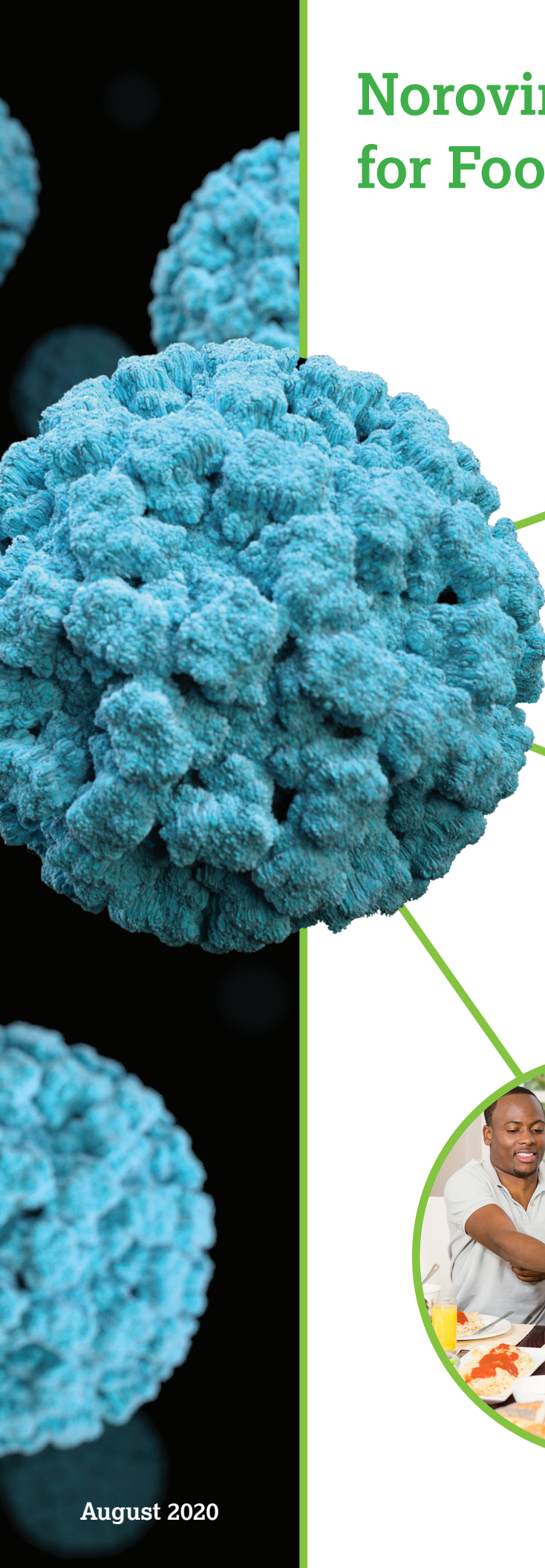


Norovirus Information Guide for Food Retail





Introduction:

The *FMI Norovirus Information Guide for Food Retail* offers helpful guidance on how to respond to, and prevent, norovirus infections within retail food establishments. This guide will answer questions regarding the exclusion of ill food workers from working in food establishments, in-store vomitus and diarrheal cleaning and disinfection procedures, proper handwashing procedures and general information about norovirus. To reduce the likelihood of foodborne outbreaks, the retail food industry must take immediate steps to address the risks of norovirus during growing, harvesting, processing, receiving, preparation and service to prevent norovirus contamination and protect the food supply for all customers.

This guide will address the following:

What is norovirus?	3
What are the symptoms of norovirus?	4
How is norovirus transmitted?	4
Why is norovirus a concern for the retail food industry?	5
How can a norovirus outbreak be prevented?	6
How should retailers respond to and manage situations potentially involving norovirus contamination?	12

What is norovirus?

Norovirus is a highly contagious group of non-enveloped, single-stranded RNA viruses that are the leading cause of foodborne illness in the United States.^{1,2,3} Each year, approximately 20 million Americans get sick from norovirus, mostly from coming in close contact with an infected individual or consuming contaminated food. While all individuals are at risk of contracting the virus, infants, elderly and persons with weakened immune systems are most at-risk of severe illness. There are currently no publicly available vaccines to prevent norovirus infections.

