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## Multistate Outbreak of *Salmonella* Paratyphi B variant L(+) tartrate(+) and *Salmonella* Weltevreden Infections Linked to Frozen Raw Tuna (Final Update)

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Posted August 19, 2015 5:30 PM ET

This investigation is over; however, the recalled frozen tuna has a long shelf life and may still be in freezers. Restaurants and retailers unaware of the recalls could continue to serve and sell sushi made with recalled frozen tuna and people could get sick. Read the [Advice to Restaurants, Retailers, and Consumers](http://www.cdc.gov/salmonella/paratyphi-b-05-15/advice.html) (<http://www.cdc.gov/salmonella/paratyphi-b-05-15/advice.html>).

### Highlights

- This investigation is over; however, the recalled frozen tuna has a long shelf life and may still be in freezers. Restaurants and retailers unaware of the recalls could continue to serve and sell sushi made with recalled frozen tuna and people could get sick.
- As a result of this investigation, Osamu Corporation announced two voluntary recalls of frozen yellowfin tuna from one processing plant in Indonesia. Details about the products affected by the recalls is available on the Advice to Restaurants, Retailers, and Consumers page (<http://www.cdc.gov/salmonella/paratyphi-b-05-15/advice.html>).
- Restaurants and retailers should not sell or serve any of the recalled tuna products.
  - Carefully check your establishment's freezers for recalled products. Return recalled products to the distributor for a refund.
  - When in doubt, don't sell or serve it.
- Epidemiologic, laboratory, and traceback findings indicated that frozen raw tuna was the likely source of this outbreak.
  - Most ill people interviewed in the outbreak reported eating sushi made with raw tuna in the week before becoming sick.
- A total of 65 people infected with one of the outbreak strains of *Salmonella* Paratyphi B variant L(+) tartrate(+) (64 people) or *Salmonella* Weltevreden (1 person) were reported from 11 states.
  - 11 ill people were hospitalized, and no deaths were reported.

- CDC's National Antimicrobial Resistance Monitoring System (<http://www.cdc.gov/narms>) (NARMS) laboratory conducted antibiotic resistance testing on clinical isolates collected from three ill people infected with the outbreak strain of *Salmonella* Paratyphi B variant L (+) tartrate(+).
  - Of the three isolates, one (33%) isolate was resistant to ampicillin and two (67%) were susceptible to all antibiotics tested on the NARMS panel.
- People at higher risk for serious foodborne illness should not eat any raw fish or raw shellfish (<http://www.fda.gov/Food/FoodborneIllnessContaminants/BuyStoreServeSafeFood/ucm07>) regardless of an ongoing outbreak. These groups include:
  - Children younger than 5 years
  - Adults older than 65
  - Pregnant women
  - People with weakened immune systems.

## Outbreak Summary

### Introduction

CDC collaborated with public health and regulatory officials in several states and the U.S. Food and Drug Administration (<http://www.fda.gov/Food/RecallsOutbreaksEmergencies/Outbreaks/ucm447742.htm>) (FDA) to investigate an outbreak of *Salmonella* Paratyphi B variant L(+), tartrate(+) and *Salmonella* Weltevreden infections linked to frozen raw tuna.

Public health investigators used the PulseNet (<http://www.cdc.gov/pulsenet/>) system to identify illnesses that were part of this outbreak. PulseNet is the national subtyping network of public health and food regulatory agency laboratories coordinated by CDC. DNA "fingerprinting" is performed on *Salmonella* bacteria isolated from ill people by using a technique called pulsed-field gel electrophoresis (<http://www.cdc.gov/pulsenet/pathogens/pfge.html>), or PFGE. PulseNet manages a national database of these DNA fingerprints to identify possible outbreaks. A total of three rare DNA fingerprints were included in this investigation ("outbreak strains").

A total of 65 people infected with one of the outbreak strains of *Salmonella* Paratyphi B variant L(+), tartrate(+) (64 people) or *Salmonella* Weltevreden (1 person) were reported from 11 states. The number of ill people reported from each state was as follows: Arizona (12), California (35), Illinois (1), Michigan (2), Minnesota (4), Mississippi (1), New Mexico (6), South Dakota (1), Virginia (1), Washington (1), and Wisconsin (1).

