

MOVING THE NEEDLE ON NOROVIRUS:

Practical Solutions for Cleaning and Disinfection

Mary Yavelak, MS, CP-FS

Food Policy & Innovation Manager

Compass Group USA



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THE PROBLEM WITH NOROVIRUS

Infectious dose as low as 18 particles

5.5 million illnesses annually

22,400 hospitalizations

Sick workers are the primary source

Resistant to many disinfectants

Survives on surfaces for weeks

RELATIVE IMPACT OF INTERVENTIONS ON NOROVIRUS TRANSMISSION



Employee health is the most effective control

(Leone et al., 2018; Duret et al., 2017)



Handwashing lowers risk to 58–75%



Environmental contamination is a secondary factor



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WHY FOCUS ON BATHROOMS DURING NOROVIRUS OUTBREAKS?

- Bathrooms are a verified norovirus contamination source
- Bathroom surfaces drive hand-mediated spread back to food areas
- Risk modeling shows bathroom controls reduce illness

(Leone et al., 2018; Duret et al., 2017)





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WHO CLEANS OUR BATHROOMS?





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CHALLENGES OF SHARED-SPACE MODELS

- Operational responsibility is often split across onsite operations, clients, and third-party sanitation providers
- Many food operators do not directly manage bathroom cleaning schedules
 - Sanitation companies may have better tools available to reduce risk
- Operators, clients, sanitation vendors, and regulators are aligned in wanting to implement best practices based on best available science



SECTION 2-501.11 — WHAT THE CODE REQUIRES

"A FOOD ESTABLISHMENT shall have written procedures for EMPLOYEES to follow when responding to vomiting or diarrheal events that involve the discharge of vomitus or fecal matter onto surfaces in the FOOD ESTABLISHMENT."

WRITTEN

Procedures must be in writing — not verbal only

SPECIFIC

Must address the exact actions employees take

PROTECTIVE

Must minimize spread and protect people and food



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WRITTEN PROCEDURE REQUIREMENTS

PPE REQUIREMENTS

Who wears what. Minimum: gloves and face mask. Recommended: goggles, gown, hair cover, shoe covers.

CONTAINMENT ZONE

Isolate 25–30 feet from the epicenter. Remove ill persons and bystanders immediately.

CLEANUP STEPS

Cover → Remove → Wash → Disinfect.

DISINFECTANT REQUIREMENTS

EPA List G product with Norovirus efficacy. Correct concentration. Correct contact time.

FOOD AND PPE DISPOSAL

Discard all uncovered food in the zone. All PPE in a sealed bag before leaving the area.

WORKER MONITORING

Monitor cleanup workers for illness for at least 48 hours after the incident.



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CLEAN UP PROCESS SUMMARY

1

CLEAR THE AREA



Remove all uninvolved persons. Restrict access to the contaminated zone (25 feet). Post signage.

2

DON PPE



Gloves (disposable), gown/apron, mask, eye protection. Don before entering the zone.

3

CONTAIN THE SPILL



Cover with absorbent material (paper towels, absorbent powder). Work from outside the contamination inward.

4

REMOVE & BAG



Carefully scoop and collect absorbed material. Place in a biohazard or heavy-duty plastic bag. Seal immediately.

5

CLEAN THE SURFACE



Apply cleaner. Scrub thoroughly. Remove all visible soil before disinfecting.

6

DISINFECT



Apply EPA-approved norovirus disinfectant. Allow full contact time per label (typically 1–10 min). Doff PPE and discard or disinfect.

DISINFECTANTS

WHAT TO USE

- EPA List G registered product
- Bleach solution: 5.25% bleach
— 1 cup per gallon of water
- Bleach solution: 8.25% bleach
— $\frac{3}{4}$ cup per gallon of water
- Follow manufacturer contact time exactly



WHAT DOES NOT WORK

- Standard quaternary ammonium (quat) sanitizers
- General-purpose all-purpose cleaners
- Any product NOT on EPA List G
- Wiping before contact time is complete

USING LIST G

Products on List G have demonstrated effectiveness against feline calicivirus.



What List G tells you about each product:

CONTACT TIME

How long the surface must stay wet for effective kill

FORMULATION

Ready to use or dilutable

SURFACE TYPE

Hard, nonporous

USE SITES

Hospital, institutional or residential

INSTITUTIONAL

The use site for traditional food service — restaurants, cafeterias, and food courts.

“Institutional” does not automatically mean safe for food-contact surfaces. Always verify the surface type and check the label.

SCENARIO



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BACKGROUND

- Fairview University's student health center calls the local health department on Friday.
- The on-call nurse reports that 10 students have been seen in the last 24 hours — all vomiting, several with diarrhea.
- Symptom onset appears to be 12–36 hours prior, clustering around Thursday evening.
- The students report eating at various locations across campus.



ADDITIONAL INFORMATION

- At approximately 5:30 PM Thursday, a student vomited in the hallway outside the main campus dining hall. A dining hall employee saw it happen, grabbed a mop from the janitorial closet, and cleaned it up in about five minutes. The dining hall stayed open throughout. No incident was reported to management.
- The dining hall has approximately 200 workers across all shifts. None have reported illness to supervisors.
- There are four food establishments on campus: the main dining hall (university-operated), a food court with three vendors (two national chains and one local), a campus coffee shop, and a grab-and-go convenience market in the student union. All are still open.



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QUESTIONS

- What questions do you have?
- What did the employees do well?
- What should they have done differently?





