#), November 1998 MR 484/88 R.S. 5

Potentially Hazardous Foods

Potentially hazardous foods are those foods which require time/temperature control to keep them safe. Some examples of potentially hazardous foods are **eggs, meat, poultry, fish, cooked pasta or rice, gravy, soup, and cut fruits and vegetables**. Dry, acidic or sweet foods which have been modified and do not easily support the growth of disease organisms or toxins are not potentially hazardous foods (i.e. pickles, beef jerky, jam, and cookies).³

Time-Temperature Control Requirements

- Temperature/time is the most common cause of bacterial foodborne illness.
- The only way to know for sure that you are storing, cooking holding and reheating potentially hazardous foods at a safe temperature is to check with a thermometer.
- The “danger zone”, 4°C (40°F) to 60°C (140°F), is the temperature range where bacteria multiply quickly. By limiting the time food is within this temperature range the growth of bacteria is limited and the risk of foodborne illness is reduced.
- Store potentially hazardous food in the refrigerator at 4°C (40°F) or colder.
- Provide and monitor thermometers for each refrigeration unit.
- Provide adequate refrigerated space for food storage as air flow is important in cooling food and keeping food cool.
- Discard potentially hazardous food left un-refrigerated for more than 2 hours ⁴
- Hot foods shall be cooled from 60°C (140°F) to 4°C (40°F) within 6 hours.^{5 6} To speed up cooling divide food into smaller portions, store in shallow containers and refrigerate immediately.
- Freezer temperature shall be -18°C (0°F) or colder to maintain food frozen.
- Food shall be thawed in the refrigerator, as part of the cooking process, under cold running water or in the microwave to prevent it or portions of it from being in the danger zone.
- Provide and use a probe thermometer accurately scaled to +/- 1°C (2°F) to check internal food temperatures.
- Reheat potentially hazardous food to 74°C (165°F) within 2 hours.⁷
- Ensure potentially hazardous foods are thoroughly cooked (meat and meat mixtures 71°C(160°F), whole poultry 85°C (185°F)).⁸
- Cooked food shall be held hot at 60°C (140°F) or above.
- Limit the time food is in the danger zone when purchasing food by doing the grocery shopping last and immediately refrigerate foods.
- Bagged lunch containing potentially hazardous foods should be stored/maintained at safe temperatures. Use insulated containers and ice packs to keep hot foods hot and cold foods cold.

³ [Food and Food Handling Establishments Regulation](#), August 1988 MR 339/88 R S. 1

⁴ *Food Retail and Food Services Code* Amended September, 2004 Canadian Food Inspection System Implementation Group p. 38 [food_services_code2004.pdf \(wordpress.com\)](#)

⁵ FDA Food Code 2009 Chapter 3 [FDA Food Code 2009: Chapter 3 - Food \(foodprotect.org\)](#)

⁶ *Food Retail and Food Services Code* Amended September, 2004 Canadian Food Inspection System Implementation Group p. [food_services_code2004.pdf \(wordpress.com\)](#)

⁷ Food Inspection Agency, Everyday Safe Food Handling Practices [www.inspection.gc.ca](#)

Safe Food Sources

Food can be contaminated prior to purchasing and to manage risk it is important to follow these safety rules when purchasing, storing and preparing food:

- Only purchase or accept food products from reliable sources.
- Unless approved by the Director of Food Protection all potentially hazardous food products must originate from government-inspected sources. This includes meat, fish, poultry, dairy products and eggs.
- Do not use unpasteurized milk and milk products or ungraded eggs.
- Potentially hazardous food products in hermetically sealed containers must originate from government inspected sources (i.e. canned vegetables, canned meat and fish, canned soup).
- Food products such as home canned jams, jellies and pickles are normally permitted as they are not considered a potentially hazardous food product. To ensure the low risk foods are canned in a safe manner refer to Health Canada's "[Food Safety Tips for Home Canning](#)".
- Do not use canned food products that are swollen, rusted, pitted or dented especially around the seam or rim.
- Purchase fresh or frozen potentially hazardous foods (i.e. meat, milk, pre-cut or ready-to-eat fruits and vegetables) that are stored at safe temperatures.
- Do not use food products that are spoiled or foul smelling. "if in doubt throw it out".
- Some best before and expiry dates are listed for food quality and some for food safety. As a general rule, unless frozen, potentially hazardous foods should not be purchased or consumed if they exceed the best before date.
- Clean and sanitize or launder your reusable bins and grocery bags. Especially if you use them to carry raw meat, poultry, fish, seafood, or other perishable foods.
- Make sure that water used for food preparation and consumption is safe or potable.
- A residential care facility that uses water from tanks or cisterns shall ensure the water haulers/suppliers possess a public health permit.⁹

Food Storage Requirements

- Refrigerate or freeze perishable food products as soon as possible.
- Refrigerator temperature 4°C (40°F) or colder
- Freezers temperature must be maintained at -18°C (0°F) or colder to keep food frozen.
- Store raw meat, poultry and fish separately and below cooked or ready to eat food products (i.e. fruit and vegetables) to prevent cross-contamination.
- Cover foods to protect from contamination.
- If repackaging foods, date and label them before storing them. For more information on how long to keep foods see [Government of Canada Safe Food Storage](#)
- Food storage containers and packaging should be made of materials that will not contaminate the food. (i.e. garbage bags, used meat trays/boxes, chemical containers)
- Store food in a location to minimize contamination risk (i.e. clean, dry, on shelves 15cm or 6" off the floor)
- Always rotate stock (first in, first out).

⁹ [Water Supplies Regulation](#) MR 330/88 s 4, 5

Food Preparation

- Maintain good personal hygiene while working in the kitchen.
- Always wash hands before handling food, after handling raw foods, soiled utensils, equipment, garbage or whenever hands become contaminated.
- Liquid soap and single use hand drying towels shall be provided in the kitchen.
- Those working in the kitchen should not be ill as this increases the risk of contaminating food from infectious agents.
- Wear clean outerwear while working with food.
- Wash fresh fruits and vegetables before you eat or cook them even if they are peeled because this helps prevent the spread of any disease organisms that may be present. To do this use cool running water. A clean vegetable scrub brush can be used on carrots, potatoes, melons, squash, and other produce with a firm skin.
- Foodhandlers should exhibit knowledge of safe food handling practices.

Cleaning and Sanitizing Food Contact and Non Food Contact Surfaces

Meat, poultry, eggs, fruits, and vegetables may carry disease organisms that cause foodborne illness. As foods are stored and handled surfaces of equipment and utensils that come in direct contact with food (i.e. knives, cutting boards, countertops, high chair tray) may become contaminated. Disease organisms can also be transferred from person to person when food contact surfaces such as eating utensils are not properly cleaned and sanitized between uses.

When something is **clean** it is free of visible soil including grease, food debris, dirt and dust. When something is **sanitized** the number of microorganisms, such as bacteria, is reduced to a safe or acceptable level. The process of sanitizing requires the application of very high heat (i.e. 77°C (171°F) or above) or a chemical to kill the disease organisms. Most commonly used chemicals approved as sanitizers for food-contact surfaces include chlorine (unscented household bleach which is about 5% - 6.5 sodium hypochlorite), iodine and quaternary ammonium.

To prevent the spread of disease organisms that can cause foodborne illness follow these general rules:

- Food contact surfaces shall be cleaned and sanitized after each use.
- Food contact surfaces shall be protected from contamination
- In order for sanitization to be effective a surface has to be clean and rinsed before sanitizers are applied.
- Equipment and utensils shall be in good repair so that they can be maintained in a safe and sanitary condition (i.e. free of chips, cracks or other damage)
- Non-food-contact surfaces of equipment must be kept free of accumulations of dust, dirt, food residue, and other debris to minimize risk of contamination and prevent safety hazards. (i.e. refrigerator door handles, ovens, storage shelving)
- Clean food spills immediately and develop a routine cleaning schedule.

Chemicals approved for use as “**disinfectants**” or “**sanitizers**” in Canada must either have a Drug Identification Number (DIN) or a Pest Control Product (PCP) number on their label. To use chemical sanitizers safe and effectively follow these tips:

- Make sure all chemicals are properly labeled.
- Use sanitizers according to manufacturer’s instructions and only for their intended purpose as directed by the product label.
- If a sanitizer does not list directions for use on food contact surfaces they should not be used for this purpose as they may leave a toxic residue on the surface which contaminates food. The **one** exception to this is unscented household bleach which contains chlorine. To make a sanitizing or disinfecting solution using unscented household bleach see appendix 2.
- Mixing or using sanitizer solution at a lower concentration than recommended will result in an inadequate reduction of microorganisms and a concentration that is too high can leave a chemical residue or be corrosive to equipment (i.e. knives).
- The use of test kits to verify the sanitizer concentrations is recommended and may be required if chemicals are found to be used inappropriately. This test equipment is available from chemical and restaurant supply stores.
- Use sanitizers with the correct water temperature. Sanitizers generally work best from 24 C° to 49 °C.
- For sanitizers to be effective in killing microorganisms, cleaned items must be in contact with the sanitizer for the manufacturer-recommended contact time as specified on the label. (i.e. 50 ppm chlorine sanitizing solution requires 1 minute contact time)
- A no rinse chlorine sanitizer shall be at a concentration between 50ppm to 200ppm
- Quaternary ammonia sanitizers generally are required to be at 200ppm or as listed by the manufacturer’s directions for use.
- Do not mix chemicals together (i.e. soap and sanitizer).
- Products such as vinegar, baking soda, and tea tree oil have not been scientifically proven to be effective at sanitization and are not be used for this purpose.

