

### ***E. coli* 0157 NM summary**

#### *Summary:*

In spring, 2004, a cluster of *E. coli* 0157:NM cases was investigated in GA. Initially 2 cases of *E. coli* O157, interviewed through routine *E. coli* O157 surveillance, were identified to have a common exposure of sprouts at one chain of restaurant. Both cases were confirmed as *E. coli* O157:NM at GPHL and matched by 2 enzymes by PFGE. Subsequently, 3 other *E. coli* O157:NM cases were identified; all matched by PFGE to the 2 sprout cases. Evaluation of the production of the sprouts to the placement in restaurants was done.

#### *Introduction:*

On April 23, GPHL reported one case of *E. coli* O157:NM to GDPH. This initial case had eaten sprouts at an Atlanta-location of restaurant chain A prior to becoming ill. On April 27<sup>th</sup>, an Athens laboratory reported another case of *E. coli* O157 who also ate sprouts at an Athens-location of restaurant chain A. This chain is national with a headquarters in a different state. No other restaurants or retail establishments were implicated. The second case was subsequently identified as *E. coli* O157:NM at GPHL. Both isolates matched by 2 enzymes by PFGE.

District health departments were notified of the cluster. Although all *E. coli* O157 cases are routinely interviewed by health districts about sprouts and other risk factors, the districts were asked to ensure they obtain detailed information about sprouts and a 7-day food history. . Three additional cases were identified by a query of laboratories. Collaboration occurred with environmental health specialists, FDA, CDC, and Georgia Department of Agriculture personnel.

#### *Methods, Epidemiology:*

All cases were interviewed by health districts with a standardized form. Interviewers were also encouraged to try to obtain complete food histories, in addition to the routine questions. Epidemiologists interviewed every unconfirmed and confirmed *E. coli* O157:NM case. On consultation with CDC, it was decided not to pursue active case finding of persons who ate at the potentially implicated restaurant chain. Local health departments were advised to concentrate their questioning of *E. coli* O157 cases on restaurant and sprout exposure.

#### *Methods, Environmental:*

This PFGE pattern that was common to all the cases was related to those from outbreaks in MN and CO, which had seed lots traced to the same seed company. Menus from the restaurant cases ate at during the week prior to illness were reviewed. The two chain restaurants were inspected, and The GA Division of Public Health and GA Dept of Agriculture investigated the distributor and sprouter. No sprouts were left for testing in these locations. The distributor to the restaurant chain provided a list of other clients distributed to. The restaurant chain buys 95% of its sprouts from this company. The sprouter decided to stop that part of his business when notified of the sprout commonality between two of the five cases. On May 1, 2004, they

sent a letter to clients requesting they send back or dispose of any sprouts

*Methods, Laboratory:*

PFGE was done on all clinical isolates. One sample of sprouts was obtained from the restaurant. No additional food samples were tested.

*Results, Epidemiologic:*

*We learned about case B first, but his isolate was not confirmed as E. coli O157NM until after A&C.*

	<b>Age</b>	<b>sex</b>	<b>date onset</b>	<b>sprout exposure/date</b>	<b>other possible exposures</b>
B.	16	m	4-7-04	no	salad/4-3, hamburger/4-6
A	25	f	4-13-04	yes/approx 4-6-04	salad/4-10-04
C.	19	f	4-19-04	yes/4-15-04	ground beef, salad
D.	55	f	4-11-04	unk	unk
E.	16 mos	m	4-12-04	no	fresh fruits/everyday/in FL

Other than case A and C who ate at different locations of the same chain, no obvious similarities in restaurants and grocery shopping between the cases.