Norovirus is easily spread from person-to-person through direct contact with someone infected with norovirus, ingesting contaminated food or beverages, touching contaminated surfaces and putting unwashed hands in one's mouth.^{3,4} Low-level contamination of food, water or surfaces can lead to major outbreaks due to norovirus' low infectious dose.⁴ Norovirus is a concern in many different settings, the most at-risk

environments include: food establishments, daycares, healthcare settings and cruise ships.

Since there are several strains of norovirus, people may become ill with norovirus multiple times throughout their life.² While only a few virus particles can make other people sick, individuals infected with norovirus shed billions of norovirus particles. People who are infected with norovirus are most contagious when they are experiencing symptoms and a few days after recovering from norovirus.^{7,8} However, some people may be contagious for two or more weeks after recovery.

Foodborne illness from norovirus can be prevented by excluding food workers who have been diagnosed with norovirus; practicing proper handwashing and personal hygiene; developing strong food safety and sanitation programs; and avoiding bare hand contact with ready-to-eat foods. Each of these topics will be covered in greater detail throughout this guide.



What are the symptoms of norovirus?

The most common symptoms of a norovirus infection include vomiting, diarrhea, nausea and stomach pain. Other symptoms may include fever, headache and body aches.⁷ Typically, symptoms appear within 12 to 48 hours after ingesting the virus and usually last about one to three days.⁷ Anyone can become infected with norovirus but individuals who are immunocompromised are most at risk. In most cases, recovery occurs without further complications, but frequent vomiting and diarrhea can cause dangerous levels of dehydration, which place young children, older adults and immunocompromised persons at risk.⁷

An employee (or employees) working in a food establishment with a norovirus infection, whether or not they are exhibiting symptoms, is a risk to food safety and is putting public health in danger. Therefore, employees should report to the Person in Charge (PIC) if they are diagnosed with norovirus or if they are symptomatic with vomiting or diarrhea. Employees who are diagnosed with norovirus or employees with symptoms associated with norovirus (i.e., vomiting, diarrhea, etc.) should be excluded from working in a food establishment until

procedures are followed to allow the previously ill employee to return to work. Norovirus is a reportable diagnosis meaning that food establishments must report any norovirus diagnosis to the proper regulatory authority ([2017 FDA Food Code 2-201.11](#)).

Note: For more information on norovirus symptoms and at-risk populations, please consult with your local health department or visit the [CDC website](#).

How is norovirus transmitted?

Norovirus is typically transmitted person-to-person by ingesting vomit or fecal particles from infected people or through contaminated food, water or surfaces. Individuals infected with norovirus can shed billions of viral particles in their vomit and feces which can contaminate nearby surfaces, and as far as 25 feet during projectile vomiting events. Some examples of the most common transmission examples include:

- Poor sanitary conditions.
- Improper hand hygiene.
- Inadequate cleaning and disinfection practices.
- Failure to exclude infected food handlers from working in food establishments.



Norovirus symptoms include:

- Vomiting
- Diarrhea
- Stomach pain
- Nausea
- Fever
- Dehydration
- Fatigue
- Headache
- Muscle Aches



Additionally, food can become contaminated with norovirus at any point in the supply chain, including during growing, harvesting, processing and handling. For example, oysters harvested from water contaminated with norovirus have been associated with widespread outbreaks. Fresh and frozen produce, such as berries and leafy greens, may become contaminated during production due to infected food handlers harvesting the product.

Why is norovirus a concern for the retail food industry?

According to the CDC, norovirus is the leading cause of foodborne illness, accounting for 58% of foodborne illnesses in the United States.⁴ This means, on average, an estimated 19-21 million Americans are sickened, 56,000-71,000 people are hospitalized, and 570-800 people die each year from complications caused by norovirus.⁴

Norovirus presents an obvious public health challenge for the entire food industry because contamination of food, whether frozen, raw or ready-to-eat, can occur at any stage in the supply chain. Noroviruses are environmentally stable and can survive both freezing and heating (although not thorough cooking above 140°F and quick steaming processes often used for cooking shellfish). They are resistant to many common chemical disinfectants and can persist on surfaces for up to 2 weeks.