Chemical sanitizers have pros and cons regarding characteristics such as effectiveness against certain organisms, ability to work in hard water, effects on metal, toxicity to respiratory system and skin, and cost per use. For more information see the National Collaboration Centre for Environmental Health *Evidence Review: [Disinfectants and Sanitizers for Use on Food Contact Surfaces August 2011](#)*.

Cloths used for cleaning and sanitizing can spread disease causing microbes. To prevent this:

- make sure cloths used for cleaning and sanitizing cutting boards, countertops and other food contact surfaces are visibly clean
- use cloths for one purpose (i.e. don't use the same cloth for wiping the countertop and the floor)
- use a separate cloth for cleaning and a separate one for sanitizing
- avoid using sponges **for sanitizing** as they have been shown to harbor food particles and microbes¹⁰
- if a sanitizer cloth is used continuously store it in a sanitizing solution between uses
- wash cleaning and sanitizing cloths often in the hot cycle of your washing machine
- disposable paper towels can be used to clean and sanitize.

Dishwashing Procedure

Dishwashing can either be done manually or by machine. Regardless of the method the same general steps should be followed

1. **Scrape and pre-rinse** dishes and utensils to remove excess soil.
2. **Sort and rack** the dishes.
3. **Wash** with hot water and dishwashing detergent.
4. **Rinse** to remove detergent and food particles that interfere with the sanitizer.
5. **Sanitize** to reduce microbes to a safe level.
6. **Air dry** on clean drain rack

Dishwashing Equipment

The volume of dishes to be cleaned and sanitized dictates the number of sinks or type of dishwasher (commercial vs residential) that is required. The dishwashing set up shall provide adequate space and equipment for dirty dish storage and air drying dishes and utensils in a manner that will prevent recontamination of cleaned and sanitized equipment and utensils.

Dishwashing Equipment (12 or fewer residents)

A residential care home with 12 or fewer residents may have a 2 compartment sink for cleaning and sanitizing dishes provided that the process described above is followed. This can be achieved by rinsing the washed dishes over the 1st sink compartment or draining the sinks after the dishes are washed and rinsed and refilling cleaned sinks with a sanitizing solution.

¹⁰ FDA Food Code 2009: Annex 3 - Public Health Reasons / Administrative Guidelines - Chapter 4, Equipment, Utensils, and Linens

If a domestic dishwasher is provided in a residential care home with 12 or fewer residents the dishwashing machine should be operated on the hottest temperature cycle. Not all dishwashers perform the same with respect to cleaning and sanitizing. When replacement of dishwasher is necessary in a care facility with 12 or less residents a domestic dishwasher certified to NSF/ANSI standard 184 or equivalent is recommended. The NSF standard provides confirmation that the dishwasher can achieve sanitization when operated on the sanitizing cycle and also establishes minimum design and performance requirements related to cleaning effectiveness. Sanitizing rinse temperatures measured in domestic dishwashers shall meet or exceed 150 °F (66 °C) to provide continued effectiveness.¹¹

Dishwashing Equipment (greater than 12 residents)

A residential care facility with greater than 12 residents is to have a 3 compartment sink to carry out the above dishwashing process effectively.

Should a residential care facility with an occupancy greater than 12 residents choose to carry out dishwashing mechanically the type of machine provided shall be a commercial dishwasher certified to NSF/ANSI standard 3 or equivalent. Based on sanitization performance testing, certified residential dishwashers can achieve the same level of heat sanitization as commercial dishwashers, but they do so at a lower temperature by extending the duration of the rinse cycle (i.e. cycle time for a domestic dishwasher 2 hours vs cycle time for a commercial dishwasher 2 minutes). These long cycle times and the amount of dishes to clean and sanitize in a larger facility is the basis for requiring a commercial dishwashing machine.

Tips for Successful Manual and Machine Dishwashing

- Equipment and storage areas shall be clean and in good repair to minimize risk of recontaminating dishes.
- Water from the kitchen tap shall be sufficiently hot, at least 49°C (120° F), to ensure that a dishwashing machine and manual dishwashing will effectively clean and sanitize.
- Pre-rinsing helps reduce the need to change the wash, rinse and sanitizing water when cleaning and sanitizing manually. Water in each sink should be sufficiently clean so that each step in the process is effective.
- Pre-rinsing also improves the likelihood machine washed dishes will be effectively cleaned and sanitized.
- When using a commercial dishwasher study the data plate on the machine and make sure that it is operating in accordance with the manufacturers specifications. Cycle times and temperature and pressure gauges shall be within the specified range. Warning systems and automatic chemical dispensers shall be checked and fully operational.
- Use the manufacturer's instruction manual and carry out routine cleaning, maintenance, and testing of the dishwashing machine. For further information on testing commercial dishwashing machines see the NSF "*Recommended Field Evaluation Procedures for Commercial Warewashing Machines*".
- Properly rack dishes according to size and type in the appropriate rack and do not overload machine so that the spray will be effective.
- Air dry dishes rather than towel dry to prevent recontamination of the dishes. The drying towel and hands can harbor disease organisms which can contaminate the clean dishes.
- Drying racks shall be self draining (i.e. don't dry dishes on towels), easily cleanable and clean to prevent recontamination of equipment and utensils.

¹¹ NSF/ANSI Standard for Residential Equipment — Residential Dishwashers Standard 184 **Issue 8, Revision 1 (September 2009)**

- The complete process should render equipment and tableware surfaces clean to sight and touch, free of grease, free of detergent residues and soil accumulations.

Dining Facilities

With the exception of residential care facilities where tray service is required, dining facilities shall be separate from the sleeping area.

Table surfaces or countertops used for eating shall be made of smooth impervious material that is cleaned and sanitized prior to food service. High chair trays or table surfaces that have direct contact with food shall be sanitized with a food contact surface sanitizer as described above.

Seating shall be provided that is safe and appropriate to residents' needs (i.e. sturdy chair with arms, high chair or infant seat with safety harness).

Menu

Residential care facilities shall provide and retain menus for 3 months.^{12 13} Review and discussion of the menu with the public health inspector can provide helpful recommendations regarding safe food handling practices. It may also provide information in the event of a food related illness.

Facility Structure and Maintenance

Evidence has shown that various aspects of the built environment can have effects on both physical and mental health outcomes, adding to the burden of illness and injury. It is important to note the facility structure and maintenance requirements for residential care homes extends beyond the technical requirements of the building code. The public health structure and maintenance requirements are in place to support health and quality of life for those in care. To do this effectively the structure, maintenance and individual resident needs must be considered together.

One example of this is that child deaths continue to occur in Canada related to window cord strangulation, including 2 cases in October 2013. This risk can be eliminated by providing cordless window coverings.

Another example of the impacts from our built environment includes injury from falls. The Public Health Agency of Canada report entitled "*You Can Prevent Falls*" provides the following statistics related to fall injuries.

- *1 in 3 seniors will experience a fall each year, and half of those more than once.*
- *40% of seniors' falls result in hip fractures.*
- *20% of injury-related deaths among seniors can be traced back to a fall.*
- *Seniors are injured **at home** more than any other location. The bathroom and stairs are particularly dangerous.*¹⁴

The Manitoba Health 2020-2021 Annual Statistics cite falls as the most common cause of injury death in our province.¹⁵ Conditions in and around the home may contribute to falls and measures

¹² [Child Care Facilities \(Other than Foster Homes\) Licensing Regulation](#) MR 17/99 S. 52

¹³ [Residential Care Facilities Licensing Regulation](#) MR 484/88R S.28

¹⁴ Public Health Agency of Canada, *You Can Prevent Falls* R 2007, 2011
<http://www.phac-aspc.gc.ca/seniors-aines/publications/public/injury-blessure/prevent-eviter/index-eng.php>

¹⁵ Manitoba Health 2010-2011 Annual Statistics www.gov.mb.ca/health/annstats

can be taken to reduce these risks. In a home providing care to individuals with mobility issues this may require an installation of securely anchored grab bars next to the toilet and bath. In a child residential care home a fall risk may be reduced or managed by: the correct installation and use of a safety gate along stairs or a balcony, placement of furniture away from windows and balconies and the installation of approved window guards that will prevent falls yet still ensure that egress is not impeded.