Illness onset dates ranged from March 5, 2015 to July 20, 2015. Ill people ranged in age from younger than 1 year to 83 with a median age of 31, and 54% were male. Among 62 people with available information, 11 (18%) were hospitalized, and no deaths were reported.

### Investigation of the Outbreak

Epidemiologic, laboratory, and traceback findings indicated that frozen raw tuna was the likely source of this outbreak.

In interviews, ill people answered questions about foods eaten and other exposures in the week before they became ill. Of 49 ill people for whom information was known, 46 (94%) reported consuming sushi in the week before they became ill. This proportion was significantly higher when compared with results from a [survey](#) [PDF - 29 pages] (<http://www.cdc.gov/foodnet/PDFs/FNExpAtI03022011.pdf>) of healthy people in which 5% reported eating "sushi, sashimi, or ceviche made with raw fish or shellfish" in the 7 days before they were interviewed. Of the 45 people with information about their sushi exposure, 44 (98%) reported eating a sushi item containing raw tuna, and 28 (80%) of 35 with information reported eating a sushi item containing raw "spicy tuna."

The Maricopa County Environmental Services Department working with the Arizona State Public Health Laboratory collected and tested unopened frozen ground tuna products from various retail locations. The Arizona laboratory isolated *Salmonella* Newport in one sample and *Salmonella* Weltevreden in another sample. The unopened frozen ground tuna products represented two different lots of product imported from Indonesia by Osamu Corporation. On May 27, Osamu Corporation [recalled](#) [PDF - 1 page] (<http://www.cdph.ca.gov/pubsforms/Documents/fdbFrOC2n.pdf>) the two lots of ground frozen yellowfin tuna imported from Indonesia due to possible *Salmonella* contamination. A search of the [PulseNet](#) (<http://www.cdc.gov/pulsenet/>) database did not identify any known human illnesses linked to the recall; however, state health departments continued to collect and test samples of frozen raw tuna products.

### The Minnesota Department of Health

<http://www.health.state.mn.us/news/pressrel/2015/tuna071415.html>) and Department of Agriculture isolated the outbreak strain of *Salmonella* Paratyphi B variant L(+) tartrate(+) from samples of unopened frozen raw tuna products collected from a Minnesota grocery store where an ill person in this outbreak reported eating tuna sushi. The contaminated frozen raw tuna products collected from the store represented one lot of product from one processing plant in Indonesia imported by Osamu Corporation. On July 21, 2015, Osamu Corporation announced a [voluntary recall of the lot](#) (<http://www.fda.gov/Safety/Recalls/ucm455622.htm>) of contaminated frozen raw tuna. Additionally, Osamu Corporation [voluntarily recalled all frozen yellowfin tuna](#)

(<http://www.fda.gov/Safety/Recalls/ucm455626.htm>) (loin, saku, chunk, slice, and ground market forms) sold to restaurants and grocery stores throughout the U.S. from May 9, 2014 to July 9, 2015 from the same processing plant in Indonesia.

Further laboratory testing of the product samples collected in Minnesota also isolated two different strains of *Salmonella* Weltevreden. A search of the PulseNet database identified one ill person from Arizona infected with one of the strains of *Salmonella* Weltevreden. This ill person reported consuming sushi containing raw tuna in the week before illness onset. As a result of these findings, this ill person was added to the total case count for the outbreak. The two *Salmonella* Weltevreden strains isolated from these samples were different from the *Salmonella* Weltevreden strain previously isolated from product tested in Arizona.

The National Antimicrobial Resistance Monitoring System

(<http://www.fda.gov/AnimalVeterinary/SafetyHealth/AntimicrobialResistance/NationalAntimicrobialResistance/NARMS>) is a U.S. public health surveillance system that tracks antibiotic resistance in foodborne and other enteric bacteria found in people, raw meat and poultry, and food-producing animals. NARMS is a partnership among the CDC, the U.S. Food and Drug Administration (FDA), the U.S. Department of Agriculture (USDA), and state and local health departments.

