Table of Contents:

Introduction: .................................................................1
Contact information: ..........................................................2
Roles and responsibilities: ....................................................3
Food complaint procedure: ....................................................5
Data Collection: .................................................................6
Food Sample/Specimen: .........................................................6
Human Sample/Specimen: .......................................................7
Analysis: ........................................................................8
Sharing of information: .........................................................8
Additional support during large outbreak: ................................9
Resources: ......................................................................9
To media: .......................................................................10
Outbreak investigation documents: ........................................11
**Introduction:**

A foodborne illness can be defined as a disease caused by consuming contaminated food or drink. A foodborne outbreak can be defined as the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food, or single cases of certain rare and serious conditions, such as gastrointestinal anthrax, botulism, or cholera.

The following is a summary of foodborne outbreaks in Nebraska -2011

<table>
<thead>
<tr>
<th>PulseNet detected outbreaks</th>
<th>Total number of cases reported</th>
<th>PFGE matched cases with national outbreak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listeria monocytogenes</td>
<td>123</td>
<td>6</td>
</tr>
<tr>
<td>Salmonella Heidelberg (ground turkey)</td>
<td>119</td>
<td>2</td>
</tr>
<tr>
<td>Salmonella Agona</td>
<td>99</td>
<td>2</td>
</tr>
<tr>
<td>Salmonella Heidelberg (broiled chicken liver)</td>
<td>312</td>
<td>2</td>
</tr>
</tbody>
</table>
Contact information:

**Office of Epidemiology**

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Contact number</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas J. Safranek, MD</td>
<td>State Epidemiologist</td>
<td>Office 402-471-0550</td>
<td><a href="mailto:tom.safranek@nebraska.gov">tom.safranek@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell 402-440-5729</td>
<td></td>
</tr>
<tr>
<td>Dennis Leschinsky</td>
<td>Communicable Disease Surveillance</td>
<td>Office 402-471-6450</td>
<td><a href="mailto:dennis.leschinsky@nebraska.gov">dennis.leschinsky@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell 402-417-3349</td>
<td></td>
</tr>
<tr>
<td>Bryan F. Buss, DVM, MPH</td>
<td>Career Epidemiology Field Officer</td>
<td>Office 402-471-8820</td>
<td><a href="mailto:bryan.buss@nebraska.gov">bryan.buss@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell 402-450-6284</td>
<td></td>
</tr>
<tr>
<td>Manjiri Joshi, MPH</td>
<td>Epidemiology Surveillance Response Coordinator</td>
<td>Office 402-471-9148</td>
<td><a href="mailto:manjiri.joshi@nebraska.gov">manjiri.joshi@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell 402-326-8197</td>
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</table>

**Office of Environmental Health**

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Contact number</th>
<th>Email</th>
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<tbody>
<tr>
<td>Troy Huffman</td>
<td>Health Food Service Evaluation Officer</td>
<td>Office-402-471-0387</td>
<td><a href="mailto:troy.huffman@nebraska.gov">troy.huffman@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell-402-430-3071</td>
<td></td>
</tr>
<tr>
<td>Jack Daniel</td>
<td>Office of Drinking Water and Environmental Health</td>
<td>Office-402-471-0510</td>
<td><a href="mailto:jack.daniel@nebraska.gov">jack.daniel@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell-402-432-4186</td>
<td></td>
</tr>
<tr>
<td>Sue Semerena</td>
<td>Office of Drinking Water and Environmental Health</td>
<td>Office-402-471-0928</td>
<td><a href="mailto:marysue.semerena@nebraska.gov">marysue.semerena@nebraska.gov</a></td>
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**Nebraska Department of Agriculture**