Much of the information in this section contains minimum standards set out in the *Dwellings and Buildings Regulation* under *The Public Health Act*. In addition the *Manitoba Building Code*, which applies to dwellings at time of construction, and municipal property standards bylaws are also used as guides in dealing with structure and maintenance issues. There are numerous home maintenance and safety checklists that have been developed to help identify and manage health and safety risks as well as learn about preventative maintenance which may reduce maintenance costs. The following web links are helpful:

Canadian Mortgage and Housing Corporation www.cmhc-schl.gc.ca
Manitoba Health, Healthy Living and Seniors
http://www.gov.mb.ca/shas/flash/Home_Falls_Prevention.swf
Public Health Agency of Canada www.publichealth.gc.ca
Parachute Canada <http://www.parachutecanada.org/>

Floor Space

Section 40 of the *Child Care Facilities (Other than Foster Homes) Licensing Regulation* requires a minimum of 7.0 m² (75 ft²) of bedroom space for 'single occupancy' and 5.6 m² (60 ft²) for each resident for 'multiple occupancy'. Floor space calculations exclude closets and bathrooms.

Section 23 of the *Residential Care Licensing Regulation* requires separate bedrooms for each sex unless accommodating a spousal unit/couple, or pre-school children.

In addition to the above minimum floor space it is important that the dwelling is sufficient sized, organized and maintained to enable care providers and residents to move safely. Equipment, furnishings, and personal belongings need to be managed so that the home is not cluttered.

Storage of Personal Items

Adequate space and storage facilities shall be provided to store personal belongings in an organized manner. Living spaces shall be free of clutter, clean and maintained so that they will not present an unacceptable risk to the resident and other occupants of the dwelling.

Clothing, bedding and personal grooming items shall not be shared. They shall be stored separate and in a manner to prevent them from becoming contaminated. Personal items may need to be stored in a manner to prevent them from being used by other residents.

Furnishings and equipment for storage of personal items shall be maintained clean and in good repair.

Windows & Doors

Doors and windows are required to provide a means of entry and exit, ventilate, bring natural light into a home and keep out the elements (wind, rain and snow). To ensure they function in this manner the *Dwellings and Buildings Regulation* prescribes the following minimum standards

- A habitable room shall have a window or windows with the glass area totaling at least 10% of the size of the room. A smaller glass size may be allowed if the home has adequate artificial lighting and mechanical ventilation.
- At least one window in each habitable room shall be openable.
- Openable windows shall have an unobstructed distance of 1.5metres (5feet) by any fence wall or other structure.
- Partitions within the room shall not obstruct light as all parts of the room shall have natural lighting.
- At minimum double pane windows shall be provided. Homes may have single pane windows however they shall be properly fitted with storm windows from November 1 to April 30 of each year.
- Where mechanical ventilation is not provided, openable windows shall be used for ventilation during the non heating season or as necessary. Cross ventilation, opening windows on either side of building, improves natural ventilation.
- Entrance doors shall be capable of being locked inside and outside.
- Bedrooms shall be provided with doors to ensure privacy.
- Windows and doors shall be weather-tight and in good repair.

Windows and doors deteriorate over time due to age, usage, wear and tear and exposure to the weather. The CMHC document entitled [Maintaining a Home: Home Maintenance Schedule](#) contains many good inspection and maintenance tips for windows and doors.

Natural & Mechanical - Heating & Ventilation

The main purpose of a Heating, Ventilation, and Air-Conditioning (HVAC) system is to provide thermal comfort and maintain occupant health by ensuring good indoor air quality. The equipment and HVAC system of a building supplies and removes air either naturally (windows) and/or mechanically and is the equipment and design components that ventilate, heat, and cool the building. Knowledge and maintenance of these systems will help you to ensure comfort and safety is achieved.

Thermal Comfort

The *Dwellings and Buildings Regulation* requires a heating system capable of maintaining temperature of dwelling of 21°C (70°F) between 7:00 am and 11:00 pm and 18.3°C (65°F) during all other hours. Temperature range recommended by The American Society of Heating,

Refrigerating, and Air-Conditioning Engineers (ASHRAE) for thermal comfort is 20 - 23°C (68-74 °F) in winter months and 23 - 26°C (73-79°F) in summer months.

During extreme heat events high temperature and humidity can be particularly difficult for the elderly or young children. However most heat-related illness can be prevented or treated if you are aware of the risks and symptoms and take action to keep cool and hydrated. For more information see:

Manitoba Health : Heat and Your Health

<http://www.gov.mb.ca/health/publichealth/environmentalhealth/heat.html>

Public Health Agency of Canada: Extreme Heat Events

<http://www.hc-sc.gc.ca/ewh-semt/pubs/climat/heat-chaleur/index-eng.php>

Ventilation

Ventilation is the exchange of air to the outside as well as circulation of air within the building. Houses need to have an exchange of air to replenish oxygen and to remove odours, moisture from cooking/showering, emissions from building materials and furnishings.

In the past homes were built without mechanical ventilation systems and up until the 1960's it was generally thought these homes provided a sufficient amount of ventilation most of the time. After the 1960's, as heating systems and construction standards improved, issues surrounding inadequate air quality (i.e. moisture and mold) surfaced creating the need for mechanical ventilation requirements within the building code. This history is important because ventilation systems among residential care homes differ. Specifically it must be recognized that renovations or upgrades to the building envelop to reduce air leakage rates (i.e. window, doors, walls) may make it necessary for the ventilation system to be upgraded to maintain air quality (i.e. prevent moisture and mold problems). For further information see Manitoba Hydro's Bulletin 8 "[Indoor Air Quality and Ventilation](#)".

It is important to learn about the homes' ventilation system and ensure that it is operated and maintained to provide a safe environment for those in care. Some of the basic operation and maintenance requirements are as follows:

- Furnace filter changed regularly as recommended by the manufacturer (i.e. every 3 months).
- Exhaust filters and grills covering return air ducts shall be maintained clean.
- Dryer shall be vented to exterior of building.
- Heat recovery ventilator (HRV) maintained in accordance with manufacturers recommendations. For further information see CMCH website www.cmhc-schl.gc.ca "[Maintaining Your Heat Recovery Ventilator](#)"
- Ventilate to prevent excessive humidity and condensation which can support the growth of mold and dust mites. As recommended by CMHC, target range for indoor humidity level is 30%-50%. When outdoor temperatures drop below -10°C indoor relative humidity should be near 30%.
- Portable humidifiers/dehumidifiers shall be cleaned as specified in the operation and maintenance manual.
- Prior to using a humidifier it is recommended that humidity levels be checked using a hygrometer as excess humidity can support the growth of mold, dust mites etc.
- Exhaust ventilation equipment in bathrooms and kitchen shall exhaust properly.

** Care facilities are required to have carbon monoxide detectors and smoke alarms in accordance with *The Fires Prevention and Emergency Response Act* and *The Buildings and Mobile Homes Act*. For further information on the specific requirements contact your local fire or building inspector or the Office of the Fire Commissioner <http://www.firecomm.gov.mb.ca/contact.html>

Mould and Moisture Control

Moulds are microscopic fungi that live on plant and animal matter. They can be found almost anywhere, and grow best in humid or moist environments. Because there is evidence to show that mould exposure can impact health it is important to remediate moisture and mould. Mould clean up and prevention activities can range in scope from small surface clean-up around a window or bathtub to extensive structural renovation resulting from a flood. Most guidance documents on mould remediation are based on the amount of visible mould present as this often corresponds to levels present in the environment.

When mould is disturbed during remediation and clean-up, spores and chemicals are released in the built environment and there is increased exposure risk for workers and building occupants. Practical measures in controlling and minimizing exposure for workers and building occupants must be in place to control these risks before cleanup is done. Those most vulnerable to experiencing health symptoms from mould include infants, the elderly and those with respiratory disease or a weakened immune system. Therefore one of the control measures may be to remove these high risk people from the residential care facility. For more information on moisture control and mould remediation see:

[Mould Remediation Recommendations](#)
[It's Your Health-Dampness, Mould and Indoor Air - Health Canada](#)
[Residential Indoor Air Quality Guidelines: Moulds - Health Canada](#)
[Fighting Mould: The Homeowners' Guideline-CMHC](#)

Or contact the public health inspector for your residential care facility.

The Non-Smokers Health Protection Act

Research shows that secondhand smoke leads to the same health problems as direct smoking, including lung cancer, cardiovascular disease and lung ailments such as emphysema, bronchitis and asthma. Manitoba has had a ban on smoking in enclosed public places since October 2004. Specific to residential care facilities or “group living facilities” as defined in the *Nonsmokers Health Protection Act* no person shall smoke in a residential care facility operated for children.

Smoking is not permitted in an adult residential care facility unless there is a separate room that:

- is designated as a smoking room by the proprietor or board of the facility;
- is not frequented by non-smoking in-patients or residents;
- is fully enclosed by floor-to-ceiling walls, a ceiling and doors that separate it physically from any adjacent area in which smoking is prohibited; **and**
- **has a separate ventilation system.**

Radon

Radon is a colourless, odourless radioactive gas found naturally in the environment. It comes from uranium as it breaks down in soil and rocks. Since radon is a gas, it can easily move through the soil and enter the air we breathe. When radon enters homes and buildings, it can reach levels that may pose a risk to health. The risk from radon exposure is long term and is associated with the level of radon, how long a person is exposed and their smoking habits. According to Health

Canada, exposure to high levels of radon can increase your risk for lung cancer, especially in people who smoke. For more information on health effects, prevention and mitigation measures refer to:

Manitoba Health: Radon

<http://www.gov.mb.ca/health/publichealth/environmentalhealth/radon.html>

[Health Canada : Radon](#)

Lead

Lead is a naturally occurring element found in small amounts in the earth's crust. Lead can be found in all parts of our environment – the air, the soil, the water, and even inside our homes. Much of our exposure comes from human activities such as: past use of leaded gasoline, some types of industrial facilities, and past use of lead-based paint in homes. Lead and lead compounds have been used in a wide variety of products found in and around our homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics.

