Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

Histamine Illness Linked to Fresh Fish Purchased at Retail Fish Counter

Indo-Pacific Agriculture and Agri-Food Office

Canada

Learning Objectives

1. Recognize features of histamine poisoning
2. Follow the step-by-step investigative process used in Canada
3. Identify critical control points in the fresh fish supply chain
4. Understand the roles and coordination mechanisms between Canadian Federal and Provincial partners
5. Draw parallels to the Vietnamese context

Scenario Snapshot

What do you know about Histamine poisoning?

Illness Detection (Day 1)

Family of 5 arrives at Emergency

- 3 exhibit flushing, headache, burning mouth, nausea/vomiting
- 1 also has trouble breathing

4 of the 5 family members report eating fish for dinner

Through symptoms and history, the doctor determines this is likely histamine poisoning

Situation is reported to the local Public Health unit

Are cases reported to your Public Health?

Provincial Case Investigation

- Public Health unit may collect leftover fish from the consumers' home
- Fish submitted to provincial lab for testing
- Investigation starts at location where fish was purchased

What would you look for at retail?

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  - Handling & storage practices
  - Retail facility conditions
  - Staff knowledge & training
  - Documentation & records
  - Sample collection

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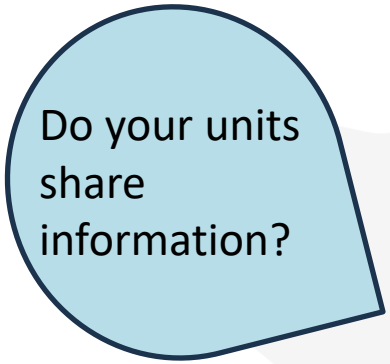
- A second report of potential histamine poisoning is received from a neighboring Province
  - Federal health department is alerted
  - Investigation is initiated



Notification of Partners

Notification is the initial communication between partners to identify issues that could lead to a multi-jurisdictional foodborne illness outbreak. It involves sharing public health and food safety information through various channels.

One key mechanism is **Public Health Alerts** on the Canadian Network for Public Health Intelligence (CNPHI) portal, which provides early warnings of potential outbreaks.

Additionally, the **FIORP contact list** of federal and provincial/territorial partners is maintained by PHAC and updated quarterly.

Federal Investigation

Public Health Agency of Canada (PHAC)

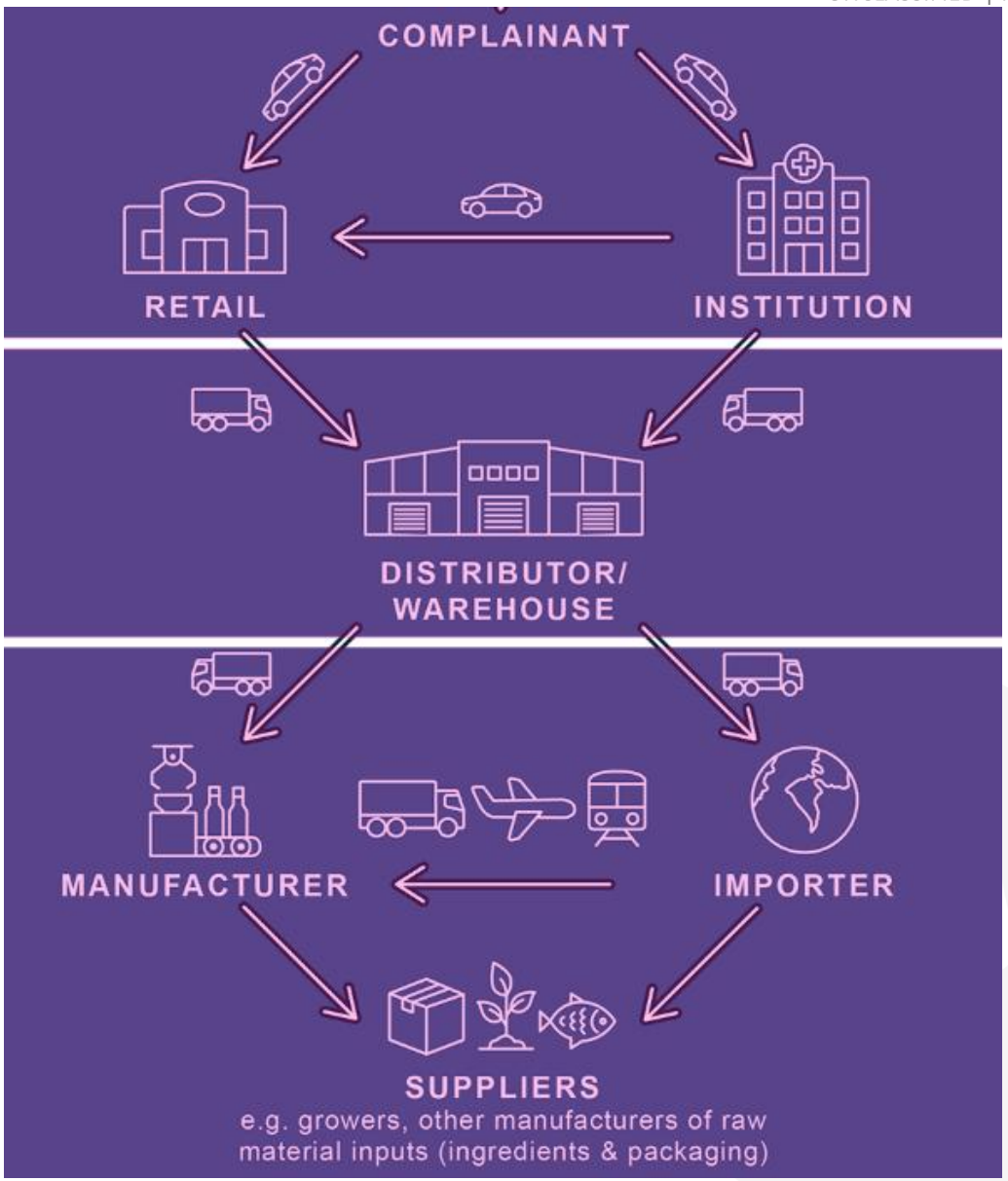
Federal Health Department performs pre-liminary analysis

