General

RELATIONAL DATA MARKERS

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 G1

State ID G2

* denotes a marker that is repeated in multiple sections of the form but appears only once in the data dictionary.

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)* G3
- ■ 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)*

G4

- ☐ 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 G5

Dates *(mm/dd/yyyy)*

Date first case became ill *(required)* G6

Date last case became ill G7

Date of initial exposure G8

Date of last exposure G9

Date of report to CDC *(other than this form)* G10

Date of notification to State/Territory or Local/Tribal Health Authorities G11

Geographic Location

Exposure state: G12

- ☐ Exposure occurred in multiple states G13
- ☐ Exposure occurred in a single state, but cases resided in another state or multiple states G14

Other states: G15 G16

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

Exposure county: G17

- ☐ Exposure occurred in multiple counties in exposure state G18
- ☐ Exposure occurred in a single county, but cases resided in another county or multiple counties G19

Other counties: G20

City/Town/Place of exposure: G21

(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	G22 #	Male	G33 #	G34 %
Probable primary cases	G23 #	Female	G35 #	G36 %
Estimated total primary cases	G24 #	Unknown	G37 #	G38 %

Primary case outcomes	# Cases	Total # of cases for whom info is available	Age *(Number or percent of the primary cases)*					
Died	G25 #	G26 #	<1 year	G39 #	G40 %	20–49 years	G47 #	G48 %
Hospitalized	G27 #	G28 #	1–4 years	G41 #	G42 %	50–74 years	G49 #	G50 %
Visited Emergency Room	G29 #	G30 #	5–9 years	G43 #	G44 %	≥ 75 years	G51 #	G52 %
Visited health care provider (excluding ER visits)	G31 #	G32 #	10–19 years	G45 #	G46 %	Unknown	G53 #	G54 %

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	G55 G56	**Min, Hours, Days**	Shortest	G63 G64	**Min, Hours, Days**
Median	G57 G58	**Min, Hours, Days**	Median	G65 G66	**Min, Hours, Days**
Longest	G59 G60	**Min, Hours, Days**	Longest	G67 G68	**Min, Hours, Days**
Total # of cases for whom info is available	G61		Total # of cases for whom info is available	G69	
☐ Unknown incubation period G62			☐ Unknown duration of illness G70		

Signs or Symptoms

Sign or symptom	# Cases with signs or symptoms	Total # cases for whom info available
Vomiting		
Diarrhea G71	G72	G73
Bloody stools		
Fever		
Abdominal cramps		
HUS		

Secondary Cases

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

☐ Food
☐ Water
☐ Animal contact G74
☐ Person-to-person
☐ Environmental contamination other than food/water
☐ Other/Unknown

Number of secondary cases		
Lab-confirmed secondary cases	G75	#
Probable secondary cases	G76	#
Estimated total secondary cases	G77	#
Estimated total cases (Primary + Secondary)	G78	#

Other CDC System IDs *(If applicable)*

NEARS ID: 1) G79 2) G80 3) G81 4) G82

OHHABS ID: 1) G83 2) G84

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

☐ Please check if traceback conducted G85

Source name *(if publicly available)*	**Source type** *(e.g. poultry farm, tomato processing plant, bottled water factory)*	**Location of source**		**Traceback comments**
		State	Country	
G86	G87	G88	G89	G90

Recall

☐ Please check if any food or bottled water product was recalled G91

Type of item recalled: G92

Comments: G93

Reporting Agency

Reporting site: G94

Agency name: G95

Contact name: G96

Contact title: G97

E-mail: G98

Phone #: G99

Fax #: G100

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)

G101

Water - General Section

Type of Water Exposure *(Check **ONE** box)* W1

☐ 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: W2 _____

2. Were data collected from comparison groups to estimate risk? W3 ☐ Yes *(specify in table below)* ☐ No ☐ Unknown

   If ***NO*** or ***UNKNOWN***, was water the common source shared by persons who were ill? W4 ☐ 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
W5	W6	W7	W8	W9	W10	W11	W12	W13	W14

Attack rate for residents of reporting state: W15 _____ % **Attack rate for non-residents of reporting state:** W16 _____ %

Geographic Location

Percent of ill persons (primary cases) living in reporting state: W17 _____%

Associated Events

Was exposure associated with a specific event or gathering? W18
☐ Yes ☐ No ☐ Unknown