All cases were laboratory confirmed. All cases had diarrhea. 3 cases had bloody diarrhea, and 2 cases had vomiting. No cases had HUS. One case was hospitalized. Case A became ill with bloody diarrhea 4-13-04. High-risk foods consumed within a week of illness onset consisted of salad from a home garden, and a sandwich containing sprouts eaten at one location of a chain restaurant. Case B was from the Athens area (Loganville is not near Athens, it is part of metro Atlanta) and became ill with bloody diarrhea on 4-7-04. He had eaten a hamburger at an Atlanta suburban fast-food restaurant, as well as a barbecue and other sit-down restaurant in the Atlanta area within a week of illness onset. He did eat salad at the barbecue restaurant 4 days before illness onset, and ate a noodle dish with some sort of vegetables in it either 3 or 5 days before illness onset. Review of restaurant menus resulted in no exposure to sprouts. None of the restaurants were common with case A. Epidemiologists recognized another *E. coli* O157NM case with a date of illness onset of 4-19-04. This case ate ground beef cooked at home within 7 days of illness onset. She also ate sprouts at another location of the same chain as case A. Two additional *E. coli* O157NM were found—one with date of illness onset of 4-11-04, and one with date of illness onset of 4-12-04. Case D denied eating meat, but refused to answer additional questions. Case E was a toddler from Atlanta, and was on the Gulf Coast of Florida during the majority of the week prior to illness onset. There he ate multiple types of produce purchased at Atlanta area grocery stores, ate at multiple restaurants at the resort, and parents denied that he ate any sprouts. No additional cases were found.

*Results, Environmental:*

No violations were found on inspection of the restaurants or distributor. There was some question about the appropriateness of the chlorination, sampling, and testing done by the sprouter by the FDA. The cleaning and sampling and testing protocols at the sprouter are as follows: They soaked half bags of seeds in 10 gallons of water with 22 oz chlorine for 30 minutes. They sit on growing bins for 1 ½ days and then are planted on trays for 2-3 days. Each lot was only tested once, and that testing is done from the sprouting water. The lots were tested

within 3 days, both with a Quix assay test, and with a confirmatory test done by a reference lab. Two shipments of the implicated lot number were received from the seed company. Only the shipment received in March was tested for *E. coli* (3-4-04). Since the April shipment was part of the same lot, it was not tested. Location 1 of restaurant chain received sprouts from the implicated lot on 4-12 and 4-19, and location 2 received them on 4-5, 4-9, and 4-13. Georgia Division of Public Health environmental health specialist and epidemiologist called the clients for which contact information was available to ensure that no sprouts of the lot number in question remained. There was some information from CDC that this lot number of seeds was harvested in a similar location and time period of the seeds implicated in the CO, MN outbreaks of the previous year. There was also some concern that these seeds were initially sent to Canada and returned for quality control issues. No additional information is available at the time of this report.

#### *Results, Laboratory:*

All clinical isolates were available for PFGE. Four patterns were indistinguishable. PFGE for case E was actually not indistinguishable, but closely related to the outbreak strain. One sprout sample from the restaurant was tested. It was negative.

#### *Discussion:*

The Georgia Division of Public Health Epidemiology Branch, The Georgia Department of Agriculture, The Georgia Public Health Laboratory, federal and local Food and Drug Administration, and the Centers for Disease Control and Prevention Foodborne Disease Branch investigated a cluster of *E. coli* 0157:NM in April 2004. This organism is rare in Georgia, and the isolates matched by PFGE. Only two of the cases were epidemiologically linked. They shared the common exposure of eating sprouts from the same chain that received their sprouts from the same company. This company was traced back to receiving their seeds from the same producer that was implicated in 2 similar outbreaks in CO and MN in the past year. This reinforces the hypothesis that sprouts were the vehicle of this cluster. A few issues at the sprouter level were noticed, and the sprouter ended up closing that aspect of his business. All recipients of the sprouts in question that were able to be reached were cooperative in not allowing their sprouts to be sold to the public, either by returning them or destroying them. Nothing to implicate particular restaurants was found. It is unclear why sprout exposure could not be documented in two of the remaining cases, and the final case was not cooperative with the interview.

#### *Recommendations:*

Sprouts are a high-risk food for *E. coli* 0157 and other foodborne diseases. Suspected cases of *E. coli* 0157 should be questioned about produce exposure, specifically sprouts. At the restaurant level, there are not many effective measures for preventing infection if the sprouts were contaminated during earlier phases of production. Collaboration with national partners can lead to identification of sources of outbreaks that can impact additional states.