

**Environmental Investigation of the *Escherichia coli* O157:H7 Outbreak in
Minnesota, Michigan, Wisconsin, and Canada
Associated with Hazelnuts – January 2011**

Final Report

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Agencies

California Department of Public Health (CDPH), Food and Drug Branch (FDB),
Emergency Response Unit (ERU)

United States Food and Drug Administration (FDA)

CDPH-FDB and FDA tasked the California Food Emergency Response Team (CalFERT), a partnership between CDPH-FDB and FDA, with this environmental investigation.

Dates of Inspection

February 25 and 28, 2011 and March 2, 3, and 9, 2011

Executive Summary

On February 24, 2011, the Minnesota Department of Agriculture (MDA) notified the California Department of Public Health (CDPH) of a multi-state cluster of *Escherichia coli* O157:H7 illnesses (Centers for Disease Control and Prevention cluster code 1102WIEXH-1). Preliminary epidemiological data collected by MDA found that all of the cases consumed either in-shell hazelnuts or mixed nuts containing in-shell hazelnuts. Hazelnuts were the suspected food vehicle in this outbreak.

In the United States, there were 8 cases reported in Minnesota (3), Michigan (1), and Wisconsin (4). An additional 8 cases were reported in Canada. Illness onset dates for the U.S. and Canadian cases ranged from December 20, 2010 to February 27, 2011.

A traceback investigation showed two common California distributors: [REDACTED] and DeFranco & Sons, Los Angeles, CA. A traceback investigation on seven of the U.S. cases indicated that DeFranco & Sons was the common distributor in all seven (100%).

An environmental investigation was initiated by CDPH at DeFranco & Sons on February 25, 2011. The investigation consisted of a Good Manufacturing Practices inspection, along with environmental and product sampling. A total of 54 samples were collected (30 environmental swabs and 24 product). Of the 24 product samples collected, three (mixed nuts) were found positive for *E. coli* O157:H7 and all three isolates had indistinguishable molecular patterns from the outbreak strain.

CDPH found that DeFranco & Sons was operating under poor sanitary conditions. Several violations were observed during the inspection pertaining to rodent intrusion and other general sanitation deficiencies. As a result, 38 pallets of packaged in-shell nut products were embargoed. DeFranco & Sons was unable to provide an adequate plan to recondition the embargoed nuts and the nuts were subsequently voluntarily destroyed by firm management.

On March 4, 2011, DeFranco & Sons recalled all hazelnuts and mixed nuts containing hazelnuts sold between November 2, 2010 and December 22, 2010. After the three product samples of mixed nuts tested positive for *E. coli* O157:H7, the date range on the recall was expanded to include all hazelnuts and mixed nuts containing hazelnuts sold between December 23, 2010 and February 17, 2011.

During the course of our investigation, health departments in the other involved states collected various DeFranco & Sons sourced mixed nut and hazelnut samples from both retail and consumer sources. Some of those samples of hazelnuts and mixed nuts also had Pulsed Field Gel Electrophoresis (PFGE) results which matched the outbreak. Taking into account the strong epidemiological and traceback data, along with the matching mixed nut and hazelnut samples, it was determined that the hazelnuts were the most likely cause of this outbreak. This outbreak marked the first recognized *E. coli* O157:H7 foodborne illness associated with bulk in-shell hazelnuts sold at retail food locations in the United States.

Background Information

On February 24, 2011, the California Department of Public Health (CDPH) – Food and Drug Branch (FDB) was notified by the Minnesota Department of Agriculture (MDA) of a distributor in California that was a point of convergence in a traceback investigation related to a cluster of *E. coli* O157:H7 illnesses. The cluster had the Centers for Disease Control and Prevention (CDC) code of 1102WIEXH-1. Preliminary epidemiological data collected by MDA found that all of the cases consumed either hazelnuts or mixed nuts containing hazelnuts.

In the United States, there were eight cases reported in Minnesota (3), Michigan (1), and Wisconsin (4). An additional eight cases were reported in Canada. Illness onset dates for both the U.S. and Canadian cases ranged from December 20, 2010 through February 27, 2011. No deaths were reported.