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RESPONSE BY UNIVERSITY

After discussion with the manager, you find out:

- The chemical used for cleanup was Lysol® Brand All Purpose Cleaner
- The procedure food service staff are supposed to follow is to clear the area, call university support services to clean, and notify management





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QUESTIONS

- Was this chemical approved for clean up?
- What changes if the facility follows their procedures?
- What are the challenges?





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CORPORATE RESPONSE

Corporate food safety manager is notified of the incident and reviews the response.

- The policy was not followed; employees are retrained on clean up procedures
- Corporate monitors for any sick employees over the next 3–4 days



AFDO Healthy People 2030 Initiatives



AFDO Healthy People 2030 Norovirus at Retail



Collaborating + Leveraging Resources = Actionable Strategies

State, Local, Tribal &
Territorial (SLTTs)
Health Departments

Academia

Industry

Federal
partners

Retail Food
Safety
Association
Collaborative



Comprehensive Employee Health Toolkit

EHS-Net
Sick Worker
Checklist



FDA
Employee Health
Assessment
Tool



Tools & Resources



STOP FBI Video



Environmental Contaminants Workgroup Tactical Plan



- Objective – Expand access to educational resources that reduce norovirus outbreaks in retail food settings
- 2026-2028 Focus – Promote clear, actionable restroom cleaning and disinfection guidance by:
 - Identifying and evaluating restroom surface cleaning and disinfection resources
 - Developing a customizable restroom cleaning template informed by end-user feedback
 - Creating an evaluation framework to assess reach, access, and implementation of recommended practices
 - Disseminating finalized resources to regulators and end users

Advisory Committee:

Federal government

- **CDC:** Centers for Disease Control & Prevention
- **EPA:** Environmental Protection Agency
- **FDA:** Food & Drug Administration
- **USDA:** United States Department of Agriculture

Industry

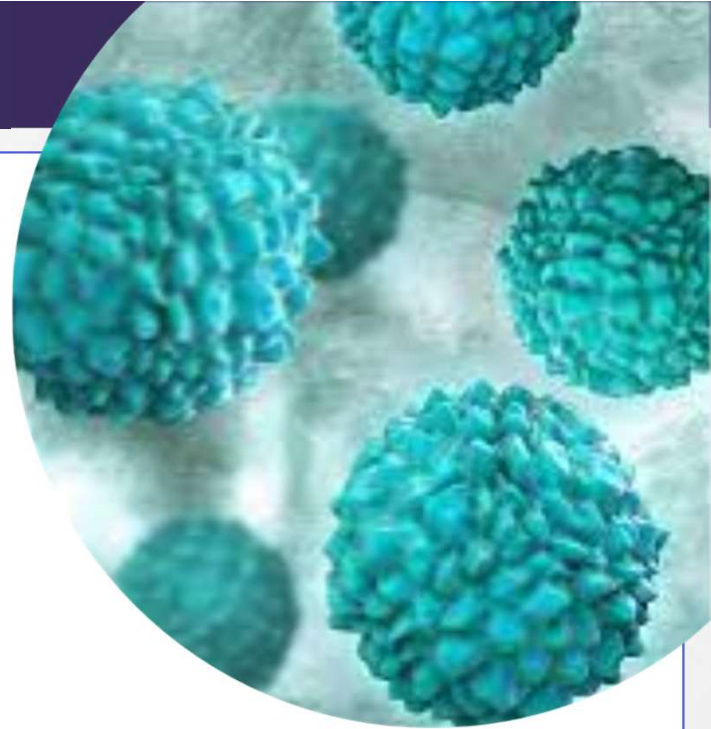
- **Acheson Group**
- **Active Food Safety LLC**
- **Cheesecake Factory**
- **Chick-fil-A**
- **Compass**
- **Diversey**
- **Ecolab**
- **FMI:** Food Industry Association
- **HAG:** Holland America Group
- **In-N-Out Burger**
- **International Fresh Produce Association**
- **McDonalds**
- **NRA:** National Restaurant Association
- **NRF:** National Retail Federation
- **Proctor & Gamble**
- **Savvy Food Safety/Don't Eat Poop! Podcast**
- **Share-ify**
- **Testo Solutions**
- **Wendy's**
- **Zero Hour Health**

Associations

- **AFDO:** Association of Food & Drug Officials
- **ASTHO:** Association of State & Territorial Health Officials
- **CFP:** Conference for Food Protection
- **NACCHO:** National Association of County & City Health Officials
- **NEHA:** National Environmental Health Association

Regulatory

- City of Allen, Texas
- Contra Costa Health Services
- **NC DHHS:** North Carolina Department of Health & Human Services
- **MA DPH:** Massachusetts Department of Public Health
- **MNDOH:** Minnesota Department of Health
- **RIDOH:** Rhode Island Department of Health
- **SNHD:** Southern Nevada Health District
- **UT DHHS:** Utah Department of Health & Human Services



Academia

- **NCSU:** North Carolina State University and emeritus
- **Northeastern University**

Others

- **Partnership for Food Safety Education**
- **STOP Foodborne Illness**
- **Independent Consultants**

Workgroup Leads



- Mandy Sedlak: mandy.sedlak@ecolab.com
 - Communications and website
- Veronica Bryant: veronica.bryant@dhhs.nc.gov
 - Employee Health
- Mary Yavelak: mary.yavelak@compass-usa.com
 - Environmental Contamination