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1.0 PURPOSE

Visiting a petting zoo or open farm is a fun and an educational event. However, rarely, serious diseases can be transmitted from animals to humans. This document aims to reduce the risk of zoonotic disease (primarily enteric disease) transmission, especially to children, from animals at petting zoos or open farms through the provision of:

- Educational materials for operators of petting zoos and open farms outlining how to reduce the risk of illness to their visitors (see Appendix I, III and IV)
- A framework for public health staff to assess proposed and existing petting zoos and open farms so as to minimize the risk to human health (see Appendix II, III and IV)

This policy was drafted in October 2006, revised in March 2011 and reviewed and approved by the BC Enteric Policy Working Group consisting of representatives from the British Columbia Centre for Disease Control (BCCDC) and the Regional Health Authorities.

2.0 DEFINITIONS

Enteric diseases: Diseases affecting the gastro-intestinal tract, generally causing nausea, vomiting and/or cramps, diarrhea.

Open farm: Farms where the public has the opportunity to have contact with farm animals

Petting zoo: Any place where the public may have direct contact with animals and their environment such as animal exhibits, pumpkin farms, country fairs, amusement parks, shopping malls, children's parties and animal rides

Zoonotic diseases: Diseases transmitted from animals to humans

3.0 ZOONOTIC DISEASES ASSOCIATED WITH PETTING ZOOS AND OPEN FARMS

3.1 Outbreaks

Outbreaks of disease that have been transmitted from animals to humans in petting zoo and open farm settings are numerous (National Association of State Public Health Veterinarians, Inc. 2009 Varma 2003, Hurd 2002). *E. coli*, *Salmonella, Cryptosporidium, Giardia* and *Campylobacter* have been identified as common causative organisms in petting zoo and farm-based outbreaks.

In 2009 an outbreak of *E. coli* O157:H7 associated with a petting farm at a special event in BC affected at least 15 children and 2 adults. The majority of those who became ill had direct contact with the animals and/or fecally contaminated bedding materials. Also in 2009, 93 people, mostly children, were infected with *E. coli* O157:H7 after visiting a petting farm in Godstone, England (Report of the *E. coli* O157Independent Investigation Committee, 2010). In 2003 an *E. coli* O157:H7 outbreak occurred in BC among children from schools and child care facilities visiting a petting zoo at a pumpkin farm (David 2004). All children who became ill had contact with the farm animals. Adequate hand washing facilities were not available. In 2000-01 in Minnesota, outbreaks at a farm day camp where children became ill after taking care of a sick calf, multiple organisms (*Cryptosporidium, E. coli, Salmonella*

and *Campylobacter*) were isolated from the people who had contact with the animal (Smith 2004). Those washing their hands after animal contact and before going home were protected from infection.

In recent studies of public behaviour at petting zoos where outbreaks have occurred, 28 to 62% of people did not wash their hands after leaving the animal areas (Reinberg 2006). See section 3.3 for other risk factors.

E. coli O157:H7 survives for a prolonged period of time in the environment and has been isolated from bedding, soil, sawdust and accumulated dust on rafters in buildings that have previously housed animals (Centers for Disease Control and Prevention 2005, Varma 2003). In one outbreak, those infected visited a fair that took place in a building a week after animals were removed from the building. Forty-two weeks later *E. coli* was still present in the sawdust on the floor (Varma 2003).

3.2 Modes of Transmission

Animals in petting zoos and on farms that have been the source of diseases include: cows, goats, sheep, horses, rabbits, pigs and chickens.

- **Fecal/oral transmission**. An animal's feces can contaminate the environment around it including the soil, bedding and the animal's hair or fur. This fecal matter can contain infectious organisms. When people touch an animal or its surroundings and do not wash their hands after, fecal matter can spread from hands to mouths (e.g. through eating, sucking fingers). An animal's saliva can also be contaminated with fecal organisms transmitting the organisms when an animal bites, scratches or licks a person. Infections can also occur when people take part in milking cows or other animal demonstrations and get organisms on their hands that are then transferred to their mouths.