¹⁶

Lead can be harmful to people of all ages. Recent scientific studies show that negative health effects are occurring at lower levels of exposure to lead than previously thought. Low-level exposure may have subtle effects on the intellectual development and behavior of infants and children. They are particularly vulnerable to the harmful effects of lead because their growing bodies absorb lead more easily and get rid of it less efficiently than adults. Also, infants and young children are more likely to ingest lead because of their normal habit of putting things in their mouths. In adults, the strongest scientific evidence to date suggests low levels of lead exposure may cause a small increase in blood pressure.¹⁷

Ongoing exposure to even small amounts of lead may eventually result in harmful levels in the body. Once lead is absorbed into your blood, it is either eliminated from your body (mostly in urine) or builds up in your bones. It can remain stored in your body for over 30 years.

Health effects associated with exposure to high levels of lead include vomiting, diarrhea, convulsions, coma or even death. However, such severe cases of lead poisoning are rare in Canada.

Take these steps to reduce your family's exposure to lead:

- Run the cold water tap first thing in the morning or any other time the water hasn't been used for a number of hours. Always use cold tap water for drinking, cooking and making baby formula, since hot water is more likely to contain contaminants like lead.
- See Health Canada's fact [Lead-based Paint](#) for important safety information about paint removal before starting any renovation project in an older home.
- Clean your house regularly to remove dust and particles. This is especially important for surfaces that young children might touch.
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¹⁶ Manitoba Health – Environmental Health Lead

<http://www.gov.mb.ca/health/publichealth/environmentalhealth/lead.html>

¹⁷ Lead and Human Health, Health Canada updated February 2013

http://www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/asked_questions-questions_posees-eng.php

- Do not keep food or beverages in lead crystal containers for any length of time. Do not serve pregnant women or children drinks in crystal glasses. Infants and children should never drink from lead crystal.
- If you own glazed glass or ceramic dishes bought outside of Canada, do not use them to serve food or drinks. They may have higher levels of lead than are allowed in Canada.
- If you work in a smelter, refinery or any other industry where you are exposed to high levels of lead, protect your family by showering and changing clothes before going home. Get your blood levels checked regularly.
- Never burn waste/old oil, battery casings or wood covered with lead paint, as lead fumes may be released. Dispose of them through your municipality's Hazardous Waste program.
- If you use lead solder in a hobby like stained glass-making, use a good quality breathing mask, keep surfaces clean, and keep children and pregnant women out of the area. Wash your hands after handling lead solder
- Avoid eating animals and birds that were killed with lead shot. Use non-lead shot when hunting for food.
- Do not store lead fishing weights, lead stripping for stained glass work, or other items made of lead where children can reach them.
- Do not allow children to chew or suck on jewelry.
- See Health Canada's Fact Sheet [Lead-based Paint](#) for important safety information about paint removal before starting any renovation project in an older home
- Clean your house regularly to remove dust and particles. This is especially important for surfaces that young children might touch.

If you are concerned that you or a family member has been exposed to lead, speak to your doctor.¹⁸

Asbestos

Asbestos is the generic name for a variety of fibrous minerals found naturally in rock formations around the world. Asbestos fibers are strong, durable and non-combustible. Until the 1980's asbestos fibres were widely used in house contraction and have been found in many products around the house. It has been used in clapboard; shingles and felt for roofing; exterior siding; pipe and boiler covering; compounds and cement, such as caulk, putty, roof patching, furnace cement and driveway coating; wallboard; textured and latex paints; acoustical ceiling tiles and plaster; vinyl floor tiles; appliance wiring; hair dryers; irons and ironing board pads; flame-resistant aprons and electric blankets; and clay pottery. Loose-fill vermiculite insulation may contain traces of "amphibole" asbestos.¹⁹

Asbestos poses health risks only when fibres are present in the air that people breathe. How exposure to asbestos can affect you depends on:

- the concentration of asbestos fibres in the air
- how long the exposure lasted
- how often you were exposed
- the size of the asbestos fibres inhaled
- the amount of time since the initial exposure.

When inhaled in significant quantities, asbestos fibres can cause asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or

¹⁸ Lead and Human Health, Health Canada updated February 2013

http://www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/asked_questions-questions_posees-eng.php

¹⁹ [Asbestos - Canada.ca](http://www.asbestos-canada.ca)

abdominal cavity) and lung cancer. The link between exposure to asbestos and other types of cancers is less clear.²⁰

If renovations are planned and it is suspected that the residential care facility may contain asbestos building materials it is recommended to first contact a trained and qualified asbestos professional. Testing will help to determine any necessary control measures to prevent exposure. This can occur in a number of situations:

- Disturbing loose-fill vermiculite insulation which may contain asbestos
- Removing deteriorating roofing shingles and siding containing asbestos, or tampering with roofing felt that contains asbestos
- Ripping away old asbestos insulation from around a hot water tank
- Sanding or scraping vinyl asbestos floor tiles
- Breaking apart acoustical ceilings tiles containing asbestos
- Sanding plaster containing asbestos, or sanding or disturbing acoustical plaster that gives ceilings and walls a soft, textured look
- Sanding or scraping older water-based asbestos coatings such as roofing compounds, spackling, sealants, paint, putty, caulking or drywall
- Sawing, drilling or smoothing rough edges of new or old asbestos materials²¹

Plumbing Fixtures

The Manitoba Plumbing Code and the *Dwellings and Buildings Regulation* prescribes minimum requirements with respect to plumbing fixtures. For example a multiple family dwelling requires one toilet, one hand basin and one tub or shower for every 10 persons residing in a multiple family dwelling. To accommodate the needs of those in care various types of fixtures and equipment are used (i.e. toilet inserts/potty seats, toilet extensions, transfer seat & systems, grab bars and commodes). It is important that all of these plumbing fixtures and ancillary equipment be maintained clean and in good repair.

Hot Water Supply

In most Canadian homes, hot water heaters are set at 60 °C (140° F). For many years that temperature has been the standard. However, water at 60 °C can cause third-degree burns in most adults in six seconds. Third-degree burns are the most serious kind; they damage all layers of the skin. Young children, elderly and those with disabilities are more susceptible to severe scalds.^{22 23}

Lowering the temperature of the hot water heater to deal with the scald risk will not eliminate public health risk because *Legionella* bacteria, which can cause a form of pneumonia, grows in stagnant water tanks and has an optimal growth range between 34°C to 46 °C (95°F to 115 °F).

In 2005 The Manitoba Plumbing Code, as applied to all new construction after this date, was amended to require the maximum hot water temperature supplied to fixtures not to exceed 49 °C (120 °F). This requirement does not apply to dishwashers and clothes washers. The thermostat controls for water heaters are to remain at 60° to prevent the growth of *Legionella* bacteria in the hot water tank. To meet this requirement the two options are:

- Installation of a mixing valve at the water heater to lower the temperature to 49°C

²⁰ & ²¹ [Health Canada Asbestos](#)

²² [Canada Safety Council “Heated Debate about Hot Water” June 2005 https://canadasafetycouncil.org/node/791](#)

²³ [Understanding Potential Water Heater Scald Hazards](#)

- Installation of a mixing valve / pressure balance valve at each outlet to provide a temperature of 49°C.

Considering that these facilities provide care to those most susceptible to scalds and Legionella it is strongly recommended that the new building code changes be implemented in existing facilities and is required when faucets/fixtures and hot water tanks are replaced.

Walls, Floors and Ceilings

The Dwellings and Buildings Regulation requires

- Interior partitions, doors, walls and ceilings to be close fitting, kept in good repair, have surfaces that are smooth and clean and can easily be kept clean, and are painted or otherwise refinished when considered necessary by a medical officer or inspector.
- all floors to be level and of such construction, and in such a state of repair, that they can be readily kept clean, and are kept free from major cracks, crevices, depressions, splinters
- floor coverings to be in good repair and well fitting, and can easily be kept clean.

Water resistant flooring is recommended in areas exposed to contamination and frequent spills (kitchen/dining, bathroom, laundry) and may be required by the public health inspector in existing residential care homes if the carpet is not sanitary. Keeping the floor clean and dry is also necessary to reduce the risk of fall injuries.

Bathtub and shower walls should have waterproof finish and caulking shall be clean and in good repair.

Stairs, Railings, Landings and Walkways

Many of our homes have stairs which are inherently hazardous. High rates of injury and even deaths are attributed to falls on stairs each year. Those most vulnerable are children and older adults. Rates of injury can be reduced with stairs, railings, landings, ramps and walkways that are well designed and maintained. The *Manitoba Building Code* and *Dwellings and Buildings Regulation* requires

- handrailing to be provided along exterior stair with more than 3 risers,
- handrailing to be provided on at least one side of interior stairs that have more than 2 risers,
- where the width of the stair exceeds 112cm (44) handrailing is required on both sides of the stairs,
- guardrails of at least 40 cm above the surface of the stairs are needed to prevent falls off the side of the stairs that are not equipped with a banister, and
- rails and guards shall be no more than 4" apart.