The traceback investigation showed two common California distributors, [REDACTED] and DeFranco & Sons, Los Angeles, CA. DeFranco & Sons was the common distributor in U.S. cases associated with this outbreak. Since 100% of the case patients in the traceback received in-shell hazelnuts or in-shell mixed nuts containing hazelnuts that originated from DeFranco & Sons, CDPH focused the investigation on this California firm. [REDACTED] was excluded as a possible source of the outbreak due to their shipment dates of the [REDACTED] nut bin being much earlier (early November 2010) than the patient's purchase dates and illness onset dates.

An environmental investigation was initiated by CDPH at DeFranco & Sons on February 25, 2011 which consisted of a Good Manufacturing Practices (GMPs) inspection as well as environmental and product sampling.

Epidemiological Summary

At the time CDPH was informed of this foodborne illness outbreak, there were six confirmed cases reported in MN (2), MI (1), WI (3), and two unconfirmed cases in Canada. The cases in MN, MI, and WI had matching *E. coli* O157:H7 Pulsed Field Gel Electrophoresis (PFGE) patterns by two enzymes. The PFGE pattern was given a designation of EXHX01.1159 for XbaI and EXHA26.3665 for BlnI with a CDC cluster code of cluster code 1102WIEXH-1. These isolates also had indistinguishable patterns via Multiple-Locus Variable number tandem repeat Analysis (MLVA). According to CDC, this MLVA pattern was uncommon to PulseNet but had been seen 8 times before. By April 1, 2011, eight confirmed cases were reported in the U.S. and eight cases were reported in Canada.

The cases in MN (3), MI (1), and WI (4) had *E. coli* O157:H7 PFGE patterns that matched each other by two enzymes. The epidemiological study conducted by CDC and states with matching outbreak patients found that all of the U.S. cases had consumed either in-shell hazelnuts or in-shell mixed nuts containing hazelnuts. The U.S. cases had illness onset dates ranging from December 20, 2010 through February

16, 2011. The U.S. cases were predominately male (age ranged from 15–78 years old; median age of 63). Among ill persons, 50% reported being hospitalized, and none had hemolytic uremic syndrome. No deaths were reported.

Data received by FDB pertaining to the Canada cases was limited; however, out of the 8 cases in Canada, four were indistinguishable from the outbreak strain and according to Canadian officials, four had a PFGE pattern that was closely related to the outbreak strain. The closely related strain was referred to as the “variant pattern.” This variant pattern had only been seen four times in the U.S. since December 2010, including twice in California. The Canadian cases had illness onset dates between December 26, 2010 and February 27, 2011. All eight Canadian case patients were hospitalized (100%). No deaths were reported.

Traceback

A traceback investigation conducted by MDA identified two common distributors of bulk in-shell nuts (almonds, Brazil nuts, hazelnuts, and walnuts). The distributors included, [REDACTED] and DeFranco & Sons in Los Angeles, CA. [REDACTED] supplied bulk nut bins to distributors in early November 2010. The [REDACTED] nut bins were subsequently refilled several times with products from other suppliers after the original shipment from [REDACTED]. The refills were supplied by two distributors, Russ Davis Wholesale (Wadena, MN) and Potato King (La Crosse, WI). Russ Davis Wholesale and Potato King supplied the retail locations with 50-lb bags of hazelnuts and 50-lb bags of mixed nuts supplied by DeFranco & Sons.

In addition to the traceback activities by MDA, CDPH conducted a traceback investigation of the suspected shipments of in-shell hazelnuts received by retail locations in WI and MN. Documents such as invoices and bills of lading were requested from the retailers and distributors who sold in-shell hazelnuts. Attachment 1 provides a traceback diagram outlining product flow and relevant information.

Specific case patient traceback information is listed below:

Case patient #WI1: Purchased bulk, in-shell mixed nuts around December 25, 2010 at Quillins Foods (La Crosse, WI). Patient illness onset was January 5, 2011. Quillins was supplied by Potato King (La Crosse, WI) and Russ Davis Wholesale (Wadena, MN). Potato King shipped both DeFranco & Sons in-shell hazelnuts and DeFranco & Sons imperial mixed nuts to Quillins. Russ Davis Wholesale shipped a Diamond nut bin received from Diamond Foods (Stockton, CA).

Case patient #WI2: Purchased bulk mixed nuts around December 25, 2010 at Festival Foods (Onalaska, WI). Patient illness onset was January 14, 2011. Festival was supplied by Potato King (La Crosse, WI) and Russ Davis Wholesale (Wadena, MN). Potato King shipped out hazelnuts and imperial mixed nuts received from DeFranco & Sons (Los Angeles, CA). Russ Davis Wholesale shipped hazelnuts and mixed nuts received from DeFranco & Sons.