  Animals in petting zoos may become stressed when they are crowded in their enclosures or when they are in contact with humans. Stressed animals can pass an increased numbers of pathogenic organisms in their feces, subsequently increasing the risk of transmission to humans (Hurd 2002, National Association of State Public Health Veterinarians, Inc. 2005). Young animals are more likely to shed pathogens such as *E. coli* O157:H7 or *Cryptosporidium* (Hancock 1998, Merck Veterinary Manual 2008).

  Young children are especially at risk of serious illnesses because their immune systems are not fully developed. Children are also more likely to expose themselves to infection by putting their fingers in their mouths, thereby ingesting dirt and bacteria that were on their hands. Others at risk include pregnant women, the elderly and those with weakened immune systems.

  E. coli O157:H7, *Salmonella, Campylobacter, Giardia, Cryptosporidium,* and *Yersinia* can be spread through fecal/oral transmission from animals (or their environment) to humans.

- **Airborne transmission**. Some diseases such as Q fever and toxoplasmosis can be transmitted when organisms become airborne. This can occur when dust that has been contaminated by infected animal waste, including placental tissues and birth fluids, is stirred up.

For more information regarding disease transmission from animals to humans see the BC HealthFiles at http://www.healthlinkbc.ca/healthfiles/index.stm:

- Petting Zoo and Open Farm Visits
- Role of Pets in Humans Disease
- Rabies
- Hantavirus Pulmonary Syndrome
- *E. coli* Infection
- Salmonellosis
- *Campylobacter* Infection
- Cryptosporidiosis
- Yersiniosis

3.3 Risk Factors for Zoonotic Disease Transmission

(National Association of State Public Health Veterinarians, Inc. 2009)

- Inadequate hand-washing
- Contact with animals in the absence of hand washing
- Contact with the animals' environment including enclosures, bedding materials, fencing, feed, soil, feces
- Failure to clean contact surfaces after contact with animals
- Exposure to the birthing process and environment
- Contact with newborn or baby animals
- Contact with ill animals
- Feeding the animals
- Eating the animals' food
- Eating edible containers used to hold animal feed (e.g. ice cream cones)
- Consumption of food in a petting zoo or animal enclosure
- Thumb-sucking, or use of a pacifier or sippy cup
- Children under 5 years of age
- Lack of supervision of children
- Limited awareness of the risk of disease
- Transportation, confinement, handling and crowding of animals in their enclosures
- Comingling of animals
- Contact with wild or exotic animals, including primates, bats and wolf-dog hybrids; unpredictable animals, strays, reptiles, amphibians, venomous animals or insects.

4.0 SUGGESTED ACTIONS FOR PUBLIC HEALTH OFFICIALS

Document the locations of petting zoos and open farms operating in the Health Authority as and when they become known

- Review the plans of new permanent facilities for approval before construction, where local government arrangements are in place for referral.
- Identify and prioritize for inspection bigger operations with high volumes of visitors.

When appropriate, educate parents, child care operators, caregivers and teachers

Distribute Health File #61b *Petting Zoo and Open Farm Visits* available at http://www.healthlinkbc.ca/healthfiles/hfile61b.stm to:

- Child Care Licensing Officers
- Petting zoo and open farm operators
- School districts
- Child care centres
- Preschool centres
- Summer day camps

Parents, school groups, etc. are encouraged to contact public health if they have any questions about health and safety at petting zoos or open farms.

When appropriate, educate operators of petting zoos and open farms

Distribute *Information for Operators of Petting Zoos and Open Farms* (Appendix I) to operators of permanent or temporary petting zoos and open farms.

Inspect petting zoos or open farms

Pursuant to the Public Health Act, Division 4 – Inspections and Orders, medical health officers and environmental health officers have the authority to conduct inspections of petting zoos and open farms, to determine if a health hazard exists and to issue orders if a health hazard exists or is imminent.