The *Dwellings and Buildings Regulation* also requires stairs, railings and landings to be in good repair. In addition to the minimum requirements of this legislation it is important to note that additional railings, gates and other equipment, specific to the needs of the residents, may be required by the licensing authority. This equipment shall be used and maintained to ensure safety of the resident.

Here are some tips to reduce risk of fall related injuries.

- Improving visibility on stairs significantly reduces the risk for common mishaps caused by misjudging distances. Landings and stairwells should be well lit at the top and bottom of stairs.
- Keep stairs, steps and landings clear of obstacles that can cause tripping. Eliminate all clutter from stairs and landings.
- To reduce the risk of slipping on stairs provide a non-slippery surface on the whole steps or at least on the leading edges (i.e. rubber or metal stair nosing, painted or taped with a special slip-resistant material)
- The prime function of the handrail is for holding as support while going up or down stairs. It is therefore crucial to be able to grasp the handrail quickly, easily and firmly.
- Choose the correct child safety gate and install it properly. There are two types of child safety gates - hardware mounted gates and pressure mounted gates. Hardware mounted gates are secured to door jams or wall studs with screws and plates. Pressure mounted gates are held in place by a pressure bar applied to a door frame. Pressure gates should never be installed at the top and bottom of the stairs.
- Once a child's chin is in line with the top of the gate or when he or she is two years old, the gate is no longer effective. A child may attempt to jump or climb over the gate. Teach children, two years and older to climb stairs and practice with them until they are able to climb independently.

Lighting

Research has shown that good lighting provides psychological and physiological benefits including improved mood, lower fatigue, and reduced eyestrain. The home should be well lit for the safety and comfort of the residents according to their needs. It is important to recognize that as people age, there are changes in vision that occur which results in the need for additional lighting to carry out tasks in a comfortable and safe manner.

Window sizing to provide natural light within a habitable room of a dwelling is specified in section 4 of the *Dwellings and Buildings Regulation* and are highlighted in the preceding section of this document titled "windows". In addition to natural lighting from windows it is important that sufficient artificial lighting be provided to carry out daily tasks (i.e. food preparation, cleaning, reading) in a safe manner. Section 16 of the *Dwellings and Building Regulation* requires lighting to be in accordance with the *National Building Code*.

Recreational Water Facilities and/or Activities

Water-based exercise offers numerous health benefits including the reduction of symptoms of chronic illness such as arthritis and improvement to mental health. However these facilities are also associated with health risks such as diarrhea and drowning and it is important to manage these risks. Privately owned swimming pools and hot tubs are not regulated under *The Public Health Act* and therefore, *Public Health Inspectors will not issue permits for these facilities. Public Health Inspectors will, however, provide an evaluation of these facilities should they be on the premises as part of the licencing review and any health hazards identified will need to be addressed.* All water recreational facilities should be properly supervised when in use and secured when not in use. If a pool or hot tub is part of the facility, it is important that they are operated and maintained to minimize health and safety risks for those in care. For further information see the following websites:

Centers for Disease Control and Prevention www.cdc.gov/healthyswimming
 Health Canada – Swimming Pools, Spas and Hot Tubs
<http://healthycanadians.gc.ca/environment-environnement/home-maison/pool-spa-piscine-eng.php>

Many care facilities partake in recreational water activities and programs on a routine basis either at local public facilities or natural water bodies. Care providers and residents should be familiar with swimming pool rules, policies and water safety. For further information see the following link

Health Canada - Recreational Water

www.hc-sc.gc.ca/ewh-semt/water-eau/recreat/index-eng.php

Building Exterior

Routine inspection and maintenance of the property and building exterior is also important in providing a safe healthy living environment for occupants. Moisture, mold, and pest problems within a home are often related to maintenance of the exterior of the building. The building exterior includes the foundation, walls, windows and doors, roofing system, yard/landscape, waste/garbage storage and in some cases the onsite wastewater management system and drinking water supply (well or cistern).

The following are requirements of the *Dwellings & Buildings Regulation*:

- Roof, fascia, soffits, shall maintained in good repair.
- Eavestroughing and rain water piping shall be water-tight, in good repair and maintained clean. All rain water from the roof of any building shall drain away from the foundation walls to prevent building damage and moisture from entering the building.
- The foundation, basement walls and floors shall be weathertight, impervious to ground or external moisture. As necessary the foundation and basement floor system shall drain water from the surface into a properly constructed catch basin to prevent flooding of the floor or foundation, or otherwise create a health hazard.
- Exterior doors and windows are to be weather-tight, close fitting and maintained in good repair.
- Exterior walkways, stairs and landings shall be slip resistant and maintained cleared of ice and snow to ensure user safety.

Pest Control/Pest Management

Care facilities shall be maintained pest proof and be free of insect pests, particularly those pests that are of public health significance. Based on evidence and the consensus of leading health experts, the World Health Organization (WHO) has published a list of insects and rodents that it considers of to be of public health significance. Please see the 2008 report entitled [Public Health Significance of Urban Pests](#). Methods of control and integrated pest management (IPM) practices are outlined in detail. Based on the WHO document, the Manitoba Health Protection Unit has adopted the following list of pests as those that require effective measures to prevent, control or

eliminate infestations in order to reduce potential health risks within dwellings and buildings in Manitoba.

1. [Cockroaches](#)
2. [Bedbugs](#)
3. [Pigeons](#)
4. [Mosquitoes](#)
5. [Rats & Mice](#)
6. [Bats](#)

Specific requirements of the Manitoba regulation that are in place to protect the public from pests include:

- Screens shall be provided for openable windows and screened doors from May 1 to October 31 in each year. The screens are to be tight fitting and maintained in good repair.
- Foundations are to be maintained in a pest proof condition
- Yard and property are to be maintained pest proof (lawn mowed, properly store and cover garbage, eliminate standing water)

Health Canada's Consumer Product Safety Division Pest Management Regulatory Agency (PMRA) provides helpful "pest notes" containing information on pest control measures and common household or garden pests. For further information see http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_pnotes/index-eng.php

Onsite Wastewater Management System

The *Dwellings and Building Regulation* requires the "*plumbing system*" to be maintained in good repair and proper working order. In rural areas and some cities where municipal wastewater collection systems are not in place private sewage systems or onsite wastewater management systems form part of the plumbing system. Sewage contains disease causing organisms and chemicals which can cause illness, therefore it is important that wastewater is handled and disposed to prevent

- contamination of drinking water;
- human exposure (i.e. minimize risk from vectors such as insects and rodents); and
- odour or aesthetic concerns.

To manage the public health risks from sewage it is very important that homeowners are knowledgeable about their onsite wastewater systems and ensure they are installed and maintained properly. For further information see

[Home Owners Onsite Wastewater Systems](#)

Potable Water (Monitoring, Reporting & Source Protection)

Many residential care facilities are supplied with piped water consisting of a treatment and distribution system network operated and monitored by the local municipality. However, in

Manitoba we also have many residential care facilities that have their own water system from ground water well water or a water storage tank (cistern). These facilities are responsible for operating and testing their own water system and this section pertains to ensuring safe water from these systems.

Water used for domestic purposes (drinking, washing dishes, food handling, bathing, brushing teeth) in a residential care facility shall be safe and is regulated under Manitoba's [Drinking Water Safety Act](#). Care providers shall obtain an operating license as required by this provincial legislation.²⁴ For further information on the operating requirements contact your local, [Drinking Water Officer](#)

Microbes

*A review in Canada of 288 outbreaks of infectious disease related to sources of drinking water over a 27-year period concluded that two-thirds were related to either semi-private or private systems.*²⁵ Microbial pathogens pose the greatest risk to the safety of the water and this data underlines the importance of ensuring that care facilities using a private water supply comply with routine bacteriological monitoring requirements. Health Canada recommends existing wells be tested two or three times a year however the operating license, issued by Conservation and Water Stewardship, may require more frequent water testing depending on the water history and an assessment of risk. Keep in mind that when carrying out sampling that it is best to sample well water when the probability of contamination is greatest. This is likely to be in early spring just after the thaw, after an extended dry spell, following heavy rains or after lengthy periods of non-use.²⁶

In addition to well water sources cisterns or water storage tanks that receive transported water from a safe source must be tested for the presence of microbiological contaminants at least once per year. The sample should be taken when the system is most vulnerable to contamination (i.e. if it has been impacted by flooding or there is a change in the water's taste, color, odour, or clarity).

Chemicals

Testing well water for chemicals that may cause adverse effects on health is also key to ensuring that well water is safe. One of the chemicals of most concern is Nitrates. Nitrates reduce the ability of the blood to carry oxygen. Babies under six months are particularly at risk from drinking well water with excessive nitrates. Water high in nitrate (45 mg/L nitrate or 10 mg/L nitrate-nitrogen) should not be used to prepare infant formula and should not be given to infants to drink.