Infected food workers also present challenges for the retail food industry. Food workers are responsible for about 70% of norovirus outbreaks that are due to contaminated food. Since vaccines are not available, food establishments cannot prevent their employees from norovirus infections through vaccines. Also, infected workers can shed the virus contaminating food or surfaces before showing symptoms, which may lead to individuals working while sick and could contribute to an outbreak.





Prevention Step #1:

Exclude ill food workers from working in a food establishment:

How can a norovirus outbreak be prevented?

Due to the highly contagious nature of norovirus, low infectious dose, moderate resistance to many common disinfectants, prevention is the most effective way to avoid norovirus outbreaks. Food handlers and managers play a critical role in preventing norovirus outbreaks. All employees must bear in mind that food items, people and environmental surfaces can carry the virus.

Retailers can take the following actions to proactively prevent norovirus outbreaks:

1. Exclude ill food workers from working in a food establishment.
2. Practice proper handwashing, avoid bare hand contact with ready-to-eat and practice good personal hygiene.
3. Develop strong food safety and sanitation programs.

Since most foodborne outbreaks due to norovirus are caused by infected food workers, it is critical for any food handler suspected or confirmed to have norovirus to be excluded from working in a food establishment ([2017 FDA Food Code 2-201.12](#)). In other words, implementing an employee health policy to ensure ill food workers stay home when they are ill. Only a



few norovirus particles (100 to 1,000 particles) can make an individual sick, and the virus may continue to spread through for more than two weeks after symptoms subside.⁸

According to the *FDA Food Code 2017*, Section 2-201.13(D), the following steps must be taken before an employee can return to work:

1. The employee is asymptomatic for at least 48 hours; or
2. The PIC obtains approval from the regulatory authority and the employee is medically cleared by a health practitioner.

Note: Check your local or state food code for specific requirements regarding the exclusion and reinstatement of food workers diagnosed with norovirus.



Prevention Step #2:

Practice proper handwashing, avoid bare-hand contact with ready-to-eat foods and practice good personal hygiene:

Developing a strong culture around proper handwashing is fundamental to preventing norovirus outbreaks. The following information demonstrates how to properly wash hands and when to wash hands.

Proper Handwashing Steps:

1. Rinse hands under clean, warm running water.
2. Apply soap.
3. Briskly rub hands for at least 20 seconds.
4. Rinse hands under clean, warm running water.
5. Dry hands thoroughly with disposable, paper towels or hand drying device.

When to Wash Hands:

- Before engaging in food preparation.
- After using the toilet.
- After coughing, sneezing, using a handkerchief or disposable tissue.
- After using tobacco, eating or drinking.
- After handling soiled equipment and utensils.



- During food preparation when switching between working with raw foods and ready-to-eat foods to prevent cross contamination.
- After caring for, or touching, service animals or aquatic animals.
- Before putting on gloves to begin a task that involves working with food.
- After taking off gloves to end a task that involved working with food.

- After engaging in any activities that may contaminate hands (e.g., taking out the garbage, wiping counters or tables, handling cleaning chemicals, picking up dropped items, touching a smartphone, etc.).

Avoiding bare hand contact with ready-to-eat foods can reduce the risk of contamination. A study analyzing foodborne outbreaks where food workers were implicated in the spread of foodborne illness, found that bare hand contact with ready-to-eat foods, handling of food by an infected food worker and improper handwashing were the most common factors contributing to the outbreaks. Therefore, it is critical to prevent food workers' hands from being a vehicle of contamination and achieve active managerial control over risk factors that could contribute to foodborne illness.



- Employees should wash their hands frequently and immediately prior to working with food, clean equipment and utensils.
 - Employees should thoroughly wash their hands after any activity that may result in contamination, including after using the bathroom and handling trash or waste.
 - Ensure handwashing sinks are properly equipped with supplies necessary for proper handwashing (i.e., running water, soap, paper towels, trash can, and signage).
 - Designated handwashing sinks should be in a convenient location for food employees to use in food preparation and warewashing areas, as well as in restrooms.
 - Employees should avoid bare hand contact, especially with ready-to-eat foods. Gloves should be available and easily accessible to all employees in areas with ready-to-eat foods and near handwashing stations.
 - Toilet room facilities and surfaces should be cleaned and sanitized frequently.
 - The PIC should routinely monitor employee handwashing to ensure proper handwashing procedures are being followed (see [2017 FDA Food Code 2-201.11](#) for PIC requirements).
- Note:** For more information on proper handwashing, visit the [CDC website](#).