Health Authorities may conduct routine inspections of permanent or temporary petting zoos and open farms.

Inspections should be conducted:

- When complaints are received
- As part of the investigation of a case or cases of zoonotic diseases that may be associated with a petting zoo or open farm
- When special events are proposed

Use the Inspection Checklist in Appendix II as a resource for inspections.

Take enforcement action as necessary

Any enforcement action will be conducted at the discretion of the Health Authority. Significant concerns which may warrant immediate enforcement or closure include:

- No or inadequate hand washing facilities
- Poor sanitation
- Reported zoonotic disease cases associated with a petting zoo or open farm
- Ill or distressed animals in public contact areas
- Any other condition that may put the public's health at risk

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6.0 APPENDIX I: Information for Operators of Permanent or Temporary Petting Zoos or Open Farms

- **Information on diseases that can be spread from animals to humans**
    - **Which animals spread diseases to humans?**
    - **Which diseases do animals spread to humans?**
    - **How are diseases spread from animals to humans?**
    - **What are the risk factors for disease transmission?**
    - **What are the symptoms of diseases spread from animals to humans?**
- **Site preparation: set up of a petting zoo in order to minimize the risk of disease transmission**
- **Site operations and maintenance**

Visiting a petting zoo or open farm is a fun and an educational event. However, contact with animals must be made in a safe way as rarely, serious diseases can be spread from animals to people. People at most risk of serious illness include children, pregnant women, the elderly, and persons with weakened immune systems.

INFORMATION ON DISEASES THAT CAN BE SPREAD FROM ANIMALS TO HUMANS

Which animals spread diseases to humans?

All animals can be potential sources of diseases. Animals in petting zoos and on farms that can spread diseases to people include cows, goats, sheep, horses, rabbits, pigs and chickens. Depending on the disease, young animals such as chicks, calves, and lambs may be more likely to be infected than older animals.

How are diseases spread from animals to humans?

Diseases can be spread in places where the public has contact with animals and their environment such as petting zoos, open farms, animal exhibits, pumpkin farms, country fairs, amusement parks, shopping malls, children's parties and animal rides. Outbreaks of disease related to petting zoos have occurred. In 2009 an outbreak of *E. coli* O157:H7 associated with a petting farm at a special event in BC affected at least 15 children and 2 adults. The majority of those who became ill had direct contact with the animals and/or fecally contaminated bedding materials. In 2003, an *E. coli* O157:H7 outbreak occurred in BC as a result of children from schools and day cares visiting a petting zoo at a farm. All children who became ill had contact with the farm animals. Adequate hand washing facilities were not available. In 2009, 93 people, mostly children, were infected with *E. coli* O157:H7 after visiting a petting farm in Godstone, England (Report of the *E. coli* O157Independent Investigation Committee, 2010)

Animals carry many types of germs in their intestines. These germs can spread from animals to people in the following ways:

- An animal's feces can get onto the soil, bedding and the animal's hair or fur. The feces can contain germs that can make people sick when people touch an animal or the area around the animal, and do not wash their hands after. Fecal matter can spread from hands to mouths through eating or sucking fingers.
- An animal's saliva or spit can also carry germs that can be spread when an animal bites, scratches or licks a person.
- Germs can be found in raw milk and on cow udders. People who milk cows can get germs on their hands which can then spread to their mouths.

Young children are most at risk of infection because they are more likely to put their fingers in their mouths, ingesting dirt and bacteria from their hands.

- Rarely, diseases including Q fever and toxoplasmosis can be spread when germs get into the air. This can occur when dust is stirred up that has been spoiled by infected animal waste, including birth fluids. For this reason, the public should not be involved in the birthing process.

Which diseases are spread from animals to humans?