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<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Contact number</th>
<th>Email</th>
</tr>
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<tbody>
<tr>
<td>George Hanssen ,</td>
<td>Food and Dairy Division Administrator</td>
<td>Office-402-471-6814</td>
<td><a href="mailto:george.hanssen@nebraska.gov">george.hanssen@nebraska.gov</a></td>
</tr>
<tr>
<td>R.E.H.S</td>
<td></td>
<td>Cell-402-326-0185</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Home-402-525-7807</td>
<td></td>
</tr>
<tr>
<td>Dan Kahler, R.E.H.S</td>
<td>Field Supervisor/ Evaluation Officer</td>
<td>Office-402-471-2536</td>
<td><a href="mailto:dan.kahler@nebraska.gov">dan.kahler@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell-402-429-0870</td>
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<tr>
<td></td>
<td></td>
<td>Home-402-476-1215</td>
<td></td>
</tr>
<tr>
<td>Tom Jensen</td>
<td>Chief Administrator</td>
<td>Office-402-471-2341</td>
<td><a href="mailto:tom.jensen@nebraska.gov">tom.jensen@nebraska.gov</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell-402-499-4774</td>
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<tr>
<td></td>
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<td>Home-402-423-3861</td>
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</table>
Roles and responsibilities:

Office of Epidemiology:
The Nebraska Department of Health and Human Services (NE DHHS), Office of Epidemiology is authorized by statute to investigate threats to public health caused by food, infection, or chemical agents which affect persons in Nebraska and is responsible to conduct such activities and mitigate threats to the health of the population.

Staffs from the Office of Epidemiology are involved in coordinating all activities related to a food borne outbreak. These activities are listed as follows:

- identify cases,
- develop hypotheses and strategies to test them,
- interview cases and healthy controls,
- plan epidemiological investigations/studies,
- collect and analyze data using statistical tools,
- summarize reports, and
- coordinate specimen collection and testing

Office of Environmental Health:
The Department of Health and Human Services Environmental Health Unit (DHHS EHU) investigates food preparation sites, collects environmental samples, and reports results. As appropriate, DHHS EHU arranges for testing of samples, reviews food preparation, handling records, inventory, flow, and contributing factors, and also provides consultation for epidemiological and laboratory investigations.

The Office of Environmental Health is involved in following activities:

- analyze clinical specimens, food and environmental samples,
- coordinate testing among laboratories, and
- advise other members about laboratory testing which includes collection, handling, storage and transport of specimen.

Nebraska Department of Agriculture:
The Office of Epidemiology recognizes that the Nebraska Department of Agriculture (NDA) has statutory authority to inspect and regulate commercial sources of human food, namely food plants, stores, and restaurants. NDA is responsible for implementation and enforcement of the sanitation and quality standards relative to the food industry through service, education, and regulation. NDA helps to scientifically develop factors focusing on public health and prevention of food borne illness. NDA staff conduct food service facility inspections at least once every six months, or according to risk-based inspection processes.

During a foodborne outbreak investigation, the NDA laboratory tests food samples for suspected causative agents at the direction of the Office of Epidemiology. If an NDA-inspected facility is suspected as the source of the outbreak, an NDA sanitarian will accompany the DHHS EHU to the facility to conduct a formal investigation. If an inspection is deemed necessary, the NDA sanitarian will conduct the inspection.

When NDA becomes aware of a potential food-related threat to public health, NDA will immediately transmit all pertinent information to the Office of Epidemiology. Likewise, if the Office of Epidemiology knows that a food-
related threat to public health is under investigation, the Office of Epidemiology will transmit such information to
the Food Division of NDA. Contacts will be initiated as soon as possible. Coordinating activities between the
Office of Epidemiology and NDA are further discussed in the “Protocol for Notification and Epidemiological
investigation of food borne threats to public health, Nebraska Department if Health and Human Services and
Nebraska Department of Agriculture” (See APPENDIX A).

