NATIONAL OUTBREAK REPORTING SYSTEM

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General

National Outbreak Reporting System

Waterborne Disease Transmission

This form is used to report waterborne disease outbreaks. Pages 1-5 ask for the minimum or basic information about the outbreak investigation, epidemiological data, and clinical specimen and water test results. These are followed by sections specific to the type of water exposure. Only 1 of the 5 water exposure sections should be completed.

CDC USE ONLY

CDC ID	State ID
270733	2016-03-015

Form Approved
OMB No. 0920-0004

General Section

Primary Mode of Transmission *(Check one)*

- ☐ Food *(Complete CDC 52.13)*
- ☑ Water *(Complete the tabs for General, Water-General, Water-Etiology & Lab, Water Samples and the type of water exposure)*
- ☐ Animal contact *(Complete CDC 52.13)*
- ☐ Person-to-person *(Complete CDC 52.13)*
- ☐ Environmental contamination other than food/water *(Complete CDC 52.13)*
- ☐ Other/Unknown *(Complete CDC 52.13)*

Investigation Methods *(Check all that apply)*

- ☑ Interviews only of ill persons
- ☐ Case-control study
- ☐ Cohort study
- ☐ Food preparation review
- ☐ Water system assessment: Drinking water
- ☐ Water system assessment: Nonpotable water
- ☐ Treated or untreated recreational water venue assessment
- ☐ Investigation at factory/production/treatment plant
- ☐ Investigation at original source *(e.g., farm, water source, etc.)*
- ☐ Food product or bottled water traceback
- ☐ Environment/food/water sample testing
- ☐ Other

Comments

Dates *(mm/dd/yyyy)*

Date first case became ill *(required)* 06/19/2016
Date last case became ill 06/20/2016
Date of initial exposure 06/17/2016
Date of last exposure 06/19/2016
Date of report to CDC *(other than this form)*
Date of notification to State/Territory or Local/Tribal Health Authorities 07/06/2016

Geographic Location

Exposure state: Colorado

- ☐ Exposure occurred in multiple states
- ☐ Exposure occurred in a single state, but cases resided in another state or multiple states

Other states:
(For multistate exposure or multistate residency outbreaks, enter the case count for each state)

Exposure county: Arapahoe

- ☐ Exposure occurred in multiple counties in exposure state
- ☑ Exposure occurred in a single county, but cases resided in another county or multiple counties

Other counties: Adams

City/Town/Place of exposure: Aurora
(Do not include proprietary or private facility names)

Primary Cases

Number of primary cases		Sex *(Number or percent of the primary cases)*		
Lab-confirmed primary cases	3 #	Male	1 #	33.33 %
Probable primary cases	0 #	Female	2 #	66.67 %
Estimated total primary cases	3 #	Unknown	#	0.00 %

Primary case outcomes	# Cases	Total # of cases for whom info is available	Age *(Number or percent of the primary cases)*							
Died	0 #	3 #	<1 year	#	0.00 %	20–49 years	#	0.00 %		
Hospitalized	0 #	3 #	1–4 years	1 #	33.33 %	50–74 years	#	0.00 %		
Visited Emergency Room	2 #	3 #	5–9 years	2 #	66.67 %	≥ 75 years	#	0.00 %		
Visited health care provider (excluding ER visits)	1 #	3 #	10–19 years	#	0.00 %	Unknown	#	0.00 %		

General

Incubation Period, Duration of Illness, Signs or Symptoms for Primary Cases Only

Incubation Period *(Select appropriate units)*			**Duration of Illness** *(Among recovered cases-select appropriate units)*		
Shortest			Shortest		
Median			Median		
Longest			Longest		
Total # of cases for whom info is available			Total # of cases for whom info is available		
☑ Unknown incubation period			☑ Unknown duration of illness		

Signs or Symptoms

Sign or symptom	# Cases with signs or symptoms	Total # cases for whom info available
Vomiting	2	2
Diarrhea	3	3
Bloody stools	2	3
Fever	3	3
Abdominal cramps	3	3
HUS	0	0
Asymptomatic	0	0

Secondary Cases

Mode of secondary transmission *(Check all that apply)*

- ☐ Food
- ☐ Water
- ☐ Animal contact
- ☐ Person-to-person
- ☐ Environmental contamination other than food/water
- ☐ Other/Unknown