Some of the most common diseases that can be spread from animals to people are infections caused by *E. coli* O157, *Salmonella*, *Campylobacter*, *Giardia*, *Cryptosporidium*, and *Yersinia*. For more information, visit the BC HealthFiles at www.healthlinkbc.ca/healthfiles/index.stm

What are the risk factors for disease transmission and injury?

- Inadequate hand-washing
- Contact with animals in the absence of hand washing
- Contact with the animals' environment including enclosures, bedding materials, fencing, feed, soil, feces
- Failure to clean contact surfaces after contact with animals
- Exposure to the birthing process and environment
- Contact with newborn or baby animals
- Contact with ill animals
- Feeding the animals
- Eating the animals' food
- Eating edible containers used to hold animal feed (e.g. ice cream cones)
- Consumption of food in a petting zoo or animal enclosure
- Thumb-sucking, or use of a pacifier or sippy cup
- Children under 5 years of age are at higher risk (because of increased hand-to-mouth contact and still-developing immune systems)
- Lack of supervision of children
- Limited awareness of the risk of disease

Transportation, confinement, handling and crowding of animals in their enclosure

- Comingling of animals
- Contact with wild or exotic animals, including primates, bats and wolf-dog hybrids; unpredictable animals, strays, reptiles, amphibians, venomous animals or insects.

(National Association of State Public Health Veterinarians, Inc. 2009)

What are the symptoms of diseases spread from animals to humans?

- Possible symptoms include diarrhea, bloody diarrhea, stomach cramps, nausea, vomiting, fever, bloating, and gas.
- Some diseases can result in serious complications like kidney failure.
- People at most risk of serious complications from infections include children, pregnant women, the frail elderly, and persons whose immune systems are compromised.

SITE PREPARATION: SET UP OF A PETTING ZOO OR OPEN FARM IN ORDER TO MINIMIZE THE RISK OF DISEASE TRANSMISSION

HANDOUTS

- Have a supply of the Health File #61b *Petting Zoo and Open Farm Visits* to hand out to visitors when they arrive at your facility. It is available online at http://www.healthlinkbc.ca/healthfiles/hfile61b.stm.
- If visitors book ahead, send out the Health File to them in advance.

SIGNS

Signs should be multi-lingual (especially including languages common to the area) or pictorial and include direction regarding:

- How, when and where to wash hands (See Appendix III for sign templates)
- Where designated eating areas are located
- How to handle the animals safely

Post hand washing signs:

- At the entrance to the petting zoo or farm
- At the entrances and exits of the animal enclosures or petting areas
- At the entrance to designated eating areas
- On the outside of food service booths
- In the toilet areas
- At the exit of the petting zoo or farm where visitors are changing their boots or shoes

Around the hand washing areas

HAND WASHING STATIONS

Number of hand washing stations

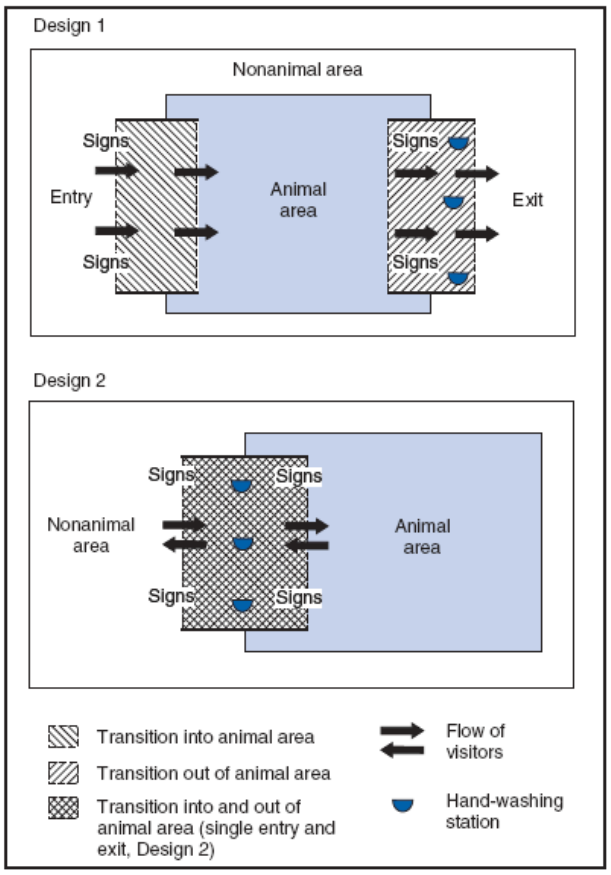
Provide enough hand washing stations so that visitors do not have to wait in line for a prolonged period of time. Consider how many people leave the animal areas and how long it takes people to wash their hands. The environmental health officer at your local health department can help you estimate the number of hand washing stations required.