Manitoba recommends wells be tested prior to use and every three to five years or whenever there is a change in the taste, smell, colour or clarity of the well water, or if there is a reason to believe the water quality has changed. In areas where nitrate is a concern, well owners should consider testing for nitrate more often.²⁷ For a regional map and a fact sheet containing more information on nitrates see the following web link

http://www.gov.mb.ca/waterstewardship/odw/public-info/fact_sheets/pdf/factsheet_nitrate.pdf

²⁴ The Drinking Water Safety Act (C.C.S.M. c. D101) Drinking Water Safety Regulation s. 18 Regulation 40/2007 Registered February 28, 2007

²⁵ Infectious disease outbreaks related to drinking water in Canada, 1974-2001. Schuster CJ, Ellis AG, Robertson WJ, Charron DF, Aramini JJ, Marshall BJ, Medeiros DT Can J Public Health. 2005 Jul-Aug; 96(4):254-8.

²⁶ Health Canada What's in your well? A Guide to Well Water Treatment and Maintenance

²⁷ Nitrate in Manitoba Well Water March 2010 http://www.gov.mb.ca/waterstewardship/odw/public-info/fact_sheets/index.html

Water Sampling & Reporting

- Collect samples in bottles provided by the lab. Arrangements can be made with an accredited lab to have water sample bottles shipped to you. Public health inspection offices, regional drinking water offices, and municipal offices often have water sample bottles available for the public however please call ahead to confirm.
- Follow the instructions for collecting the sample that are provided with the sample bottles.
- Submit samples to the lab soon after collecting the sample. The lab should receive the sample within 24 hours of collection.
- If your test results indicate your drinking water is unsafe, then you must contact your public health inspector.
- Water analysis results must be on file for review during public health inspections.
- If you have questions regarding the analysis results you may contact your local drinking water officer or public health inspector.

Wells & Cisterns (location, construction & maintenance)

Evidence shows that outbreaks of disease from small water systems are often caused by a lack of source water protection, precipitation, spring thaw/run-off and high turbidity and inadequate or failure of water treatment.²⁸ Proper location, construction and maintenance of a well or cistern will help to minimize the likelihood of drinking water contamination.

- The cistern or well should not be located downhill from any source of pollution (i.e. sewage system, manure pile). Surface drainage should be directed away from the wells and cisterns.
- Check well caps and cistern manhole covers regularly to ensure that they are securely in place and watertight.
- Joints, cracks and connections in the well casing should be sealed.
- Cistern vents shall be screened to prevent entry of pests.

Cistern cleaning and disinfection should be done following:

- Construction, repair or maintenance work on the cistern
- Flooding in the area of an underground cistern
- A period of non use
- Sampling which indicates the presence of bacteria
- A year of use

For more information on safe drinking water, see the following links.

[Manitoca Drinking Water Standards.](#)
[Government of Canada](#) .

Solid Waste Management

For centuries we have recognized that improper storage and management of solid waste can have effects on public health. Solid wastes are a possible cause of groundwater contamination,

²⁸ Water-borne Disease Outbreaks in Canadian Small Drinking Water Systems
Sylvia Struck Oct 2012
[Water-borne Disease Outbreaks in Canadian Small Drinking Water Systems](#)

air pollution, odour and a breeding ground for disease-causing vectors (i.e. mosquitoes, rodents, and insects).

In Manitoba solid waste management programs are regulated under *The Waste Reduction and Prevention Act*, *The Environment Act* and municipal bylaws. To manage risks associated with solid waste (garbage, recycling compost, hazardous wastes and biomedical waste) it is important to be knowledgeable and comply with the local requirements. For specific questions on solid waste management requirements in your area contact your municipal office. The following are general tips for safe storage and disposal of solid waste:

- Reduce, reuse and recycle where possible to limit the amount of waste generated. <http://www.ec.gc.ca/gdd-mw/default.asp?lang=en&n=D3A22BDD-1>
- Segregate waste at the source and store in appropriate containers
- Outdoor containers for solid waste and recyclable items (paper, cardboard, plastic, glass, or metal cans) should be covered, water-tight, strong enough to support the weight of items contained. Some municipalities will require the use of standard bins and others may require specific garbage cans or bins.
- Household Hazardous Waste (HHW) is waste material generated in the care facility that may pose a risk to health, safety or the environment when thrown in the garbage or down the drain and includes (flammable or combustible products like paint and solvents, reactive products such as pool chemicals, corrosive products like some cleaners, toxic products like pesticides, products with heavy metals such as batteries and fluorescent light tubes and leftover medications.) Collection events occur periodically at rural locations and in Winnipeg. [Household Hazardous Waste Disposal Locations](#)
- Do not burn garbage in barrels, open pits, outdoor furnaces, woodstoves, or fireplaces. Open burning of garbage is much more harmful to your health and the environment than you may think. Open burning of garbage -- even seemingly harmless materials like paper, cardboard, yard waste, and construction debris -- releases a hazardous mixture of cancer-causing compounds and other toxic substances when open-burned.²⁹

Infection Control

Infection control programs were first developed in hospitals, as a means of reducing the spread of communicable disease in acute care settings. Similar programs have since been developed for residential care facilities, using the same basic infection control principles; because these facilities have common characteristics that can include shared living and transient resident populations with potential health issues. Wherever infection control measures have been introduced, their effectiveness in reducing the spread of communicable disease has been demonstrated.³⁰ Therefore residential care facilities must follow infection control procedures to control and minimize the risk of transmission of a communicable disease.³¹

The infection control section of this document contains information from the Manitoba Health Guidelines entitled *Infection Control Guidelines for Community Shelters and Group Homes January 2005 and Manitoba Health's Communicable Disease Management Protocols*. **It is important to seek medical attention if someone is ill.** Consult with a physician or contact Health Links-Info Santé at 788-8200 in Winnipeg or toll-free 1-888-315-9257.

²⁹ [Environment Canada Open Burning of Garbage](#). [anagingburning-garbage-health-risks.html](#)

³⁰ [Manitoba Guidelines for Infection Control in Group Settings](#)

³¹ [Public Health Act](#) Go to Section. 40(2)

Understanding what causes infection and disease is the first step in being able to prevent and control it. An infection occurs when a disease causing organism enters the body and starts to multiply. This often results in signs and symptoms of infection. For an infection to occur a series of events needs to take place and this is called the “chain of infection”. Microorganisms can be transmitted from their reservoir or source to a susceptible host by several routes as described below.³² By breaking the links in the chain of infection we can prevent disease.

- **Direct Person to Person Contact** - This is the most common mode of transmission and can occur from skin to skin contact, especially from one’s hands following sneezing or coughing.
- **Indirect Contact** - Hands pick up organisms from contaminated surfaces or equipment and then inoculate the individual or transmit the organisms to others.
- **Droplet Contact** - This involves exposure of the mucus membranes of the conjunctiva, nose and mouth as a result of sneezing or coughing by an infected person. These droplets are heavy and usually travel no more than approximately two metres (six feet) before falling to the ground.
- **Airborne Transmission** – This occurs by dissemination of an infectious agent either by droplet nuclei or tiny particles in the air. The agent can be widely dispersed by air currents and remain suspended in the air for extended periods of time (hours), enabling it to be inhaled.
- **Common vehicle** – A contaminated inanimate vehicle such as food, water, or blood products may serve as a passive vector for transmission or even allow the microorganism to multiply within them.
- **Vectors** – Vectors (i.e. mosquitoes, flies and bats) carry microorganisms as part of their normal flora, or as an infection, and may infect humans through a bite.

Reporting and Management of Communicable Disease

The purpose of making a specific communicable disease reportable by public health law is to prevent and control communicable disease. A health professional or laboratory who becomes aware that a person has a reportable disease must make a report to a medical officer of health, public health nurse or public health inspector in accordance with the Manitoba regulation. Those diseases of greatest public health importance, which require reporting, are listed on the Manitoba Health Communicable Disease Control website.

<http://www.gov.mb.ca/health/publichealth/surveillance/strategies.html>

Collaboration is necessary to prevent, recognize, and control disease within a residential care facility. *The Public Health Act* allows for the sharing of personal or confidential information for this purpose:

40(1) Any person who reasonably believes that a health hazard exists may report that belief, and the basis for it, to a medical officer, inspector or other person specified in the regulations.

40(3) A person acting in good faith may make a report under subsection (1) even if it requires the disclosure of personal information, personal health information, or proprietary or confidential information.

³² Providing Health Care to the Client Living in the Community Provincial Infection Control Network of British Columbia August 1, 2009 p 9 <http://picnetbc.ca/practice-guidelines>

Keeping immunizations up-to-date will help reduce the spread of disease that are preventable by vaccine. Please contact your local [Public Health Office](#) or [Regional Health Authority](#) directly for more information.

Specific Communicable Disease Management Guidelines

Seasonal Influenza “Get the Shot Not the Flu”

The flu is an infection caused by a virus. It can spread easily from one person to another through coughing, sneezing or sharing food or drinks. You can also get the flu by touching objects contaminated with flu virus and then touching your mouth, eyes or nose.