If an outbreak occurs within the jurisdiction of a local health department, the health director/epidemiologist of that
health department, as well as NDA, will be notified immediately by the Office of Epidemiology. If the magnitude
and the complexity of the outbreak suggest that the local health department is capable of adequately addressing
the situation, and when so requested by the director of the local health department, the Office of Epidemiology
can delegate responsibility for conducting the investigation to the local health department. Otherwise, the Office
of Epidemiology will help in their surge capacity and in consultation.
Food complaint procedure:

The Office of Epidemiology has adopted an electronic process for receiving complaints and information regarding food borne illness (See APPENDIX B). An online survey will be available for the general public to report their complaints, which will help detect non-reportable pathogens and new or emerging agents/infections. Food borne illness complaints are welcomed from either individuals or groups.

Complaints can also be made by phone or email to the Office of Epidemiology, DHHS EHU, NDA, or the respective local health department from which the complaint arises. Based on the information received, the State Epidemiologist, in conjunction with NDA (if necessary) will determine the method of investigation warranted and the action plan to be taken. If required, an emergency meeting with all or some of the following participants should be held or an email to update on current information.

- Division of Public Health Administrator
- Chief Medical Officer
- Community Health Section Chief Administrator
- Public Health Support Unit Administrator
- Environmental Health Unit Administrator
- Drinking Water and Environmental Health Unit Administrator
- Drinking Water and Environmental Health Environmental Health Specialist
- NDA Director
- NDA Chief Administrator
- NDA Foods Division Administrator
- NDA Food & Dairy Laboratory Supervisor
- Public Information Officers from NE DHHS and NDA

The purpose of this meeting/email shall be to inform participants about the suspected foodborne illness and to affirm that everyone understands his/her role as outlined in this document. Any or all of the above-mentioned participants may play an active role during the implementation of the action plan. The participants will inform the State Epidemiologist about the activities being conducted in response to the requests of the State Epidemiologist. The State Epidemiologist will give NDA representatives clear direction on what food samples are to be collected if an on-site investigation is necessary.
Data Collection:

Exposure information captured at initial complaint is usually biased towards the exposures which are close to onset of symptoms. Therefore, when two or more individuals with a common exposure are identified through the online complaint system, individuals are contacted to collect more thorough information. Potential sources of exposures are assessed for association with occurrence of illness, generally by using the thorough set of questionnaires. Data collection method, study design, data entry, and analytical methods are discussed, coordinated, and conducted with Office of Epidemiology staff.

The following case definitions are used to classify an outbreak.

When illnesses are caused by known agents, Center for Disease Control and Prevention (CDC) case definitions are used for the individual organisms. These are available at the following URL: http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/case_definitions.htm#top

Confirmed Food Borne Disease (FBD) outbreak: Two or more people with the same laboratory-confirmed FBD agent epidemiologically associated with consumption of the same food or meal.

Probable FBD outbreak: Two or more people from different households with the same clinical illness epidemiologically associated with consumption of a particular food or meal, but without laboratory confirmation due to inconclusive results, inadequate specimen collection, or no specimen collection.

Suspect FBD outbreak: Two or more people from different households who develop similar illness during the same time period after sharing a common food or meal; ALL SUSPECT FBD OUTBREAKS MUST BE INVESTIGATED.

Food Sample/Specimen:

Collection: On-site investigations are carried out by DHHS Environmental Health Specialists (DHHS EHS). Systematic data collection is done after classification of the outbreak and adequate specimens are collected for diagnostic testing. Food samples are collected by the Environmental Health Specialist and submitted to the NDA laboratory.

NDA staff will collect or assist in the collection of food samples when possible. No food samples will be accepted by either agency, unless they involve a threat to public health, as determined by an appropriate epidemiological investigation. The State Epidemiologist or designee must approve acceptance of food samples and is responsible for requesting appropriate testing.

Testing: Food samples are collected and tested for specific organisms based on results of epidemiological investigation. If a pathogen is isolated from food, the isolate is sent to the Nebraska Public Health Laboratory (NPHL) to confirm results and for further sub-typing.

Request for the specific test(s) from the State Epidemiologist or designee should be timely. If the State Epidemiologist or designee does not order specific tests, samples will be discarded after a two (2) week period (The State Epidemiologist or designee shall be notified before food is discarded).