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

W19 _____

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

Start date: W20 _____ *(mm/dd/yyyy)* End date: W21 _____ *(mm/dd/yyyy)*

Route of Entry W22

☐ 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							
☐ Confirmed ☐ Suspected	W24	W25	W26	W27	W28	W29	W30
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							
☐ Confirmed ☐ Suspected							

W23

* 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
W31	W32	W33	W34	W35

Clinical Specimens

1. Were clinical diagnostic specimens taken from persons? ☐ Yes ☐ No ☐ Unknown W36
   If **YES**, from how many persons were specimens taken? _____ W37 _____

Specimen type†	Specimen subtype§	Tested for¶ *(list all that apply)*
W38	W39	W40

† 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)*

W41

☐ 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 W42
   If yes, where was AST performed?
   ☐ Clinical Lab ☐ Public Health Lab ☐ CDC-NARMS W43
   ☐ Other ☐ Unknown
   If yes, were any antimicrobial resistant strains associated with the outbreak? ☐ Yes ☐ No ☐ Unknown W44

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 W45

Results

Sample number W46	1	2	3	4	5
Source of sample *(e.g., swimming pool, lake)*	W47				
Additional description *(e.g., time of day, location of sample collection)*	W48				
Date *(mm/dd/yyyy)*	W49				
Volume tested, *(number, unit)*	W50 W51				
Temperature *(number, unit)*	W52 W53				
Residual/Free disinfectant level - number, unit *(if total and combined disinfectant levels given, total - combined = free)*	W54 W55				
Combined disinfectant level - number, unit *(if total and free disinfectant levels given, total - free = combined)*	W56 W57				
pH	W58				
Turbidity (NTU)	W59				

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
W46	W60	W61	W62

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
W46	W63	W64	W65	W66	W67

Sample number	Test results positive?	Concentration *(numerical value)*	Unit	Test type*	Test method *(reference: National Environmental Methods Index: http://www.nemi.gov)*
	☐ Yes ☐ No				
W46	☐ Yes W68 ☐ No	W69	W70	W71	W72
	☐ 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 - Treated Venue

Implicated Water - Recreational Water Venue Description

Venue number *(use this number to link the venue with water treatment or fill water data below)*	Water venue *(e.g., spa/whirlpool/hot tub; pool-swimming pool; pool-waterpark)*	Water venue subtype *(select indoor, outdoor, or unknown)*	Setting of exposure *(e.g., club, requiring membership; hotel/motel/lodge/inn; waterpark)*
1			
2 W73	W74*	W75*	W76*
3			
4			
5			

Implicated Water - Water Treatment Description

Venue number *(reference the appropriate Venue number from above)*	USUAL water treatment provided at venue *(e.g., no treatment; coagulation; disinfection; flocculation; filtration [pool]; unknown)*	Venue treatment subtype *(disinfection or pool filtration: e.g., UV; chlorine dioxide; bag filter; cartridge filter; unknown)*	Chlorination subtype *(chlorine disinfection only: e.g., gaseous; sodium hypochlorite; cyanurates/ stabilized chlorine)*
W73	W77	W78	W79

Implicated Water - Fill Treatment Description

Venue number *(reference the appropriate Venue number from above)*	Fill water type *(e.g., public water supply; sea water; untreated ground or surface water; unknown)*	If public water supply, USUAL water treatment provided before coming to the venue *(e.g., no treatment; disinfection; filtration [treatment plant]; unknown)*	If public water supply, fill water treatment subtype *(disinfection or filtration: e.g., UV; chlorine dioxide; bag filter; cartridge filter; unknown)*
W73	W80	W81	W82

Recreational Water Quality

Did the venue meet state or local recreational water quality regulations? ☐ Yes ☐ No W83 ☐ Unknown ☐ Not applicable

If **NO**, explain: W84

Was there a pool operator on the payroll with state-approved training or certification? ☐ Yes ☐ No W85 ☐ Unknown