Hand washing stations should be set up at the following locations:

- Animal areas: separate entrances and exits to and from the animal areas are preferable, with hand washing stations located directly outside of the animal areas. See Figure 1.
- At the entrance to eating areas;
- In the toilet areas;
- At the exit of the petting zoo or farm where visitors are changing their boots or shoes.

Figure 1. Location of hand washing stations

FIGURE. Examples of designs for animal contact settings, including clearly designated animal areas, nonanimal areas, and transition areas with hand-washing stations and signs



Signs should be in different formats depending on the audience (e.g., children and people who do not speak English).

Animal area – Areas in which animal contact is possible.

Taken from National Association of State Public Health Veterinarians, Inc. Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2009. MMWR 2009; 58 (No. RR-05): 1-15. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5805a1.htm

What you need to set up a hand washing station:

- Potable running water (preferably warm water)
- Sinks (preferably that small children, adults and people with disabilities can access)
- For permanent locations, hands free taps (e.g. sensor or pedal operated) are strongly recommended
- Liquid soap
- Paper towels
- Garbage containers
- Adequate space for people who are waiting in line

Liquid soap and single use paper towels should be in dispensers.

Do not use containers of standing water for hand washing because reusing water can spread bacteria from one person to the next. Adding a disinfectant to the water does not make the practice acceptable.

Hand sanitizing gels are not a substitute for proper hand washing and are not effective if hands are visibly soiled. They can be used after hand washing.

Hand washing stations at temporary events:

All requirements are the same as listed above, except:

- Potable running water may be supplied from large water containers (minimum 5 gallons) with spigots (that do not need to be held down to operate).
- There must be a potable water source nearby to refill the containers as needed.
- Buckets may be used to collect waste water and emptied into the sanitary sewer.

EATING AREAS

It is good practice to provide visitors with a designated area to eat and rest.

- Separate the eating area from the animal and petting areas.
- Post visible signs directing the public to hand washing stations, i.e. on the way into the food service and/or eating area.
- Only pasteurized products (milk, milk products, juices and ciders) should be offered for consumption. The sale of unpasteurized milk is illegal.
- Do not allow pets or domesticated animals and birds in the eating area.
- Provide adequate garbage containers with lids.
- Remove food debris from the eating area so that animals and birds are not attracted to the area.

SITE OPERATIONS AND MAINTENANCE

SUPERVISION

Offer visitors an orientation to the petting zoo or open farm. Supervisory staff should be prepared to:

- Demonstrate good hand washing techniques to visitors.
- Remind visitors to wash their hands when they leave the enclosures, or pet or feed an animal.
- Remind visitors that there is no eating or drinking in the animal areas.
- Advise visitors on proper petting techniques and how to behave around the animals.
- Advise visitors on proper feeding techniques to avoid bites.
- Ensure visitors do not have access to dirty or fecally contaminated animal bedding areas and surfaces.

Supervisory staff should be in or near the animal area and prepared to offer assistance if needed.