- compiles provincial information
- reinterview patients
- analyse clinical data
- actively monitor for other reported illnesses

Engages Federal Regulator → **Canadian Food Inspection Agency (CFIA)**

- verify product information collected
- traceback product to determine
  - Root cause analysis
  - Scope: quantity/level of exposure/distribution
  - Shelf life
- sample & test to identify/confirm food-hazard of concern

Traceback flowchart - Distribution & Import



Notification of Partners

When **international partners** need to be notified, the **responsible federal partner** acts as the liaison with foreign countries.

- **PHAC** is the main liaison with international **public health** counterparts.
- **CFIA** is the main liaison with international **food safety** counterparts for food safety-related issues.

Outbreak Investigation Coordination Committee (OICC)

- A teleconference call will be held among affected partners (those with cases of human illness or having relevant foodborne hazard information) to review the available information and decide whether an OICC should be activated. If the partners agree that an OICC is not required at that time, further OICC assessment calls can be held if new information warranting collaborative assessment becomes available.

  - Federal Health Department: PHAC's CFEZID Outbreak Management Division (chair of teleconference); PHAC National Labs;
  - Health Canada;
  - CFIA-OFSR; and
  - public health/epidemiology and laboratory representatives from P/Ts with cases.

- Additional partners may be included as required and include federal contacts in specific program areas, P/T agricultural agencies and local public health authorities.

Continuous Review, Communication & Assessment of Situation

Once a potential multi-jurisdictional foodborne illness outbreak has come to the attention of public health or food regulatory agencies, there is a requirement to examine the current available information and determine if a multi-jurisdictional foodborne outbreak exists. Each affected partner should make efforts to gather, summarize, and share the information available to them prior to an assessment call.

- Expanse
- Severity
- Prioritize
- Partners

Have you participated in a multi-jurisdictional event?