Testing of food handlers is done on a case-by-case basis. Determinants for testing include, but are not limited to, identification of illness among food handling staff, etiologic agent of the outbreak, and infectious dose. The Office of Epidemiology will make the determination and, if necessary, will arrange for testing.
Information regarding a suspected outbreak should be obtained and forwarded to the NDA Foods Division Administrator immediately. The numbers and types of tests shall be relevant and based on data collected during the epidemiological investigation (food histories, epidemic curve, symptoms, etc.).

**Human Sample/Specimen:**

*Collection:* Human specimens can include but are not limited to stool, nose, sputum, throat, urine or vomitus specimen. Guidelines for specimen collection of human samples are available at the NPHL website: http://www.nphl.org/documents/AllCollectionGuidelines.pdf

*Testing:* Clinical specimens collected at the request of the Office of Epidemiology as part of an outbreak investigation are routinely tested by culture at NPHL. If shiga toxin producing E. coli, Salmonella or Listeria are isolated, NPHL runs Pulse Field Gel Electrophoresis (PFGE) to determine the molecular subtype (“DNA fingerprint”). NPHL can assess whether isolates of certain foodborne pathogens (E. coli O157:H7, Salmonella, Listeria) are not only indistinguishable from isolates within Nebraska but also from any other isolate in the United States as well as Canada by uploading the PFGE results to the national database (PulseNet). If appropriate, the PFGE results can be included in outbreak case definitions to help establish whether or not a patient’s illness is confirmed as an outbreak-associated case.

When a specimen is approved and collected, an NPHL special microbiology requisition form should be included with the specimen. The label should include verification of the approval with either wording as follows: “Approved by Leschinsky” or “Approved by Safranek”. (See APPENDIX C)

The NPHL provides a courier service for public health testing purposes. Questions regarding proper specimen collection or transport should be directed to NPHL Client Services, 402-559-2440 or toll free at 1-866-290-1406.

To maximize timeliness, request(s) for specific test(s) from the State Epidemiologist/designee will not be delayed. If the State Epidemiologist or designee does not order specific tests, samples could generally be discarded after a two (2) week period. (The State Epidemiologist or designee shall be notified before food is discarded).
Analysis:
Following the epidemiological investigation, a summary report of the outbreak response is written. The summary should include the following:

- Primary mode of transmission
- investigation methods
- dates of outbreak (start date-end date)
- total number of cases involved (confirmed, probable, or suspect)
- reporting agency, recall of product (if any)
- demographic profile
- symptom profile
- tests performed on specimens
- epidemic curve
- total attack rate
- median incubation period
- food specific attack rate and
- measure of risk

Sharing of information:
Information gathered from the investigation may be shared with any appropriate regulatory authority such as the Food and Drug Administration, United States Department of Agriculture, Nebraska Department of Agriculture, Nebraska Department of Health and Human Services, and/or any other associated local/tribal health department(s).

A summary report of the Food Safety Program activities related to a specific outbreak will be prepared by the Lead Environmental Health Specialist. This report will be provided to Office of Epidemiology as part of a complete report provided to the Nebraska Department of Health and Human Services and the Nebraska Department of Agriculture.

The Office of Epidemiology shall forward a copy of the final report of the outbreak investigation and facility evaluation to the NDA Foods Division and also to the director of the local health department, if involved. If food product is cultured, a copy of the final report shall be forwarded to the Director of the Nebraska Agriculture Laboratory and to the State Epidemiologist. Report will be shared with all local health departments, facilities who have been involved and whosoever requests it.

Phone calls will be answered as follows during an outbreak:

<table>
<thead>
<tr>
<th>Health professionals</th>
<th>State Epidemiologist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NE DHHS</td>
</tr>
<tr>
<td>News media</td>
<td>Joann Schaefer, MD</td>
</tr>
<tr>
<td></td>
<td>Chief Medical Officer</td>
</tr>
<tr>
<td></td>
<td>NE DHHS</td>
</tr>
<tr>
<td></td>
<td>Thomas Safranek, MD</td>
</tr>
<tr>
<td></td>
<td>State Epidemiologist</td>
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</tbody>
</table>
At the local level, these activities will be covered by the local health department director in close coordination with the State Epidemiologist and the Nebraska Health and Human Services, Public Information Officer.