ANIMAL HEALTH

- Have a veterinarian administer a comprehensive animal health program including: examination of ill animals, vaccination and parasite control.
- Animals must be in good health. Ill animals must not be put on display.
- Do not crowd animals in their enclosures. Crowding can stress animals and result in increased shedding of germs.
- Animals should not give birth in public areas. If animals do give birth in public areas, ensure the public does not have contact with birthing animals. Ensure any materials contaminated during birthing are removed.

SITE MAINTENANCE

- Remove manure and any soiled materials as soon as possible from animal enclosures and areas that visitors have access to.
- Keep bedding (straw, shavings) clean and dry and replace it as needed.
- Keep animal bedding areas separate from areas that the visitors have contact with the animal to reduce contact with soiled materials.
- Ensure that the enclosure, including all hand rails and fencing, is kept as clean as possible.
- Pick up garbage on a regular basis.
- Check hand washing stations throughout the day to restock supplies such as soap and paper towels.

ACCIDENTAL INJURY

- Have a first aid kit available in the event that a visitor is bitten, scratched or injured.
- Have staff trained in first aid.
- Advise injured visitors to seek medical attention.

7.0 APPENDIX II: Inspection Checklist for Environmental Health Officers and Operators of Petting Zoos and Open Farms

Premises Name: **Operator Name:**

EHO: **Date of Inspection:**

Operators: You can use this checklist to determine if you are ready to operate.
If the following critical items occur, it is not safe to open your facility to the public.

- ***No hand washing facilities***
- ***Inadequate hand washing facilities***
- ***Poor sanitation***
- ***Diseases in humans associated with visits to your petting zoo or open farm***
- ***Ill or distressed animals in public contact areas***
- ***Any other condition that may put the public at risk***

SIGNS

Are there signs regarding:	**Yes**	**No**
• How and where to wash hands?	___	___
• Where designated eating areas (if any) are located?	___	___
• How to handle the animals safely?	___	___

Are hand washing signs posted:	**Yes**	**No**
• At the entrance to the petting zoo or farm?	___	___
• Just outside the exit from the animal contact areas?	___	___
• At the entrance to designated eating areas?	___	___
• In the toilet areas?	___	___
• In the hand washing areas?	___	___
• On the outside of temporary food service booths?	___	___
• At the exit of the petting zoo or farm where visitors are changing their boots or shoes?	___	___

Comments: _____

HAND WASHING STATIONS	**Yes**	**No**
Is there an adequate number of hand washing stations?	___	___
Are the hand washing stations properly equipped with:		
• Running water?	___	___
• Sinks that small children, adults and people with disabilities can access?	___	___
• Liquid soap?	___	___
• Paper towels?	___	___
• Garbage containers?	___	___

Are there hand washing stations located:	**Yes**	**No**
• Just outside the exit from the animal contact areas?	___	___
• At the entrance to designated eating areas?	___	___
• In the toilet areas?	___	___
• At the exit of the petting zoo or farm where visitors change their boots or shoes?	___	___

Comments: _____

EATING AREAS	**Yes**	**No**
• Is there an eating area?	___	___
• Is it totally separate from the animal contact areas?	___	___
• Are milk, milk products, juices and ciders for sale pasteurized?	___	___
• Are pets, farm animals or large birds prohibited from accessing the eating area?	___	___
• Is there an adequate number of garbage containers with lids?	___	___
• Is food debris removed from the eating area regularly?	___	___

Comments: _____

ANIMAL CONTACT AREAS	**Yes**	**No**
• Are animals clean?	___	___
• Are animal contact areas free of large amounts of fecal matter?	___	___
• Are animals uncrowded in the contact areas?	___	___
• Is manure put in an area that is not accessible to visitors?	___	___
• Are bedding areas and any fecally contaminated areas separate from animal contact areas?	___	___

Note: Ask operator about the general health of the animals and the procedures the operator follows if animals are ill.