Rec Water-Treated

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

	Contributing factors *(Check all that apply)** W86*	Documented/ Observed† W87*	Suspected† W88*
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	☐	☐
	Operator error	☐	☐
	Intentional contamination *(explain in remarks)*	☐	☐
Facility Design	Combined pool filtration/recirculation systems led to cross-contamination	☐	☐
	Hygiene facilities *(e.g., toilets, diaper changing facilities)* inadequate or distant	☐	☐
	Some spray feature water bypasses filtration/treatment system and returns to feature unfiltered/untreated	☐	☐
	No supplemental disinfection installed that would have inactivated pathogen *(e.g., Cryptosporidium)*	☐	☐
	Water temperature ≥30°C (≥86°F)	☐	☐
	Cross-connection with wastewater or non-potable water	☐	☐
Maintenance	Disinfectant control system malfunctioning, inadequate, or lacking *(e.g., hand feed chemicals)*	☐	☐
	Incorrect settings on disinfectant control system	☐	☐
	pH control system malfunctioning, inadequate, or lacking *(e.g., hand feed chemicals)*	☐	☐
	Incorrect settings on pH control system	☐	☐
	Filtration system malfunctioning or inadequate *(e.g., low flow rate)*	☐	☐
	Supplemental disinfection system malfunctioning or inadequate *(e.g., ultraviolet light, ozone)*	☐	☐
	Insufficient system checks so breakdown detection delayed	☐	☐
	No preventive equipment maintenance programs to reduce breakdowns	☐	☐
	Ventilation insufficient for indoor aquatic facilities	☐	☐
	Chemical handling error *(e.g., chemical hookup, improper mixing or application)*	☐	☐
	Maintenance chemicals not flushed from system before opening to swimmers	☐	☐
	Recirculation pump off or restarted with swimmers in water	☐	☐
	Low or zero water flow combined with continuous feed of chemicals resulted in excess chemicals in water	☐	☐
	Extensive slime/biofilm formation	☐	☐
	Recent construction	☐	☐
	Cyanurate level excessive	☐	☐
	Lack of draining/cleaning	☐	☐
	Stagnant water in spa piping was aerosolized	☐	☐
Policy and Management	No aquatics operators on payroll who have completed state/local training	☐	☐
	Untrained/inadequately trained staff on duty	☐	☐
	Remote monitoring system replaces on-site water quality testing	☐	☐
	Unclear communication chain for reporting problems	☐	☐
	Inadequate water quality monitoring *(e.g., inadequate test kit, inadequate testing frequency)*	☐	☐
	Employee illness policies absent or not enforced	☐	☐
	No or inadequate policies on good chemical handling and storage practices	☐	☐
	No operator on duty at the time of incident	☐	☐
	Facility falls outside aquatic health code	☐	☐
	No shock/hyperchlorination policy	☐	☐
	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.

Remarks

W89*

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)*
W74*	W75*	W76*

Recreational Water Quality

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

☐ Yes ☐ No ☐ Unknown ☐ Not applicable W90

If **NO**, explain: W91 _____

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

☐ Yes ☐ No ☐ Unknown ☐ Not applicable W92

If **NO**, explain: W93 _____

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

W87* W88*

	Contributing factors *(Check all that apply)** W86*	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

W89*

Drinking Water

Implicated Water - Drinking Water System Description

Water system* *(e.g., commercially-bottled water, community water system, individual water system)*	**Public water system EPA ID number†**	**Water source** *(select ground water, surface water or unknown)*	**Water source description** *(e.g. spring; well; lake)*	**Setting of exposure** *(e.g., airport, mobile home park)*	**USUAL water treatment provided** *(e.g.,no treatment, disinfection, home filtration)*	**Water treatment subtype** *(disinfection or filtration: e.g., boiling; chlorine; rapid sand filter; reserve osmosis)*
W72*	W94	W95	W96	W74*	W97*	W98*

* Water system definitions: Community and noncommunity water systems are public water systems that have ≥ 15 service connections or serve an average of ≥ 25 residents for ≥ 60 days/year. A community water system serves year-round residents of a community, subdivision, or mobile home park. A noncommunity water system serves an institution, industry, camp, park, hotel, or business and can be nontransient or transient. Nontransient systems serve ≥ 25 of the same persons for > 6 months of the year but not year-round (e.g., factories and schools), whereas transient systems provide water to places in which persons do not remain for long periods (e.g., restaurants, highway rest stations, and parks). Individual water systems are small systems not owned or operated by a water utility that have < 15 connections or serve < 25 persons.

† Number used for EPA reporting that uniquely identifies the public water system within a specific state. The water system ID number can be found by searching the Safe Drinking Water Information System (SDWIS) online at https://ofmpub.epa.gov/apex/sfdw/f?p=108:200.