Review of Available Information

National Epidemiologic Update (and international updates, if applicable)

- National enteric surveillance update
- Total number of cases
- Geographic distribution (by P/T)
- Onset date range
- Age distribution (mean, median, range), Gender ratio
- Any hospitalizations, severe complications, and death
- Summary of reported exposures
- Updates on concurrent investigations in other countries, if applicable

National Laboratory Update

- Total number of confirmed and pending isolates
- Interpretation of the PFGE, MLVA, and whole genome sequencing results
- Updates on matches in other countries, if applicable

P/T Updates

- Total number of cases
- Status of case interviews
- Summary of reported exposures
- Laboratory updates: clinical, food, environmental isolates collected, in transit, and pending
- Public health control measures

Review of Available Information

Food Safety Investigation Update

- Trace-back and/or trace-forward activities
- Sampling activities
- Environmental assessments to identify possible points of contamination

Hypothesis Review

- Potential hypotheses for source of the outbreak
- Additional information required? How would it be collected (e.g. case re-interviews, analytic study)?

Communications Updates

- Need for communication? Proactive or reactive?
- Media inquiries
- Coordinate timing, messaging, and spokesperson(s)

Food Safety Investigation Laboratory Results

Samples exceed histamine thresholds

Confirms chemical contamination

Strengthens epidemiologic link

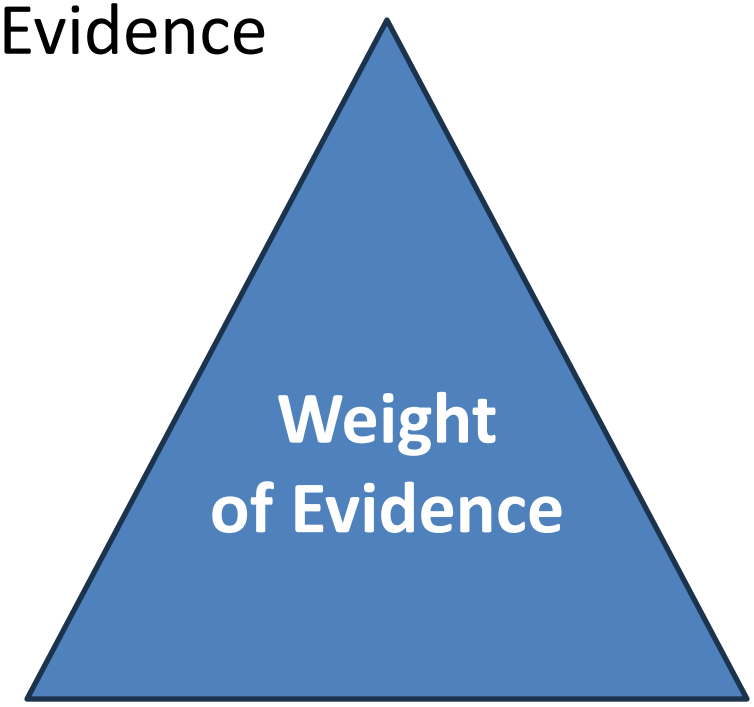
Cold-Chain & Handling Findings

- insufficient ice coverage/melting ice
- stored >4ºC
- unrefrigerated during preparation, weighing, trimming, or transfer
- equipment malfunction
- training gaps

- Warm temperatures → rapid bacterial growth. When fish are held above 4 °C (40 °F), naturally occurring bacteria multiply quickly on the fish surface.
- Bacterial enzyme converts histidine → histamine
- Harmful histamine levels can develop within hours
- Histamine is heat-stable—cooking, smoking, canning, or freezing does not destroy histamine