Case patient #WI3 Purchased in-shell hazelnut nuts after December 25, 2010 at Supervalu (Green Bay, WI). Patient illness onset was January 20, 2011. Supervalu was supplied by Russ Davis Wholesale (Wadena, MN) who shipped mixed nuts and hazelnuts from DeFranco & Sons (Los Angeles, CA) and a [REDACTED] nut bin from [REDACTED]

Case patient #MI: Purchased in-shell hazelnut nuts from a bulk bin on December 16, 2010 at Super One Foods (Marquette, MI). Patient illness onset was December 20, 2010. Super One was supplied by Russ Davis Wholesale (Wadena, MN) who shipped hazelnuts received from DeFranco & Sons (Los Angeles, CA) and a [REDACTED] nut bin received from [REDACTED]

Case patient #MN1: Purchased in-shell mixed nuts (pecans, almonds, and hazelnuts) at Tersteeg's Holiday Market (Redwood Falls, MN) between December 25, 2010 and January 7, 2011. Patient illness onset was January 7, 2011. Tersteeg's was supplied by Russ Davis Wholesale (Wadena, MN) who received mixed nuts and hazelnuts from DeFranco & Sons (Los Angeles, CA) and a [REDACTED] nut bin from [REDACTED]

Case patient #MN2 Purchased in-shell mixed nuts (pecans, walnuts, hazelnuts, and Brazil nuts) at Cash Wise Foods (Waite Park, MN) around December 25, 2010. Patient illness onset was January 28, 2011. Cash Wise was supplied by Russ Davis Wholesale (Wadena, MN) who shipped mixed nuts and hazelnuts received from DeFranco & Sons (Los Angeles, CA) and a [REDACTED] nut bin from [REDACTED]

Case patient #MN3 Purchased hazelnuts from Coborn's (Melrose, MN) on December 19, 2010. Patient illness onset was December 27, 2010. Coborn's was supplied by Russ Davis Wholesale (Wadena, MN) who shipped hazelnuts received from DeFranco & Sons and a [REDACTED] nut bin from [REDACTED]

[REDACTED] nut bins were not suspected as a cause of the outbreak due to the time elapsed between the shipment of [REDACTED] nut bins and the numerous shipments of DeFranco & Sons nuts afterwards. Moreover, the DeFranco & Sons products were readily available before the earliest onset of the illness (December 20, 2010). DeFranco & Sons was the sole supplier of in-shell hazelnuts and in-shell mixed nuts to the distributors who sold to the retail locations during the time period of interest and all of the cases had purchased the in-shell nuts during the same time period in December 2010. DeFranco & Sons had received over 99% of their in-shell hazelnuts from a packer in Oregon. According to a survey by the U.S. Department of Agriculture, 90% of domestically harvested hazelnuts are grown in Oregon.

Since all of the case patients received in-shell hazelnuts or in-shell mixed nuts containing hazelnuts that originated from DeFranco & Sons, CDPH focused the outbreak investigation on this California firm.

Recall

CDPH presented a summary of all available traceback and epidemiological data to DeFranco & Sons management, on March 2, 2011. Based on the evidence, DeFranco & Sons initiated a voluntary recall all hazelnuts and mixed nuts containing hazelnuts distributed between November 2 and December 22, 2010. The press release announcing the recall was issued on March 4, 2011.

On March 14, 2011, CDPH notified DeFranco & Sons that three product samples of in-shell mixed nuts had tested positive for *E. coli* O157:H7. Since these mixed nuts were received by DeFranco & Sons after the shipments included in the previous recall (March 4, 2011 release date), the firm expanded their March 4, 2011 recall to include 50-lb bags of hazelnuts and all mixed nuts sold between December 23, 2010 and February 17, 2011. Only three customers were affected by the expanded recall with two of the three customers located in California. DeFranco & Sons did not issue another press release because of the small number of additional customers affected by the expanded recall. However, the firm did notify each affected customer by phone regarding the expanded recall.