Drinking Water Quality

Did the drinking water system have any monitoring violations in the 1 month prior to the outbreak? W99

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

If **Yes**, explain: _____

W100

Did the drinking water system have any maximum contaminant level (MCL) violations in the 1 month prior to the outbreak? W101

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

If **Yes**, explain: _____

W102

Did the drinking water system have any violations in the 12 months prior to the outbreak?§ W103

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

If **Yes**, explain: _____

W104

§ Sources of information about past violations can be obtained from utility records, consumer confidence reports (water quality reports), or violation records from state or local health departments

Factors Contributing to Drinking Water Contamination and/or Increased Exposure to Contamination Drinking Water

1. Did a problem with the source water *(i.e., ground water or surface water)* contribute to the disease or outbreak?
☐ Yes *(specify in the table below)* ☐ No ☐ Unknown W105

Source water contributing factors *(Check all that apply)** W86*	**Documented/ Observed†** W87*	**Suspected†** W88*
Sanitary sewer overflow (SSO)§	☐	☐
Combined sewer overflow (CSO)§	☐	☐
Malfunctioning on-site wastewater treatment system§¶	☐	☐
Sewage treatment plant malfunction§	☐	☐
Sewer line break§	☐	☐
Poor siting/design of on-site wastewater treatment system§¶	☐	☐
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	☐	☐
Contamination by a chemical that the current treatment methods were not designed to remove	☐	☐
Domestic animal contamination *(e.g., livestock, concentrated feeding operations, pets)*	☐	☐
Wildlife contamination - Birds	☐	☐
Wildlife contamination - Mammals	☐	☐
Wildlife contamination - Fish kill	☐	☐
Flooding/heavy rains	☐	☐
Algal bloom	☐	☐
Seasonal variation in water quality *(e.g., lake/reservoir turnover events, resort community with seasonal loading)*	☐	☐
Low water table *(e.g., drought, over-pumping)*	☐	☐
Ground water under direct influence of surface water *(e.g., shallow well)***	☐	☐
Contamination through limestone or fissured rock *(e.g., karst)*	☐	☐
Contaminated recharge water	☐	☐
Use of an alternate source of water by a water utility	☐	☐
Mixing of raw water from different sources	☐	☐
Improper construction or location of a well or spring	☐	☐
Water system intake failure *(e.g., cracked well casing, cracked intake pipe)*	☐	☐
Intentional contamination *(explain in remarks)*	☐	☐
Other, specify:	☐	☐
Unknown	☐	☐

2. Did a problem with the water treatment prior to entry into a house or building contribute to the disease or outbreak?
☐ Yes *(specify in the table below)* ☐ No ☐ Unknown W106

Treatment contributing factors *(Check all that apply)** W86*	**Documented/ Observed†** W87*	**Suspected†** W88*
Change in treatment process *(specify in remarks)*	☐	☐
No disinfection	☐	☐
Temporary interruption of disinfection	☐	☐
Chronically inadequate disinfection	☐	☐
No filtration	☐	☐
Inadequate filtration	☐	☐
Deficiencies in other treatment processes	☐	☐
Corrosion in or leaching from pipes or storage tanks	☐	☐
Pipe/component failure or break *(e.g., pipes, tanks, valves)*	☐	☐
Contamination during construction or repair of pipes/components	☐	☐
Construction or repair of pipes/components without evidence of contamination	☐	☐
Operator error	☐	☐
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 on the property in which persons have become ill. The sewage release may have occurred at a distant site but still affected the property 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.
** Any water beneath the surface of the ground with substantial occurrence of insects or other macroorganisms, algae, or large-diameter pathogens (e.g., *Giardia intestinalis* or *Cryptosporidium*), or substantial and relatively rapid shifts in water characteristics (e.g., turbidity, temperature, conductivity, or pH) that closely correlate with climatologic or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the state.

3. Did a problem with the distribution system contribute to the disease or outbreak? *(NOTE: For a community water system, the distribution system refers to the pipes and storage infrastructure under the jurisdiction of the water utility prior to the water meter (or property line if the system is not metered). For noncommunity and nonpublic water systems, the distribution system refers to the pipes and storage infrastructure prior to entry into a building or house)*

