



DATASHEET

Microbiological Hazard Series

Pathogen Name: *Norovirus*

Characteristics: Noroviruses are a group of viruses belonging to the *Norovirus* genus and the Caliciviridae family. Based on the sequence of the major capsid protein, these viruses are further divided into 6 genogroups (GI-GVI), consisting of numerous genotypes. GI, GII and GIV are the only genogroups known to infect humans.

The virus is round, non-enveloped, single-stranded, positive-sense, polyadenylated RNA.

Pathogenicity: Noroviruses are environmentally hardy organisms that not only can be transmitted by food and water, but also can be easily transmitted through person to person contact and contact with environmental surfaces.

Norovirus infection causes acute gastroenteritis, characterized by rapid onset of symptoms. Up to 30% of infections are asymptomatic however, these individuals are able to transmit the virus.

Infectious Dose: The infective dose is very low; it is estimated to be as low as 1 to 10 viral particles.

Sources (Including High - Risk food groups): Consumption of contaminated water or food. Also through the faecal/oral route.

Food vehicles can include shellfish, salad ingredients and fruit.

Onset Period: Typically, 24-48 hours after ingestion of the virus.

Illness, Symptoms and Complications: Typical symptoms are vomiting (often projectile), diarrhoea, abdominal pain, nausea, headache, stomach cramps and occasionally low-grade fever.

The severity of symptoms appears to be higher in hospitalized patients, immunocompromised people and elderly people.

Dehydration is the most common complication especially among the young, the elderly and patients with underlying medical conditions.

The illness usually lasts from 12 -60 hours although there have been reports symptoms have lasted for more than two weeks.

Controls to reduce the risk:

To reduce the risk of food-borne transmissions of noroviruses controls include, using only potable water for food processing. Only using approved suppliers and shellfish from approved harvesting waters.

Any food handlers suffering from viral gastroenteritis should not return to work in a food handling environment for at least 48-72 hours after symptoms have stopped.

There should be strict hygiene control for all employees e.g. adequate hand washing facilities and training in adequate personal hygiene practices is essential.

Adequate cleaning of surfaces and equipment using approved detergents and sanitizers.

EXAMPLE OUTBREAKS		
YEAR	LOCATION	DETAILS
2012	Germany	More than 30 people were hospitalized after consumption of frozen strawberries imported from China.
2015	Sweden	Presence of norovirus in frozen berries caused 70 people in a nursing home to become ill, with 3 deaths also linked to this outbreak.
2016	Denmark	More than 400 people became ill after consuming lettuce that was contaminated.
2018	Spain	39 people became ill after consuming mussels that were contaminated.

SUMMARY TABLE	
Source	<ul style="list-style-type: none"> • Transmitted by food and water • Transmitted from person to person • Shellfish • Salad ingredients • Fruit
Growth Temperature	<ul style="list-style-type: none"> • N/A
Growth pH range	<ul style="list-style-type: none"> • Can survive at a pH of 3.4 and has been known to survive at a pH of 2.7 for 3 hours
Onset period	<ul style="list-style-type: none"> • 24 to 48 hours
At risk groups	<ul style="list-style-type: none"> • Elderly people • Immunocompromised
Illness, Symptoms, Complications	<ul style="list-style-type: none"> • Vomiting • Diarrhoea • Nausea • Fever • Dehydration
Controls	<ul style="list-style-type: none"> • Only use potable water for food processing • Strict hygiene control should be in place • Adequate training in personal hygiene • Only source shellfish from approved harvesting waters • Gloves • Personal Protective Clothing
Published Risk Assessments	<ul style="list-style-type: none"> • FDA Risk Assessment of Norovirus Transmission in Food Establishments https://www.fda.gov/Food/FoodScienceResearch/RiskSafetyAssessment/ucm570585.htm • NCBI Quantitative Risk Assessment of Norovirus Transmission in Food Establishments: Evaluating the Impact of Intervention Strategies and Food Employee Behavior on the Risk Associated with Norovirus in Foods. https://www.ncbi.nlm.nih.gov/pubmed/28247943

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