Number of secondary cases		
Lab-confirmed secondary cases		#
Probable secondary cases		#
Estimated total secondary cases		#
Estimated total cases (Primary + Secondary)	3	#

Other CDC System IDs *(If applicable)*

NEARS ID: 1)_____ 2)_____ 3)_____ 4)_____

OHHABS ID: 1)_____ 2)_____

Traceback *(For food and bottled water only, not public water)*

☐ Please check if traceback conducted

Source name *(if publicly available)*	**Source type** *(e.g. poultry farm, tomato processing plant, bottled water factory)*	**Location of source**		**Traceback comments**
		State	Country	

Recall

☐ Please check if any food or bottled water product was recalled

Type of item recalled: _____

Comments: _____

Reporting Agency

Reporting site: Colorado

Agency name: Colorado Department of Public Health and Environ

Contact name: Kerri Brown

Contact title: Epidemiologist

E-mail: kerri.brown@state.co.us

Phone #: 303-692-2393

Fax #: 303-782-0338

General Remarks

Briefly describe important aspects of the outbreak not covered above. Please indicate if any adverse outcomes occurred in special populations (e.g., pregnant women, immunocompromised persons)

Water - General Section

Type of Water Exposure *(Check **ONE** box)*

- ☐ Treated recreational water *(e.g., in manufactured venues such as pools, spas/whirlpools, hot tubs, spray pads, at-home kiddie pools)*
- ☑ Untreated recreational water *(e.g., water in natural venues such as freshwater lakes, hot springs, marine beaches/oceans)*
- ☐ Drinking water in public or individual water systems *(e.g., municipal system, private well, commercially-bottled water, water kiosk)*, regardless of the exposure pathway *(i.e., not limited to ingestion)*.
- ☐ Other water *(e.g., cooling/industrial, water reuse, irrigation, occupational, decorative/display; includes water consumed from sources such as back-country streams)*
- ☐ Unknown water uses *(i.e., the intended purpose or use of the water is unknown or the water exposure category could not be determined)*

Epidemiologic Data

1. Estimated total number of persons with primary water exposure: _____

2. Were data collected from comparison groups to estimate risk? ☐ Yes *(specify in table below)* ☑ No ☐ Unknown

   If ***NO*** or ***UNKNOWN***, was water the common source shared by persons who were ill? ☐ Yes ☐ No ☐ Unknown

Exposure in epidemiologic investigation *(e.g., pool, waterpark, hot spring, well water)*	**Total # exposed (A)**	**# ill exposed (B)**	**Total # not exposed**	**# ill not exposed**	**Attack rate (%) (B/A)**	**Odds ratio**	**Relative risk**	**p-Value** *(provide exact value)*	**95% confidence interval**

Attack rate for residents of reporting state: _____ **%** **Attack rate for non-residents of reporting state:** _____ **%**

Geographic Location

Percent of ill persons (primary cases) living in reporting state: 100.00 %

Associated Events

Was exposure associated with a specific event or gathering?
☐ Yes ☑ No ☐ Unknown

If **YES**, what type of event or gathering was involved?

_____

If outbreak occurred during a defined event, dates of event:

Start date:_____ End date: _____
(mm/dd/yyyy) *(mm/dd/yyyy)*

Route of Entry

☑ Ingestion ☐ Contact ☐ Inhalation ☐ Other *(specify in remarks)* ☐ Unknown

Water-Etiology & Lab

Outbreak Etiology *(Report the confirmed and/or suspected etiological agent(s) here, even if no clinical specimens were tested)*

Confirmed as etiology?	Genus/Chemical/Toxin	Species	Serotype/Serogroup/ Serovar	Genotype/ Subtype	Detected in* *(list all that apply)*	Total # tested primary cases	Total # positive primary cases
☑ Confirmed ☐ Suspected	Salmonella	enterica	Typhimurium		1	3	3
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							

* 1-Clinical Specimens, 2-Water Samples, 3-Clinical Specimens & Water Samples, 4-Other (describe in the general remarks), 5-Unknown, 6-None

Outbreak Isolates *(Links data about molecular characterization across multiple systems. For each pathogen, provide a representative for each distinct molecular designation)*