Prevention Step #3:

Develop strong food safety and sanitation programs:

It is necessary for retail food establishments to develop and implement strong food safety programs that include appropriate measures for controlling risk factors associated with norovirus. These measures should include:

- Ensuring food is purchased from approved suppliers that have strong food safety programs in place and that all food is prepared and handled safely.
- Developing and implementing written plan that addresses cleaning and disinfection procedures for employees to follow when responding to vomitus or diarrheal events.

Since, noroviruses are somewhat resistant and can survive at temperatures as high as 140°F and quick steaming processes that are often used for cooking shellfish, it is important to ensure food is cooked to the proper temperature, particularly shellfish, and to avoid serving undercooked oysters and other shellfish. In addition, shellfish should be sourced from safe, approved suppliers. Fruits and vegetables should be rinsed before preparing and serving them. Any food that might be contaminated with norovirus should be discarded.

Having a timely and effective response to a vomitus or diarrheal event is critical to reduce the likelihood of contamination of food and food contact surfaces, as well as other environmental



surfaces. In order to effectively respond to and manage situations potentially involving norovirus contamination, it is important for food establishments to have a written plan. It is also important that employees are prepared to implement the plan. The written plan should be available and accessible by employees when responding to such events. In addition, having the necessary equipment on hand (i.e., disinfectant products effective against norovirus, personal protective equipment, biohazard clean-up kits, etc.) and ensuring employees are properly trained before an incident occurs are also essential for effective control. Food establishments should consider working with their local public health agency when developing their plan.



When responding to a vomit or diarrheal incident, it is critical to immediately define the area of contamination and disinfect the entire area within a 25-foot radius. Norovirus can survive on surfaces for up to 5 days and routine cleaning without the use of a disinfectant that is effective against norovirus may be ineffective at removing the virus from surfaces. Therefore, a food establishment's procedures for the clean-up of vomitus and fecal matter should differ from establishment's routine cleaning procedures since cleaning chemicals typically used for the routine cleaning may not be effective against norovirus.

It is recommended that employees directly involved with vomit or diarrheal clean-up activities closely monitor their health for potential signs and symptoms of norovirus illness for up to 72 hours after cleaning the affected areas. Further, the employee conducting the cleaning and disinfection of vomit and diarrhea may need to be restricted from all fresh areas for up to 72 hours. This is important to further control the potential for secondary transmission if infected employees were to handle food after contracting a norovirus infection.

Vomit and diarrhea— cleaning and sanitation considerations:

- Develop and implement written procedures for employees to follow when responding to vomitus or diarrheal events.
 - Procedures should address specific actions to take to minimize the spread of contamination and exposure of employees, consumers, food and surfaces that were exposed to vomitus or fecal matter (FDA *Food Code* 2-201.11; FDA *Food Code Annex 3*).
- Ensure employees are properly trained on how to clean and disinfect a vomit or diarrheal incident.
- Ensure personnel conducting the cleaning and sanitation activities are wearing personal protective equipment per manufacturer's label instructions.
- Contain and remove any vomit or diarrhea discharges, including airborne particulates.

- Clean and disinfect any surfaces that may have become contaminated.
 - For environmental disinfection, the CDC recommends using a bleach solution with a concentration of 1000 to 5000 ppm.
 - 5 to 25 tablespoons household bleach (5.25% sodium hypochlorite) per gallon of water.
 - Disinfectants used in food establishments should be registered as effective against norovirus by the EPA.
 - For more information on EPA-approved disinfectants against norovirus, please visit [List G: EPA Registered Hospital Disinfectants Effective Against Norovirus](#).
 - When using an EPA-registered disinfectant for norovirus, apply per manufacturer's instructions.
- Evaluate and dispose of any food that may have been exposed to vomit or diarrheal discharges.
- Create a cleanup kit for employees to use when cleaning up vomit or diarrhea. This kit should include:
 - Procedures for employees to follow to properly clean up vomit and diarrhea
 - 'Caution!—Wet Floor' signs or safety cones
 - Eye protection
 - Disposable gloves (vinyl, latex, nitrile or rubber)
 - Disposable mask