Flu symptoms usually appear suddenly and can include cough and a fever, sore throat, muscle aches, joint pain and exhaustion. Children may also feel sick to their stomach, vomit or have diarrhea. Elderly people, young children and people with lowered immunity may not have a fever. Not everyone who gets the flu develops symptoms but they still may be able to spread it to others, especially if they cough or sneeze. It's important for all people to practice proper cough and sneeze etiquette, whether or not they feel ill.

An annual flu shot is especially important for those at increased risk of serious illness from the flu, their caregivers and close contacts. This includes:

- Seniors age 65 or older
- Residents of personal care homes or long-term care facilities
- Children age six months to five years

- Those with chronic illness
- Pregnant women
- Health care workers and first responders
- Individuals of Aboriginal ancestry
- People who are severely overweight or obese
- or as determined by your primary health care provider

Manitobans over the age of 65 should also get a pneumococcal shot at the same time as the seasonal flu shot. Most adults only need one pneumococcal shot in their lifetime. ³³

The Canadian Paediatric Society's chart entitled "[Managing Infections](#)"³⁴ provides helpful information for care providers and residents to learn about common infectious diseases. By understanding the basic roles and functions of microorganisms in our environment, principles can be applied to prevent and control the spread of infection. Handwashing is the most important step we can take to avoid getting sick and spreading germs to others.

Handwashing Facilities and Practices

Following good handwashing practices is everyone's responsibility. Ongoing handwashing education, encouragement and supervision is important in maintaining good hand hygiene to break the chain of infection.

Handwashing supplies

- Hand sanitizers do not kill all types of germs it is best to use soap and water when available
- should use single-use disposable paper hand towels to dry or a single use cloth hand drying towel common or multi-use hand towels are not recommended because they allow for the spread of germs/recontamination of hands
- Use a plain soap for handwashing. Antibacterial soap is not recommended.
- Supervision of residents may be required to avoid potential ingestion or inadvertent contact of hand sanitizers with eyes and mucous membranes.

When to Wash Hands

- Before, during, and after preparing food
- Before eating food
- Before preparing/dispensing medications
- Before and after caring for someone who is sick
- Before and after treating a cut or wound
- Before leaving home for common/public areas and starting work

³³ Manitoba Health: Flu- Questions and Answers <http://www.gov.mb.ca/health/flu/qanda.html>

³⁴ [Well Beings A guide to health in Child Care, 3rd Edition 2008](#)

- Before leaving work or upon arrival at home
- Before and after using disposable gloves
- After using the toilet
- After changing diapers
- After assisting someone blow their nose or use the toilet
- After blowing your nose, coughing, or sneezing
- After touching an animal or animal waste
- After handling pet food or pet treats
- After touching garbage, unclean equipment and work surfaces, soiled laundry.

How to Wash hands

- Rinse hands with warm running water, add soap to palms and rub hands together to create lather
- Thoroughly cover all the surfaces of your hands and fingers (including nails) for 10 – 15 seconds
- Rinse under warm running water
- Dry hands thoroughly with single-use towel or hand dryer
- Turn off the tap with a clean paper towel

[Hand Hygiene poster](#)

[Handwashing Procedure poster \(for Adults\)](#)

[Handwashing Procedure poster \(for Children\)](#)

Waterless Handwashing – Hand Sanitizer Information & Tips

- The use of hand sanitizers does not eliminate the need for adequate handwashing facilities and practices because *“if there is heavy microbial soiling, hands must first be washed with soap and water to remove visible soiling.”*³⁵
- Alcohol strength shall be 70% to 90% with added emollients (glycerine or cetyl alcohol is less drying). Non alcohol hand sanitizers may be used.
- Must be used on dry hands because moisture from wet hands dilutes the alcohol.

How to Handrub

- Take a small amount of hand sanitizer (about the size of a nickel) on the palm of one hand
- Rub your hands together.
- Rub the product over all surfaces of your hands and fingers until your hands are dry. Do not wipe off with a paper towel.

³⁵ Health Canada, *Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care*, December 1998, p. 7.

Cleaning and Disinfection Procedures and Schedules

Cleaning and disinfecting environmental surfaces is another way in breaking the chain of infection. Clean means to render free of visible soil. Although many germs are removed by cleaning, surfaces can have lots of disease causing organisms on them. In many instances it is necessary to reduce microbial levels even further by disinfecting to reduce the risk of transmitting disease causing microbes.

Disinfection is the destruction of most disease-causing microorganisms on objects or surfaces using high temperatures or chemical solutions. It has a similar meaning to sanitize however disinfection can have a higher rate of germ destruction (low, intermediate and high-level disinfection) according to the type of product used, the concentration and contact time. Disinfection is recommended for cleaning up blood, fecal contamination, toilet fixtures, baths and surfaces that are frequently touched such as taps and door knobs.

The same principles and tips for cleaning and sanitizing food contact surfaces and non-food contact surfaces listed in the food section of this document apply to cleaning and disinfection of environmental surfaces. The following are additional cleaning and disinfection tips:

- The physical action of scrubbing with detergents and rinsing with water removes large numbers of microorganisms from surfaces.
- For disinfectants to work well soil, grease soap etc. must first be removed as these materials shield the germs from the action of the disinfectant and can neutralize the disinfectant
- Cleaners and disinfectants must be selected on the basis of effectiveness, acceptability, safety and cost.
- Make sure disinfectants bear a Drug Identification Number (DIN) issued by Health Canada. The DIN lets the user know that the product has undergone and passed a review of its formulation, labeling and instructions for use.
- Cleaners and disinfectants must be stored and used safely. Care providers and residents using chemicals need to be knowledgeable and follow safe storage and handling (i.e. chlorine and toilet bowl cleaner when mixed produce a toxic gas).
- Personal protective equipment (i.e. gloves) should be available and used appropriately.
- Cleaning equipment such as brooms and mops should be maintained in a clean, dry state after use.
- Cleaning should proceed from least to most soiled.
- Spills involving blood or body wastes should be cleaned up with disposable towels/cloths, which should be placed in a plastic bag for disposal in the regular garbage. The area should then be disinfected using a bleach water mixture (see appendix 4) or a chemical “disinfectant”
- Having clearly defined schedules of cleaning tasks will help to ensure that tasks are carried out at the appropriate frequency. Cleaning schedules can also be used as a helpful reference on the type of cleaner or disinfectant to use and the procedure to be followed for a specific task. Cleaning schedules should be established according to the type of surface to be cleaned and the type of soiling that occurs. For example:
 - spills – clean immediately
 - surfaces used for food preparation cleaned and sanitized after each use
 - surfaces used for diapering/incontinence care cleaned and sanitized after each use
 - kitchen, bathrooms, playroom – clean daily and as necessary.
 - bath tubs shall be cleaned and disinfected after each use. Jetted tubs require special cleaning and disinfection for further information contact your public health inspector.

- resident rooms, living rooms, offices, appliances – clean weekly and as necessary.
- mattresses, pillows, bedframes, bedroom furniture – clean between occupants.
- household furniture, walls, carpets, etc –follow a rotating schedule (monthly/yearly) and as necessary.
- toys shall be cleaned and disinfected routinely.
- toys used by young children that are mouthed should not be shared and washed, rinsed and sanitized in accordance with the procedure required for food contact surfaces

Toileting and Diapering/Incontinence Care

Disease organisms are easily spread from an infected person through fecal contamination of the environment. To reduce the spread of infection procedures that reduce fecal contamination of hands and the surrounding environment shall be in place. Diapering and incontinence care procedures, equipment and facilities shall be in place that are appropriate to individual needs. Even in cases where there is a low level of assistance required for toileting it may be necessary to monitor toilet rooms closely to ensure the toilet is flushed, fixtures are clean and free from stool or urine and that the washroom is safe and free of microbial hazards for continued use.

Diapering/ Incontinence Care

Where possible all diapering/incontinence care (including self care) should be done in a designated area such as a washroom. The change area shall be separate from any food preparation areas, and shall never be used for the temporary placement or serving of food.