Which CDC system contains this isolate profile? *(e.g., PulseNet, CaliciNet)*	CDC lab system outbreak # *(e.g., PulseNet tracking number)*	State lab ID *(i.e., Lab tracking number)*	Molecular designation 1	Molecular designation 2
PulseNet		HUM-2016012776		
PulseNet		HUM-2016012944		
PulseNet		HUM-2016012939		

Clinical Specimens

1. Were clinical diagnostic specimens taken from persons? ☑ Yes ☐ No ☐ Unknown

If **YES**, from how many persons were specimens taken? 3

Specimen type†	Specimen subtype§	Tested for¶ *(list all that apply)*
Stool		1, 5

† Specimen Type: 1- Autopsy Specimen (specify subtype), 2-Biopsy (specify subtype), 3-Blood, 4-Bronchial Alveolar Lavage (BAL), 5-Cerebrospinal Fluid (CSF), 6-Conjunctiva/Eye Swab, 7-Ear Swab, 8-Endotracheal Aspirate, 9-Saliva, 10-Serum, 11-Skin Swab, 12-Sputum, 13-Stool, 14-Urine, 15-Vomitus, 16-Wound Swab, 17-Other (describe in the general remarks), 18-Unknown

§ Specimen Subtype: 1-Bladder, 2-Brain, 3-Dura, 4-Hair, 5-Intestine, 6-Kidney, 7-Liver, 8-Lung, 9-Nails, 10-Skin, 11-Stomach, 12-Wound, 13-Other, 14-Unknown

¶ Tested for: 1-Bacteria, 2-Chemicals/Toxins, 3-Fungi, 4-Parasites, 5-Viruses, 6-Other (describe in general remarks), 7-Unknown

Testing Information

1. Test types *(select all test types used for clinical specimens)*

- ☐ Chemical Testing
- ☑ Culture
- ☑ DNA or RNA Amplication/Detection *(e.g. PCR, RT-PCR)*
- ☐ Microscopy *(e.g., fluorescent, EM)*
- ☐ Serological/Immunological Test *(e.g., EIA, ELISA)*
- ☐ Tissue culture infectivity assay
- ☐ Other *(specify in the general remarks)*
- ☐ Unknown

2. Was Antimicrobial Susceptibility Testing (AST) performed?

☐ Yes ☐ No ☐ Unknown

If yes, where was AST performed?

☐ Clinical Lab ☐ Public Health Lab ☐ CDC-NARMS ☐ Other ☐ Unknown

If yes, were any antimicrobial resistant strains associated with the outbreak? ☐ Yes ☐ No ☐ Unknown

Water Samples

Water Samples *(Provide representative data about water quality testing, chemical or pathogen testing. Additional sample data can be described in the remarks or attached)*

Was water tested? ☐ Yes *(specify in table below)* ☑ No ☐ Unknown

Results

Sample number	1	2	3	4	5
Source of sample *(e.g., swimming pool, lake)*					
Additional description *(e.g., time of day, location of sample collection)*					
Date *(mm/dd/yyyy)*					
Volume tested, *(number, unit)*					
Temperature *(number, unit)*					
Residual/Free disinfectant level - number, unit *(if total and combined disinfectant levels given, total - combined = free)*					
Combined disinfectant level - number, unit *(if total and free disinfectant levels given, total - free = combined)*					
pH					
Turbidity (NTU)					

Water Samples - Water Quality Indicators *(Might not be applicable for treated recreational water samples)*

Sample number	Type *(e.g., fecal coliforms)*	Concentration *(numerical value)*	Unit

Water Samples - Microbiology or Chemical/Toxin Analysis *(Provide both positive and negative test results)*

Sample number	Genus/Chemical/Toxin	Species	Serotype/Serogroup/ Serovar	Genotype/Subtype	PFGE pattern

Sample number	Test results positive?	Concentration *(numerical value)*	Unit	Test type*	Test method *(reference: National Environmental Methods Index: http://www.nemi.gov)*
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				

* Test type: 1-Culture, 2-DNA or RNA Amplification/Detection (e.g., PCR, RT-PCR), 3-Microscopy (e.g., fluorescent, EM), 4-Serological/Immunological Test (e.g., EIA, ELISA), 5-Phage Typing, 6-Chemical Testing, 7-Tissue Culture Infectivity Assay, 8-Other (describe in the general remarks), 9-Unknown