- Disposable plastic apron
- Biohazard clean-up kits, which include:
 - Liquid spill absorbent material
 - Disposable shovel or scrapper
 - Disposable bags and bag ties
 - EPA-registered disinfectant effective against norovirus
 - Impervious bag for employees to discard PPE after use and used cleanup supplies. Waste should be disposed in appropriate biohazard waste container.
 - Secure trash container to manage and dispose waste safely.
- Paper towels
- Several plastic trash bags and bag ties

- Chemicals needed for cleanup, including absorbent materials to contain vomit/diarrhea, and a disinfectant that is effective against norovirus
- Floor cleaning tools (Note: mops are not recommended for clean-up, unless mop head is immediately discarded after use)
- Buckets for cleaning solutions
- Spray bottles and/or portable hand pump spray applicator

Note: Dispose of any cleaning and disinfection tools that were used to clean up vomit or fecal matter. Please refer to Appendix A for sample step-by-step procedures for responding to a vomit or diarrheal incident within a food establishment.



How should retailers respond to a suspected or confirmed norovirus diagnosis?

If store employees show any symptoms associated with norovirus infection (i.e., vomiting or diarrhea), the PIC should ask when symptoms began (i.e., onset date) and whether they have sought medical care.

The FDA *Food Code* permits the exclusion of ill food workers from working in a retail food establishment based on symptoms prior to a diagnosis. Therefore, employees experiencing symptoms associated with norovirus (i.e., vomiting and/or diarrhea) should be excluded from working in a food establishment. Employees excluded for vomiting or diarrhea can return to work if they are asymptomatic for at least 48 hours or receive a written release from a physician.

If an employee is diagnosed with norovirus or is experiencing symptoms associated with norovirus, take the following steps:

- Notify the appropriate local regulatory authority if an employee has been diagnosed with norovirus or is suspected to have norovirus ([2017 FDA Food Code 2-201.11](#)).
- Immediately send the food employee home and exclude the infected food employee from working in the food establishment.
- Proceed with targeted cleaning and sanitation protocols.

- Cooperate with local regulatory authorities throughout their investigation and be prepared to provide any information and records they request.
- Work with the local regulatory authority to determine when the employee is permitted to return to work.
- Ensure employees are trained on the symptoms of norovirus and the internal procedures to inform management of a norovirus diagnosis or exposure to norovirus. This information should be included in employee health policies and all employees should be trained on when and why they need to report symptoms and illnesses.
- Review CIFOR guidelines on “Foodborne Disease Outbreak Response” to determine whether a food recall must be established and work closely with local or state regulatory authorities about a possible outbreak.
- Work with internal communications and crisis response teams to provide important information to the public about norovirus infections impacting stores.
- Be open and honest with employees, customers, regulatory officials and all stakeholders regarding possible or known cases of norovirus infections.

Adoption of Food Code Provisions Is Linked to Lower Rates of Foodborne Norovirus Outbreaks

FIGURE 1: States that adopted three specific provisions of the Food Code had lower rates of foodborne norovirus outbreaks per million person-years than states without these provisions.