**Additional support during large outbreak:**

Individuals at each LPHD’s with required skills that are available to assist during a large outbreak. For contact information for each local health department (see Appendix D). Staff from Office of epidemiology will also be involved in an outbreak investigation.

Contact list:

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact information</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robin Williams</td>
<td>Health Surveillance Specialist</td>
<td>Office of Epidemiology</td>
</tr>
<tr>
<td>Allison Keyser Metobo</td>
<td>Epi Surveillance coordinator</td>
<td>Office of Epidemiology</td>
</tr>
<tr>
<td>Eryn Murphy</td>
<td>Epi Syndromic Surveillance</td>
<td>Office of Epidemiology</td>
</tr>
<tr>
<td>Bryan Buss, DVM</td>
<td>CDC, Career Epidemiology Field Officer</td>
<td>Office of Epidemiology</td>
</tr>
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</table>

**Resources:**

*Administrative staff:* Includes person who would help make calls, answer calls from concerned members of the public, and enter data into the database, copy paperwork and other administrative work.

Contact name: Dorothy Smiley  
Contact information: Phone: 402-471-2937  
Fax: 402-471-3601  
Email: dorothy.smiley@nebraska.gov
Legal Counsel: Legal counsel to prepare public health orders reviews and recommends revisions in the agency procedures and control measures, ensures confidentiality of health data and address legal issues.

To media:
In the event of a foodborne illness outbreak, the Office of Epidemiology will work with the NDHHS Communications Department to deliver critical information to the public, public health partners and media. The Office of Epidemiology will notify the Communications Department of the outbreak. When multiple agencies are involved in the investigation, the public information officers/communications officers will work collaboratively to disseminate the information.

Depending on the scope of the outbreak, communications may need to refer to its Crisis and Emergency Risk Communication Plan. The goal of the plan is to be first; be right; be credible and to establish orderly and clear procedures for communicating official information and to provide accurate and understandable information in a timely manner to various audiences with respect for their customs and special needs.

<table>
<thead>
<tr>
<th>Public information officer: Name</th>
<th>Designation</th>
<th>Contact number</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leah Bucco- White</td>
<td>Public Information Officer</td>
<td>Office- 402-471-9356</td>
<td><a href="mailto:leah.bucco-white@nebraska.gov">leah.bucco-white@nebraska.gov</a></td>
</tr>
<tr>
<td>Marla Augustine</td>
<td>Public Information Officer</td>
<td>Office-402- 471-4047</td>
<td><a href="mailto:marla.augustine@nebraska.gov">marla.augustine@nebraska.gov</a></td>
</tr>
</tbody>
</table>
Outbreak investigation documents:

APPENDIX A: Protocol for Notification and Epidemiological investigation of food borne threats to public health, Nebraska Department of Health and Human Services and Nebraska Department of Agriculture (Click HERE to open this attached document)

When viewing in Adobe Acrobat Pro or Adobe Reader, to prevent closing the main document when opening an attached document, first go to <Edit>; <Preferences>; <Documents>; uncheck the "Open cross-document links in same window" box.

APPENDIX B: Food illness complaint form (Click HERE to open the link to food complaint survey)

APPENDIX C: NPHL requisition Form (Click HERE to open this attached document)

APPENDIX D: Contact for Nebraska Local health Department (Click HERE to open this attached document)

APPENDIX E: Outbreak monitoring form (Click HERE to open this attached document)

APPENDIX F: Standardized outbreak questionnaire (Click HERE to open this attached document)

APPENDIX G: Foodborne Outbreak Investigation Flowchart (Click HERE to open this attached document)