Recreational Water - Untreated Venue

Implicated Water - Recreational Water Venue Description

Water venue *(e.g., canal; lake; river/stream; ocean)*	IF SPRING OR HOT SPRING, water venue subtype *(select indoor, outdoor or unknown)*	Setting of exposure *(e.g., beach-public; camp/cabin/recreational area)*
Lake/Reservoir/Impoundment		Public Outdoor Area

Recreational Water Quality

Did the venue meet state or local recreational water quality regulations?

☑ Yes ☐ No ☐ Unknown ☐ Not applicable

If **NO**, explain: _____

Did the venue meet Environmental Protection Agency (EPA) recreational water quality standards?

☐ Yes ☐ No ☑ Unknown ☐ Not applicable

If **NO**, explain: _____

Factors Contributing to Recreational Water Contamination and/or Increased Exposure in Untreated Venues

	Contributing factors *(Check all that apply)**	Documented/ Observed†	Suspected†
People	Exceeded maximum bather load	☐	☐
	Primary intended use of water is by diaper/toddler-aged children *(e.g., kiddie pool)*	☐	☐
	Heavy use by child care center groups	☐	☐
	Fecal/vomitus accident	☐	☐
	Patrons continued to swim when ill with diarrhea	☐	☐
	Staff error	☐	☐
	Intentional contamination *(explain in remarks)*	☐	☐
Swim Area Design	Hygiene facilities *(e.g., toilets, diaper changing facilities)* inadequate or distant	☐	☐
	Malfunctioning or inadequate on-site wastewater treatment system§¶	☐	☐
	Poor siting/design of on-site wastewater treatment system§¶	☐	☐
	Stagnant or poorly circulating water in swim area	☐	☐
Water Quality	Heavy rainfall and runoff	☐	☐
	Sanitary sewer overflow (SSO) impact§	☐	☐
	Combined sewer overflow (CSO) impact§	☐	☐
	Domestic animal contamination *(e.g., livestock, pets)*	☐	☐
	Wildlife contamination - Birds	☐	☐
	Wildlife contamination - Mammals	☐	☐
	Wildlife contamination - Fish kill	☐	☐
	Wastewater treatment plant effluent flows past swim area	☐	☐
	Wastewater treatment plant malfunction§	☐	☐
	Sewer line break§	☐	☐
	Nearby biosolid/land application site *(e.g., human or animal waste application)*	☐	☐
	Contamination from agricultural chemical application *(e.g., fertilizer, pesticides)*	☐	☐
	Contamination from chemical pollution not related to agricultural application	☐	☐
	Water temperature ≥30°C (≥86°F)	☐	☐
	Seasonal variation in water quality *(e.g., lake/reservoir turnover events)*	☐	☐
	Inappropriate dumping of sewage into water body *(e.g., from boat, RV)*	☐	☐
	Algal bloom	☐	☐
	Dumping of ballast water	☐	☐
	Tidal wash *(i.e., tide exchange or influence by inland water)*	☐	☐
Policy and Management	No or inadequate monitoring of water quality	☐	☐
	No managers have completed state/local required training	☐	☐
	Untrained/inadequately trained staff on duty	☐	☐
	Unclear communication chain for reporting problems	☐	☐
	Employee illness policies absent or not enforced	☐	☐
	Other, specify:	☐	☐
	Unknown	☐	☐

* Only check off what was found during investigation.

† "Documented/Observed" refers to information gathered through document reviews, direct observations, and/or interviews. "Suspected" refers to factors that probably occurred but for which no documentation (as defined previously) is available.

§ The release of sewage does not have to occur at the property/venue/setting where the people were exposed. The sewage may have occurred at a distant site but still affected the property/venue/setting in question.

¶ "On-site wastewater treatment system" refers to a system designed to treat and dispose of wastewater at the point of generation, generally on the property where the wastewater is generated (e.g., septic systems or other advanced on-site systems). However, contamination that originates from these systems can still occur off the property where treatment and disposal takes place due to migration of contaminants from malfunctioning systems or poor siting and design.

Remarks