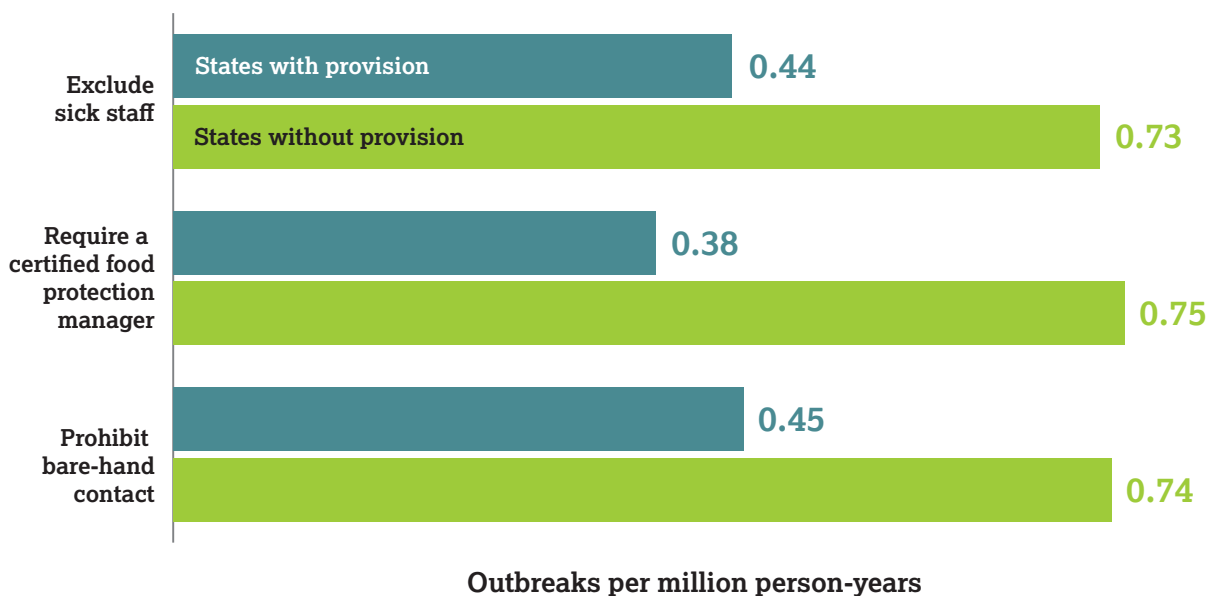


Chart courtesy of CDC. <https://www.cdc.gov/nceh/ehs/activities/adoption-of-food-code-linked-to-lower-norovirus-outbreaks.html>

APPENDIX A:

Sample Step by Step Procedures for Managing Vomitus and/or Fecal Incidents:

1. Specially trained staff should be assigned clean up and disinfection tasks.
2. Define the area of contamination and the area to be disinfected.
3. Close or block off the affected area(s) or department(s) using the 'Caution - Wet Floor' signs, caution tape or safety cones until the cleanup procedure is completed. Control foot traffic of employees and/or customers until clean up procedures and disinfection have been completed.
4. Put on personal protective equipment (PPE) per manufacturer's label instructions.
5. To minimize potential aerosol spread, the soiled areas should be covered immediately with a disposable cloth or paper towels.
6. Use absorbent paper towels to soak up excessive soil caused by vomitus and/or feces. Carefully transfer these and any solid matter into a plastic bag by folding it on itself and placing the waste materials into the plastic bag. Double bagging is recommended. Apply disinfectant solution over absorbent materials and seal bag(s) per manufacturer's label instructions.

7. Apply a chlorine bleach solution or other EPA registered disinfectant against norovirus to all surfaces per manufacturer's label instructions within defined contamination areas (equipment, floors, walls, etc.). Avoid application of disinfectant solution via excessive force or focused stream (i.e., power washer or hose with sprayer handle) to prevent aerosolizing virus particles.

NOTE: Work from the perimeters of the room or affected area towards either the center of contamination site or a floor drain.

8. After initial disinfection and removal of bodily fluids, apply a spray on disinfectant to surface and keep surfaces wet per manufacturer's instructions, and then allow surfaces to air dry.
9. Disassemble all exposed food preparation equipment within potential contamination area and apply disinfectant solution per manufacturer's label. Allow the surfaces to remain wet per contact time recommended on chemical manufacturer's label instructions.
10. Consider repeating steps 7 through 9 above as a precautionary measure to further ensure the norovirus agent is fully inactivated.

- 11.** It is recommended that open and exposed food items and single service items be discarded. Some alternatives to discarding intact and sealed food containers or packaging supplies might include implementing a documented product disinfection process that is approved by your local regulatory official. For those items discarded, place food and containers into a trash bag, seal, and then place into outside dumpster/compactor.
- 12.** For disinfected food contact surfaces, rinse the surface and resume routine cleaning and sanitizing procedures.
- 13.** For disinfected non-food contact surfaces, resume routine cleaning and sanitizing procedures.
- 14.** Bag, seal and discard all disposable cleaning equipment (i.e., mop heads, gloves, aprons), exposed to the

initial contamination or used during clean up.