Recommended Facility/Equipment

- An accessible hand-washing sink within the same room
- A changing surface that has an impervious, non-absorbent surface. Changing surfaces shall be cleaned and sanitized between each diaper/incontinence product change.
- Covered receptacles conveniently located close to the changing surfaces for the disposal of soiled diapers/incontinence products and wipes. These receptacles shall be washable, plastic lined and tightly covered. Diaper/incontinence product receptacles shall be cleaned and sanitized daily
- Disposable gloves
- An exhaust fan

The following web link provides examples of diaper change procedure:

<http://www.gov.mb.ca/fs/childcare/pubs/healthypractices/diapering.pdf>

Pets & Farm Animals

There are many benefits of human-animal interaction including education and companionship. Many of our home environments include pets and/or housing of farm animals on the property and it is important to keep in mind that disease can be spread to and from people and animals. Some people are at higher risk of getting a disease from animals because of age and health status. Therefore residential care facilities should have policies and procedures in place to reduce the risk for those in care that have interaction with animals. The following general guidelines are provided to assist care facilities in managing these risks:

- Pets should be in good general health, house trained, good tempered and examined regularly by a veterinarian. Vaccinations should be up to date and regular deworming as necessary. Records shall be kept on site for review by the public health inspector.
- Don't handle pets or farm animals that have diarrhea.
- If the pet's diarrhea lasts for more than 1 or 2 days take your pet to your veterinarian. Ask the veterinarian to check the pet for infections that may be the cause of diarrhea.
- If you are getting a pet from a pet store, animal breeder, or animal shelter (pound), check the sanitary conditions and license of these sources. If you are not sure about the animal's health, have it checked out by your veterinarian.
- Pets should not drink from toilet bowls or get into garbage.
- Don't let your pets hunt, eat or roll in another animal's stool (droppings).
- Keep pets clean well groomed (nails clipped, fleas off).
- Pets should not be allowed in common food preparation or eating areas.
- Pets should have their own area for sleeping and eating.
- In resident rooms when active care is given (i.e. dressing changes) the pet should not be in the room.
- Interactions with pets and residents may need supervision depending on the level of care (i.e. children younger than 5 years old).
- Do not allow residents to kiss animals or to put their hands or other objects into their mouths after handling animals.
- Hands should be washed thoroughly with running water and soap after contact with animals, animal food/treats, cages and animal equipment.
- Cages and aquariums should not be cleaned in food preparation areas.
- Residence that may be at higher risk of infection such as children or elderly should avoid handling animal waste and cleaning up litter, cages etc.
- Don't touch stray animals because you could get scratched or bitten. Stray animals can carry many infections.
- Avoid exotic pets such as monkeys, hedgehogs, ferrets, reptiles and amphibians (snakes, lizards, turtles, frogs). These pets are known to carry disease organisms and it is not recommended that they be kept in residential care homes.³⁶
- If bitten or scratched wash the wound with warm soapy water and seek medical advice.
- People/ residents working with animals outside the residential care facility should be knowledgeable and take precautions to prevent the spread of infection within the residential care facility.

For more information on healthy pets and healthy people see:

[Centre of Disease Control and Prevention \(CDC\) National Centre for Infectious Disease ; Healthy Pets Healthy People](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5805a5.htm)

Personal Hygiene Items and Practices

³⁶ CDC: Guidelines for Animals in School and Child-Care Settings May, 2009
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5805a5.htm>

Keeping your body, hair and teeth clean is essential for good health and can reduce the spread of infection. The following tips are not specific to any particular disease; they are good, common-sense prevention practices that should always be used.

WASH YOUR HANDS to protect yourself and others from infectious disease.

- Bath or shower regularly
- Brush teeth at least once or twice per day.
- Do not share personal care articles (combs, brushes, razors, towels, etc) with anyone else and clean them regularly.
- Personal care items may need to be labeled or stored in the residents' room to prevent use by other residents.
- It is preferable to use liquid soaps and body wash from a dispenser. If liquid soap dispensers are refilled they should be cleaned and sanitized before refilling as germs can grow in the soaps.
- If bar soap is used it must be kept in a clean, dry soap dish that allows the bar to drain between uses.
- Each resident using an incontinence brief should have a personal incontinence care cleanser.
- Do not share eating utensils or cigarettes.
- Cover your mouth when you cough or sneeze. Keep disposable tissues handy and put them in the garbage after use.
- Avoid touching your eyes or mouth with your hands.
- Change clothing regularly.

Laundry

Although soiled linen has been identified as a source of microorganisms, the risk of actual disease transmission appears low, provided that hygienic handling, storage and processing of clean and soiled linen are carried out. Clothing, bedding etc. can be laundered together using detergent, and dried in a hot air dryer to ensure killing of microorganisms.^[1]

General Requirements (laundry)

- Personal protective equipment (ex: gloves) should be made available for use in sorting/handling laundry soiled with blood or other body wastes.
- Appliances must be cleaned when visibly soiled.
- Donated clothing must be laundered before use/distribution.

The following method must be followed for cleaning soiled laundry:

Collection

- Laundry should be collected in a manner that prevents contamination of the environment.
- Care providers should handle any laundry soiled with blood or body fluids with gloves and avoid touching it to their clothes or skin.
- Position the laundry basket nearby to reduce handling (keep off the floor and upholstered furniture);
- Handle laundry with minimal agitation and do not shake.

^[1] *Infection Control Guidelines: Providing Health Care to the Client Living in the Community* Provincial Infection Control Network of British Columbia August 1, 2009

- Remove fecal material into the toilet before storage.
- Baskets or hampers are appropriate and should be cleaned if visibly soiled.
- Laundry soiled with blood or body wastes should be washed as soon as possible. The time during which laundry can be held before washing depends on issues of odour control and stain removal rather than infection control.

Sorting

- Sorting should be done in a way that prevents the contamination of clean laundry either by handling or by being placed too close to unwashed laundry.
- Sorting is usually done according to temperature and product requirements.
- Care should be taken to identify objects (ex: needles) that may injure individuals or damage appliances.

Washing

The usual cycles of household washing machines are adequate. Using hot water for heavily soiled items is beneficial. Bleach will decrease the number of germs but may not be compatible with the fabric.

Drying

Use an automatic dryer to dry clothes. Proper drying reduces microbes.

Storage

Clean laundry should be stored separate from soiled linens and handled in a way that prevents contamination. ^[2]

Hazardous Product Safety

Storage and Handling of Chemicals

- Store chemicals/cleaners separately from food.
- Store chemicals/cleaners in a secure location (i.e. a locked cupboard).
- Store chemicals/cleaners according to manufacturer's instructions.
- Store chemicals in labeled containers.

Storage of Medications & Sharps

- All medications must be stored securely and administered in a clean well-lit area. Emergency medications (i.e. epi-pens, inhalers) should be kept with the individual at all times unless circumstances (ex: too young, intellectually disabled) dictate otherwise. Refrigerated medicines should be stored in a locked container and be kept separated from food. Sharps must be stored in approved puncture resistant containers.
- Avoid cuts or punctures from sharp objects, such as needles, that may have been in contact with someone else's blood or body fluids. Needles that have been used by diabetics or others should be carefully disposed of in containers specifically designed for "sharps."

^[2] [Infection Control Guidelines for Community Shelters & Group Homes](#)

- Garbage should be contained and disposed of by usual methods. Sharp objects (such as needles) should be placed in approved, puncture-resistant containers to prevent puncture injuries or cuts to the skin.

Appendix 1 Public Health Inspection Contact Numbers

Manitoba Health - Public Health Inspection Offices Phone the one nearest you (area code 204):

Brandon *	204-726-6601
Dauphin	204-622-2062
Killarney	204-523-5285
Lac du Bonnet	204-345-1447
Portage la Prairie	204-239-3187
Selkirk*	204-785-5209
Steinbach	204-326-2733
The Pas	204-627-8307
Thompson	204-677-6472

Morden*	204-822-2850
Winnipeg*	204-945-4204

*denotes regional office

Appendix 2 Preparing Household Bleach Solution For Sanitizing and Disinfecting ^{37 38} Sodium Hypochlorite

Note: The strength of household bleach solutions weaken when diluted with water so to maintain optimum strength it may be necessary to mix new solutions daily ³⁹

1:500 Household Bleach Solution 0.01% (approximately 100 ppm)

- No rinse sanitizing concentration for food contact surfaces such as cutting boards, dishes, utensils and mouthed toys
- Sanitizer concentration for food contact surfaces to be 50 ppm to 200 ppm
- 1 ml household bleach + 500 ml of water
($\frac{1}{4}$ teaspoon bleach + 2 cups water)
- 10 ml household bleach + 4 litres of water
(2 tsp bleach + 1 gallon of water)

1:100 Household Bleach Solution 0.05% or approximately 500 ppm

- Intermediate level disinfection used for disinfecting commonly touched surfaces such as faucets, light switches, door knobs and nonfood contact surfaces.
- 50 ml household bleach + 4950 ml of water
($\frac{1}{4}$ cup bleach + 24 $\frac{3}{4}$ cups water)
- 5 ml household bleach + 495 ml of water
(1 tsp bleach + 2 cups water)

1:10 Household Bleach Solution 0.5% or 5000 ppm

- High level disinfectant used to decontaminate semi critical items (i.e. nail clippers, tweezers) and surfaces contaminated with feces, vomit, mucus or blood
- 250 ml household bleach + 2250 ml water
(1 cup bleach + 9 cups water)
- 125 ml household bleach + 1125 ml water
($\frac{1}{2}$ cup bleach + 4 $\frac{1}{2}$ cups water)
- 50 ml household bleach + 450 ml water
($\frac{1}{4}$ cup bleach + 2 $\frac{1}{2}$ cups water)

³⁷ Ontario Ministry of Health, *Personal Services Settings Protocol Infection Control Program*, January 1998

³⁸ Health Canada, *Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care*, Document Dissemination Division at the laboratory Centre for Disease Control, December 1998 (<http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/98pdf/cdr24s8e.pdf>)

³⁹ Rutala WA, Cole C, et al *Guideline for Disinfection and Sterilization in Health Care*. MMWR 2006 May 1998 Vol. 19 no. 5 p 323-327