Environmental Investigation

Investigated Firm – DeFranco & Sons

Paul DeFranco, Jerry DeFranco, and Richard DeFranco (President, Vice President, and Secretary; respectively)
1000 Lawrence Street
Los Angeles, CA 90021

CalFERT conducted an environmental investigation at DeFranco & Sons, a corporation also known as Parimar, Inc. or New England Tomato Company. DeFranco & Sons warehoused, packaged, and distributed various types of in-shell nuts and processed raw vegetable products. The firm warehoused and distributed in-shell nuts including pasteurized almonds, bleached and natural walnuts, fumigated hazelnuts, Brazil nuts, pecans, and pistachios in 50-lb bags. The firm seasonally repackaged in-shell "mixed nuts" and individual nuts from October through December. Mixed nuts consisted of walnuts, almonds, hazelnuts, pecans, and Brazil nuts. DeFranco & Sons also processed raw, ready-to-cook, husked corn and trimmed green beans and handled a limited amount of tomatoes, asparagus, and bell peppers.

CalFERT was initially deployed to DeFranco & Sons on February 25, 2011. Information and documents were collected regarding the handling, packaging, and shipping of nuts. Environmental sampling, product sampling, and a general inspection were completed by March 9, 2011. For details regarding the general inspection see the attached Processed Food Registration inspection report (Attachment 2).

DeFranco & Sons last production of packaged nuts occurred on December 5, 2010. The firm repackaged in-shell nuts primarily in the small repackaging room. The room was not in use during the investigation, but did contain vibrating nut hoppers, conveyer

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belts, shakers and scales. The larger nut repackaging area located near the corn processing line was equipped with hoppers, conveyers, tumbler, scale and bag closing machinery.

Information and data collected during the investigation indicated that the suspect hazelnuts were supplied by the following companies:

- George Packing Company, Inc. in Newberg, Oregon (2,480 bags; 50-lb each)
- Torn and Glasser in Los Angeles, California (35 bags; 50-lb each) – supplied by:
 - Firestone Farms in Dayton, Oregon
 - Northwest Hazelnut Company in Hubbard, Oregon

The FDA conducted inspections at the three nut suppliers in Oregon. FDA reported that it was common practice for hulling operations in Oregon to commingle numerous lots of product from many different growers. Because the lots were commingled, FDA could not determine the ranch locations that supplied the hazelnuts shipped out by George Packing Company, Firestone Farms, and Northwest Hazelnut Company.

Firm management at DeFranco & Sons described their understanding of the hazelnut harvesting process. Hazelnuts were mechanically shaken from the tree onto the ground. A tractor swept the nuts into a row and second tractor picked up the hazelnuts. The hazelnuts were hulled, dried, and bleached. The heating temperatures, drying method, and bleaching process were unknown to DeFranco representatives. The nuts were then graded and packaged into 50-lb bags before shipping to DeFranco & Sons.

DeFranco & Sons handling procedures for hazelnuts were described as follows. The firm received 50-lb bags of previously hulled, dried, bleached, and graded in-shell hazelnuts from growers or other distributors. Upon receiving the nuts, DeFranco & Sons assigned a four digit lot number to the shipment. This number was assigned based on sequential numbering. Upon inspecting the log, CalFERT investigators observed numerous occasions where the lot number on the receiving invoice did not correspond to what was written on the receiving log.

To manufacture mixed nut products, 50-lb bags of nuts were selected on a first-in, first-out basis and opened into hoppers. The hoppers released the nuts onto a conveyor line which carried them into a large mixing tank. Once mixed, the nuts were packaged into 50-lb bags and an employee used a bag closing machine to sew the bags shut. The firm did not perform any heating, seasoning, cracking, or other processes on nuts. The firm did not repackage 50-lb single-type nuts. These products are sold in 50-lb bags as originally received from their supplier. However, DeFranco & Sons did repackage single-type 50-lb bagged nuts into retail sized bags under the Sunripe label.

The firm distributed nuts within the U.S. and Canada with approximately 95% of the shipments remaining in California. The packaged retail products were shipped to grocery stores; bulk products were distributed to restaurants, school districts, and wholesalers.

DeFranco & Sons did not keep any production records or packing records for nuts. Finished product lot coding was not applied to the repackaged 50-lb mixed nuts.

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However, 1-lb packages of nuts received a use by date of approximately three months in the future (last day of the 3rd month after packaging). The same equipment was used to package the 1-, 2-, 4-, and 50-lb packages.