- 15.** Disinfect any tools or other non-disposable items used in the cleanup (i.e., mop buckets, handles, etc.).
- 16.** Immediately after clean-up procedures are completed, thoroughly wash hands (giving extra attention between fingers and under fingernails) with soap and water for at least 20 seconds.
- 17.** Reopen the affected area following air drying.

IMPORTANT: *Special cleaning attention should also be given to areas such as restrooms and drinking fountains and other common areas with high potential for hand contact. Even though vomitus or fecal material may not be visible, it is common for sick individuals to use public restrooms following an incident. Refer to Appendix C for more details.*



APPENDIX B:

Quick Reference of Affected Areas

ITEM:	ACTION:
Possible norovirus vomitus or fecal incident within food preparation department	Immediately stop all food preparation and service, secure area and implement clean-up and disinfection procedures
Possible norovirus vomit or fecal incident adjacent to food preparation department	Secure area, immediately stop all food preparation and service, implement clean-up and disinfection procedures
Possible norovirus vomitus or fecal incident with public, dining, or non-food preparation areas	Secure area, implement clean-up and disinfection procedures
Any “open or in-use” food, ice or single service items within defined area directly contaminated	Discard food, ice or single service items
Any “open or in-use” food, ice or single service items within defined area that could have been contaminated by airborne (aerosolized) droplets	Discard food, ice or single service items
Exposed food preparation equipment and utensils within defined area (refer to Appendix B – Specific Touch Points)	Disinfect, wash, rinse and sanitize
Nonfood contact surfaces within defined area	Disinfect, wash, rinse and sanitize
Common areas (restroom & break room) used as a result of vomitus or fecal incident	Immediately close until thoroughly disinfected and cleaned
Linens (including clothes, aprons, wiping cloths, napkins, tablecloths, etc.) within defined area of incident	Thoroughly wash using ‘hot’ water cycle—temperature of at least 160 F (71°C) for a minimum of 25 minutes. Dry linens using high temperatures
Carpeted areas within defined area of incident	Steam clean at a minimum of 140°F (60°C)
Air ventilations systems within adjacent areas (i.e., exhaust hoods, vents in restrooms)	Implement clean-up and disinfection procedures for exterior of ventilation systems. Assess if additional disinfection for interior of system would be necessary

APPENDIX C:

Human-Touch Surfaces for Food Retail*

*List provided by Ecolab and is not intended to be an exhaustive list.

Back of the House

- Door handles and push plates
- Handles of all equipment doors and operating push buttons
- Handles of the dispensers (beverage, bulk, etc.)
- Ice scoops
- Walk-in and other refrigerator handles
- Walk-in refrigerator and freezer plastic curtains
- Freezer handles
- 3-compartment sink and mop sink handles
- Handwash sink handles
- Soap dispenser push plates at handwash sink
- Cleaner dispenser push buttons
- Towel dispenser handle at handwash sink
- Trash receptacle touch points
- Cleaning tools
- Self-service Utensils
- Buckets
- Telephone keypad and handset
- Computers
- Office cabinet handles and safe handle
- Microphone and point of sale register
- Breakroom tables and chairs
- Display screens on equipment
- All service area counter surfaces
- All kitchen/fresh department counter surfaces
- All stainless steel surfaces

Front of the House

- Door handles, push plates, thresholds and hand railings
- Grocery carts and baskets
- Dining tables and chairs, if still in service
- Trash receptacle touch points
- Highchairs, if still in service
- Front counter
- Drink and condiment dispensers
- Display cases
- Self-service areas, if still in service
- Point of sale registers/touchscreens
- Trays
- Kiosks
- Sneeze guards

Restrooms

- Door handles
- Sink faucets and toilet handles
- Towel dispenser handle
- Soap dispenser push plates
- Baby changing station
- Trash receptacle touch points

Curbside Pickup and Delivery

- Pens or other writing utensils
- Clipboards
- Electronic signature pads
- Elevator buttons
- Door handles
- Surfaces inside delivery vehicles

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