Health Risk Assessment

Food Safety Investigation Evidence



Epidemiological Evidence

Laboratory Evidence

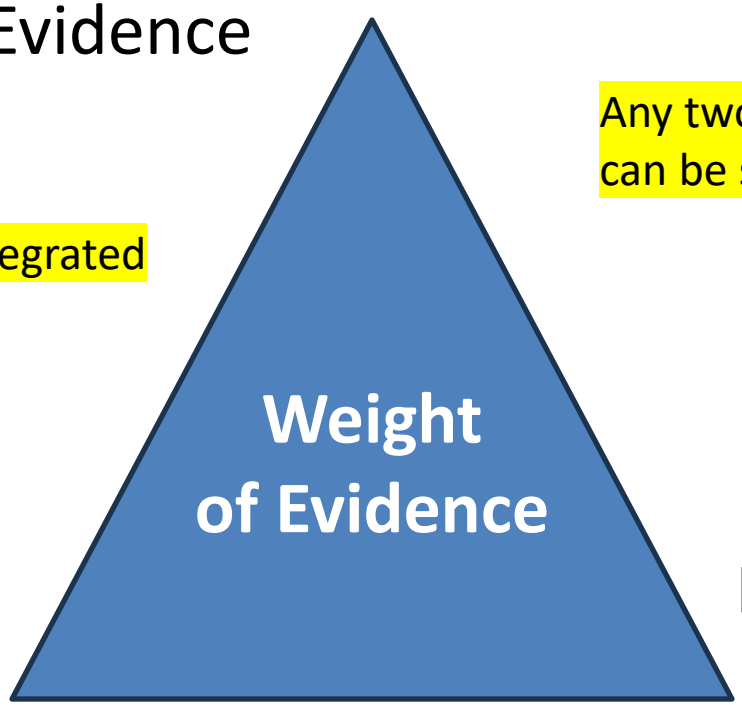
Generally conducted by Health Canada

Health Risk Assessment

Food Safety Investigation Evidence

Any two of these—**if strong**—can be sufficient

these pillars are integrated



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Health Risk Assessment

Health Risk Class I — High Risk

There is a reasonable probability that eating the food will cause serious adverse health effects or death.

Health Risk Class II — Moderate Risk

Eating the food may cause temporary or non-life-threatening adverse health effects, or when the probability of serious consequences is low.

This is the class often applied in histamine (scombroid) fish incidents, where symptoms are usually acute but self-limiting.

Health Risk Class III — Low or Minimal Risk

Exposure to the food is not likely to cause any adverse health effects. Typically applies to minor labelling errors or quality-related issues with no real health hazard.

Recall Levels & Depth

Health Risk Class	Recall Level	Recall Depth
Class I	Class I Recall	Consumer-Level
Class II	Class II Recall	Retail-Level Consumer-Level
Class III	Class III Recall	Retail-Level Distributor/Importer-Level

Consumer-Level : retail, food service establishments, distribution centres, and consumers are warned not to consume the product

Retail-Level : retail, food service establishments and distribution centres; *but no consumer exposure*

Distributor/Importer-Level : wholesalers, distribution centres and/or importers; *has not been shipped to retail*

Public Recall Notice

Government of Canada | Gouvernement du Canada

Search website

Canada.ca > Health > Recalls and safety alerts

Recalls and safety alerts

Food recall warning

Vicente Marino brand Anchovy Fillets in Olive Oil recalled due to histamine

▶ Brand(s)

Last updated: 2025-07-03

Summary

Product: Anchovy Fillets in Olive Oil

Issue: Food - Chemical

What to do: Do not consume, use, sell, serve or distribute recalled products

Distribution: Alberta
British Columbia
Nova Scotia
Ontario
Quebec
Saskatchewan
Possibly other provinces and territories

Public Recall Notice

Affected products

Filter items | Showing 1 to 1 of 1 entries | Show 10 entries

Brand	Product	Size	UPC	Codes
Vicente Marino	Anchovy Fillets in Olive Oil	80 g / 42 g	80268215	Lot#24171 EXP: 12/2025

Issue

The affected product is being recalled from the marketplace due to histamine.

What you should do

- If you think you became sick from consuming a recalled product, contact your healthcare provider
- Check to see if you have recalled products
- Do not consume, serve, use, sell, or distribute recalled products
- Recalled products should be thrown out or returned to the location where they were purchased

Learn more:

- Sign up for recall notifications by email and follow us on social media
- View our detailed explanation of the food safety investigation and recall process
- Report a food safety or labelling concern

Additional information

- ▶ Background
- ▶ What is being done
- ▶ Details
- ▶ Media and public enquiries

Get notified

Receive emails about new and updated recall and safety alerts.

Subscribe

Verification & Review

- Confirm affected product was removed from market
- Continue to monitor for further illnesses
- Is any further action required?

Hot Wash

- What went well?
- What were the challenges?
- How do we improve?

Chronology (At-a-Glance)

1. Illness detection
2. Provincial investigations
3. CFIA traceback
4. Lab testing
5. Cold-chain findings
6. Risk assessment
7. Recall notice
8. Verification
9. Review

Prevention of Histamine

Ensuring proper storage techniques

- Strict Temperature Control
- Maintain Cold-Chain Integrity
- Hygiene and Sanitation
- Prompt Processing & Freezing

Key Takeaways

Histamine forms quickly with temp abuse

Coordination shortens time-to-recall

Cold-chain verification prevents recurrence