DeFranco & Sons had written Standard Sanitation Operating Procedures (SSOPs). They also maintained daily sanitation logs and master sanitation schedules for the weekly cleanings which took place on Saturdays. Investigators determined that the firm did not adhere to its written SSOPs. DeFranco & Sons SSOPs specifically stated that tape may not be used on food contact surfaces. However, the sides of the mixed nut conveyor belt in the nut repackaging room were observed covered with duct tape.

DeFranco & Sons indicated that food and non-food contact surfaces (including floors, tables, and conveyor belts) were swabbed quarterly by [REDACTED] and tested for *Listeria* and total coliforms. Test results from November 2010 and February 2011 were reviewed and found negative.

During this investigation, CalFERT investigators observed flaking paint and/or brown-colored stains on multiple walls adjacent to food processing and food storage areas. Flooring adjacent to the nut repackaging equipment near the corn husking line had excessive product dust and dirt. Additionally, 50-lb bags of nuts stored adjacent to the green bean line showed evidence of splash, possibly from sanitation procedures.

At the time of firm inspection, CalFERT observed that the raw and finished product walk-in refrigeration units were maintained at appropriate temperatures. The firm used [REDACTED] as a detergent on equipment, and [REDACTED] quaternary sanitizer (target [REDACTED] ppm) to sanitize equipment. A three-compartment sink was used to sanitize utensils and brushes.

During the inspection CalFERT observed that nut repackaging equipment was not maintained in a clean or sanitary condition. Old product residue and dirt was observed on the machinery surfaces and within cracks and crevices of conveyor belts. Paul DeFranco, President and a certified Food Safety Manager, stated that the food contact surfaces of the in-shell nut tumbler were not subject to cleaning. Nut repackaging equipment was observed with rusted and corroded metal parts, cracked pieces of rubber, and chipped paint.

Municipal water was used for processing, cleaning, and personal hygiene within the plant. The water was last tested by [REDACTED] on November 4, 2010. Total Plate Count and coliforms were reported as negative.

DeFranco & Sons maintained a contract with [REDACTED] Pest Control ([REDACTED]), to service the facility on a monthly basis or more frequently if needed. On February 25, 2011, numerous rodent traps were observed by CDPH investigators on and behind pallets of nuts, particularly walnuts. More than 10 rodent gnaw holes in multiple bags of walnuts were also observed. As a result, thirty-eight pallets of in-shell nuts were embargoed due to exposure to vermin. In addition, one 50-lb walnut bag with rodents gnaw marks and one 50-lb intact bag of hazelnuts were collected for laboratory analysis. On March 18, 2011, [REDACTED] Pest Control examined the embargoed pallets of

nuts and found no evidence of rodent droppings or urine. [REDACTED] did identify 15 bags containing rodent gnaw holes. These bags were removed from embargo by CDPH and voluntarily destroyed by DeFranco & Sons.

Regulatory Actions

On February 25, 2011, FDB investigators embargoed 38 pallets containing 50-lb bags of various types of in-shell nuts. The embargo included: DeFranco Mixed Nuts, DeFranco Brazil Nuts, Crain Ranch California Walnuts, Blue Diamond Almonds, and North Valley Nut Almonds. The affected nuts were observed being held under insanitary conditions whereby the nuts could have been contaminated with rodent filth. In addition to rodent traps located on top of multiple product bags rodents gnaw marks and holes were observed in bags of walnuts. A Notice of Violation (NOV) was issued documenting these conditions (see Processed Food Registration inspection report, Attachment 2). A second NOV was issued on March 3, 2011, pertaining to the insanitary conditions observed subsequent to February 25, 2011 (Attachment 2).

DeFranco & Sons presented CDPH with plans to recondition the remaining embargoed in-shell hazelnuts and mixed nuts containing hazelnuts. CDPH did not approve the reconditioning plan to pasteurize the affected nuts because it lacked scientific evidence of effectiveness. On March 1, 2012, the embargoed in-shell hazelnuts (12,000-lb) and in-shell mixed nuts (8,000-lb) were released from embargo and voluntarily destroyed at [REDACTED] (CA).

Sampling and Results

Samples were collected by multiple agencies during this outbreak investigation:

Minnesota: MDA collected samples of mixed nuts with hazelnuts at a Cash Wise in Minnesota and in-shell hazelnuts from a case patient. According to MDA, both samples tested positive for *E. coli* O157:H7 and matched the outbreak strain by PFGE. Documentation collected by MDA from Cash Wise indicated that the hazelnuts were sourced from DeFranco & Sons.