Comments: _____

SUPERVISION	**Yes**	**No**
• Are there supervisory staff?	___	___
• Are they knowledgeable about zoonotic diseases (e.g. sources, transmission, importance of hand washing)?	___	___

Do the supervisory staff:

• Demonstrate good hand washing technique to visitors?	___	___
• Remind visitors to wash their hands when they leave the enclosures?	___	___
• Remind child care givers that there is no eating or drinking in the animal areas?	___	___
• Advise visitors how to behave around the animals?	___	___
• Advise visitors on proper petting techniques?	___	___
• Advise visitors on proper feeding techniques to avoid bites?	___	___

Comments: _____

8.0 APPENDIX III: Hand Washing Sign Templates

The following 3 pages contain Hand Washing Sign templates that can be printed and used as needed.

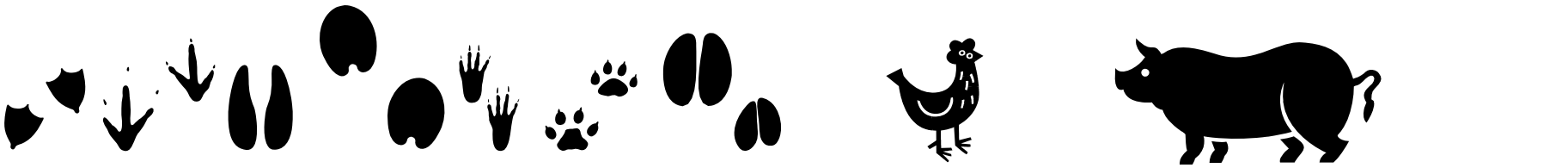
Know that animals may carry germs that can make people sick

Never eat, drink or put things into your mouth in animal areas

Older adults, pregnant women and young children should be extra careful around animals

Wash your hands with soap and water right after visiting the animal area

How to be Safe around Animals!



Used and modified courtesy of the National Association of State Public Health Veterinarians

Wash Your Hands

Lavez-vous les mains

손을 씻으세요

ਆਪਣੇ ਹੱਥ ਧੋਵੋ

洗手

دست هایتان را بشوئید

Lávese las manos

Hãy rửa tay

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

BRITISH COLUMBIA
The Best Place on Earth

HOW TO WASH YOUR HANDS

1. WET YOUR HANDS

2. APPLY PLAIN SOAP

3. RUB HANDS TOGETHER

4. RINSE YOUR HANDS

5. DRY YOUR HANDS

6. TURN OFF TAP WITH PAPER TOWEL

LEAVE THE WASHROOM NEAT AND TIDY

9.0 APPENDIX IV: Estimating the Number of Hand Washing Stations

Number of hand washing stations

Provide enough hand washing stations so that visitors do not have to wait in line for a prolonged period of time. Consider how many people leave the animal areas (e.g. large school groups) and how long it takes people to wash their hands.

Suggested guidelines for estimating an adequate number of hand washing stations:

$$\frac{\text{Maximum \# people in animal area x time required for hand washing}}{\text{Average time spent in animal area}}$$

For example, if you estimate that a maximum of 30 people will be in the animal area at any given time, that they spend 15 minutes in the animal area on average and that each person will take one minute to wash their hands, you should provide enough hand washing facilities for two people to use at one time.

More examples:

$$\frac{\text{15 people x 1 minute}}{\text{15 minutes}} = \text{1 hand washing station}$$

$$\frac{\text{30 people x 1 minute}}{\text{15 minutes}} = \text{2 hand washing stations}$$

$$\frac{\text{60 people x 1 minute}}{\text{15 minutes}} = \text{4 hand washing stations}$$

Similar calculations can also be made for main exits, entrances to eating areas or other recommended locations.

Adapted from: Health & Safety Executive. Avoiding ill health at open farms – Advice to farmers (with teachers' supplement). Agriculture Information Sheet No. 23 and Supplement (revised). [cited 2006 Mar 18]. Available from: http://www.hse.gov.uk/pubns/ais23.pdf.