The NARMS human surveillance program (<http://www.cdc.gov/narms/index.html>) at CDC monitors antibiotic resistance in *Salmonella* and other bacteria isolated from clinical specimens submitted to NARMS by public health laboratories. CDC's NARMS laboratory conducted antibiotic resistance testing on clinical isolates collected from three ill people infected with the outbreak strain of *Salmonella* Paratyphi B variant L(+) tartrate(+). Of the three isolates, one (33%) isolate was resistant to ampicillin and two (67%) were susceptible to all antibiotics tested on the NARMS panel.

This investigation is over; however, the recalled (<http://www.cdc.gov/salmonella/paratyphi-b-05-15/advice.html>) frozen tuna has a long shelf life and may still be in freezers.

Restaurants and retailers unaware of the recalls could continue to serve and sell sushi made with recalled frozen tuna and people could get sick.

- > August 19, 2015
- > July 22, 2015
- > July 15, 2015
- > June 5, 2015

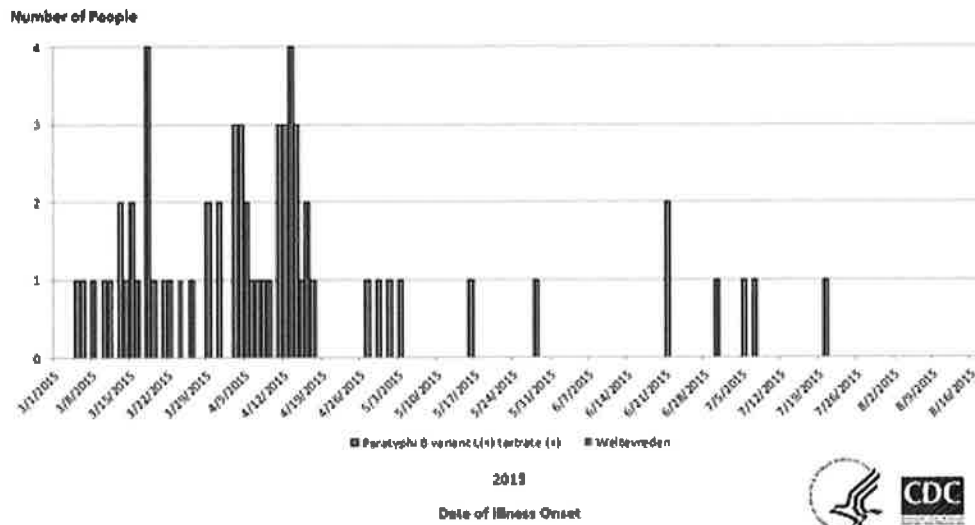
> Initial Announcement

## At A Glance

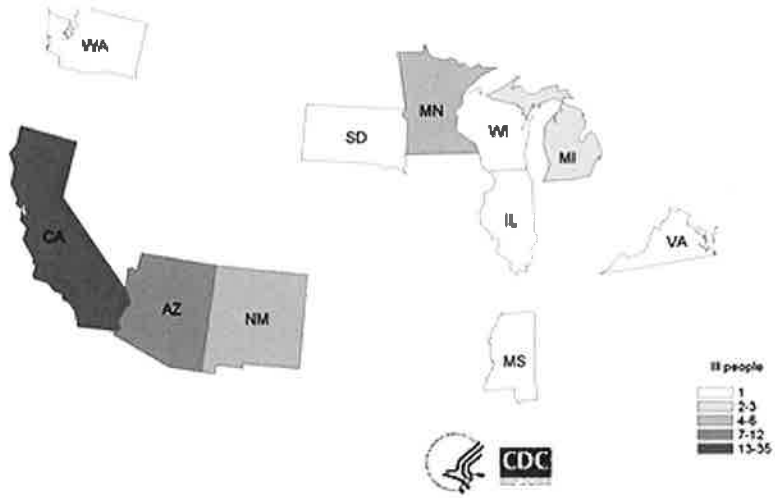
- Case Count: 65
- States: 11
- Deaths: 0
- Hospitalizations: 11
- Recall: Yes

## More Information

- Advice to Retailers & Consumers
- Signs & Symptoms
- Key Resources



[CLICK TO VIEW EPI CURVE GRAPHS](#)



[CLICK TO VIEW CASE COUNT MAPS](#)

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National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (</ncezid/index.html>)

Division of Foodborne, Waterborne, and Environmental Diseases (DFWED) (</ncezid/dfwed/index.html>)