Wisconsin: The Wisconsin Department of Agriculture, Trade and Consumer Protection and the Wisconsin Department of Health Services sampled mixed nuts containing in-shell hazelnuts from Potato King (La Crosse, WI) and found *E. coli* O157:H7 in three samples, which matched the outbreak strain by PFGE.

FDA: The FDA collected hazelnut samples at Northwest Hazelnut Company, Hubbard, OR (a supplier to Torn and Glasser). All samples were negative for the pathogen.

CalFERT: CalFERT collected and tested walnuts, hazelnuts, mixed nuts containing in-shell hazelnuts, and environmental swabs at DeFranco & Sons (see below). On February 25, 2011, CalFERT sampled one 50-lb bag of Crain Ranch California Walnuts (with five rodent gnaw marks/holes) and one 50-lb bag of George Packing Company

Hazelnuts from a shipment used in December. These two samples were negative for *E. coli* O157:H7.

On March 3, 2011, CalFERT collected environmental and product samples at DeFranco & Sons for a total of 54 samples (Table 1). Thirty environmental samples (56% of total) were collected in the nut packaging room and the nut storage area. Each sample consisted of two swabs that were composited for analysis (2 sponge swabs per Whirl-Pak® bag for a total of 30 bags). Ten 50-lb bags of in-shell mixed nuts packed by DeFranco & Sons were collected. Two samples (1-lb each) were aseptically extracted from each of these 10 bags for a total sample number of 20. These 20 in-shell mixed nut samples were sent to the Food and Drug Laboratory Branch (FDLB; Richmond, CA) for analysis.

Table 1 – Product and environmental samples collected by CalFERT at DeFranco & Sons

Sample Type	Number of Samples Collected
Environmental swabs	30
Mixed nuts	22
Walnuts	1
Hazelnuts	1
Total	54

FDLB analyzed the samples for *E. coli* O157:H7 and generic *E. coli*. Three mixed nuts samples out of the 20 tested by FDLB (sample IS# 082030211A, IS# 082030211B, and IS # 082030211P) were confirmed positive for *E. coli* O157:H7 (Table 2). Two of these samples (IS# 082030211A and IS# 082030211B) were from a single 1-lb bag and the third was from another bag. Analysis by PFGE confirmed that all three positive samples matched the *E. coli* O157:H7 outbreak strain (pattern designation EXHX01.1159/EXHA26.3665 for CDC cluster code 1102WIEXH-1). The two bags of mixed nuts, from which the positive samples were obtained, were shipped to FDLB on March 15, 2012 for further testing (two samples total). FDLB tested each type of nut separately to determine which type of nut may have contributed to the previous positive results. *E. coli* was not detected in the individual nut testing.

Table 2 – Summary of all positive *Escherichia coli* O157:H7 samples (n=3) collected at DeFranco & Sons

Sample Number	Sample Type	Serotype of Pathogenic <i>E. coli</i>	PFGE (XbaI/ BlnI)	Match to Outbreak Strain
082030211A	Mixed Nuts	O157:H7	EXHX01.1159/ EXHA26.3665	Yes
082030211B	Mixed Nuts	O157:H7	EXHX01.1159/ EXHA26.3665	Yes
082030211P	Mixed Nuts	O157:H7	EXHX01.1159/ EXHA26.3665	Yes

Summary of Findings

Epidemiological and traceback data determined that DeFranco & Sons was the common source of the in-shell hazelnuts; the food vehicle linked to this outbreak. DeFranco & Sons was a point of convergence in seven U.S. cases as determined by the traceback investigation. Laboratory findings further supported that hazelnuts sourced from DeFranco & Sons were positive for *E. coli* O157:H7, and isolates from the DeFranco & Sons samples were a genetic match via PFGE to the outbreak strain. CDPH inspectional findings noted that DeFranco & Sons operated under poor sanitary conditions at the time of the investigation. Deficiencies were recorded regarding pest control, sanitation, and facility maintenance. Although CDPH determined that DeFranco & Sons had contaminated product at their facility, the investigative team was unable to determine if the *E. coli* O157:H7 contamination occurred at DeFranco & Sons or at a point previous to the nuts arrival at DeFranco & Sons.

Attachments

1. Traceback diagram
2. Processed Food Registration inspection report