☐ Yes *(specify in the table below)* ☐ No ☐ Unknown W107

Distribution and storage contributing factors *(Check all that apply)** W86*	**Documented/ Observed†** W87*	**Suspected†** W88*
Cross-connection of potable and nonpotable water pipes resulting in backflow	☐	☐
Low pressure or change in water pressure in the distribution system	☐	☐
Change in water flow direction in the distribution system	☐	☐
Mixing of treated water from different sources	☐	☐
Pipe/component failure or break *(e.g., pipes, tanks, valves)*	☐	☐
Corrosion in or leaching from pipes or storage tanks	☐	☐
Contamination of mains during construction or repair	☐	☐
Construction or repair of mains without evidence of contamination	☐	☐
Scheduled flushing of the distribution system	☐	☐
Contamination of storage facility	☐	☐
Aging water distribution components *(e.g., pipes, tanks, valves)*	☐	☐
Water temperature ≥30°C (≥86°F)	☐	☐
Intentional contamination *(specify in remarks)*	☐	☐
Other, specify:	☐	☐
Unknown	☐	☐

4. Did a problem occur after the water meter or outside the jurisdiction of a water utility that contributed to the disease or outbreak? *(e.g., in a service line leading to a house/building, in the plumbing inside a house/building, during shipping/hauling, during storage other than in the distribution system, at the point of use, involving commercially-bottled water)*

☐ Yes *(specify in the table below)* ☐ No ☐ Unknown W108

Factors not under the jurisdiction of a water utility or contributing factors at the point of use *(Check all that apply)** W86*	**Documented/ Observed†** W87*	**Suspected†** W88*
Legionella species in water system	☐	☐
Cross-connection of potable and nonpotable water pipes resulting in backflow	☐	☐
Lack of backflow prevention in plumbing	☐	☐
Low pressure or change in water pressure in the plumbing	☐	☐
Change in water flow direction in the plumbing	☐	☐
Corrosion in or leaching from pipes or storage tanks	☐	☐
Pipe/component failure or break *(e.g., pipes, tanks, valves)*	☐	☐
Aging plumbing components *(e.g., pipes, tanks, valves)*	☐	☐
Contamination of plumbing during construction or repair	☐	☐
Construction or repair of plumbing without evidence of contamination	☐	☐
Deficiency in building/home-specific water treatment after the water meter or property line	☐	☐
Deficiency or contamination of equipment/devices using or distributing water	☐	☐
Contamination during commercial bottling	☐	☐
Contamination during shipping, hauling, or storage	☐	☐
Contamination at point of use – Tap	☐	☐
Contamination at point of use – Hose	☐	☐
Contamination at point of use – Commercially-bottled water	☐	☐
Contamination at point of use – Container, bottle, or pitcher	☐	☐
Contamination at point of use – Unknown	☐	☐
Water temperature ≥30°C (≥86°F)	☐	☐
Intentional contamination *(specify in remarks)*	☐	☐
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.

Remarks

W89*

Other or Unknown Water

Intent for Use

What was the intended use for the implicated water? *(check all that apply)*

- ☐ Cooling/Air Conditioning *(e.g., cooling tower, swamp cooler)*
- ☐ Mister *(e.g., produce in grocery store, public cooling system)*
- ☐ Ornamental *(e.g., a decorative non-interactive fountain intended for public display and not designed for swimming or recreational use)*
- ☐ Industrial/Occupational *(e.g., steam cleaner)*
- ☐ Agricultural Irrigation
- ☐ Waste water
- ☐ Other *(specify)* : _____
- ☐ Unknown

W109

Implicated Water - Water Description

Water type *(e.g., cooling tower; drainage ditch; fountain - ornamental)*	**Setting of exposure** *(e.g, airport; hospital/health care facility; nursing home; park-state park)*	**Usual water treatment provided** *(e.g., no treatment; disinfection; settling/ sedimentation)*	**Water treatment subtype** *(disinfection or filtration: e.g., boiling; chlorine; rapid sand filter; reverse osmosis)*
W72*	W74*	W97*	W98*

Factors Contributing to Contamination and/or Increased Exposure to Contaminated Water

W87* W88*

Contributing factors *(Check all that apply)** W86*		**Documented/ Observed†**	**Suspected†**
Cooling tower/ Evaporative condenser	Shutdown for >3 days without draining to waste	☐	☐
	Lack of a maintenance program	☐	☐
	Lack of a qualified water quality specialist	☐	☐
	Presence of scale or corrosion	☐	☐
	Presence of dirt, organic matter, or other debris in the cold water basin	☐	☐
	Absence of drift eliminators	☐	☐
	Presence of damaged drift eliminators	☐	☐
	History of recent repairs to the device	☐	☐
	Siting of device near building air intakes	☐	☐
	Siting of device near windows that can be opened	☐	☐
	Siting of device in immediate area of kitchen exhaust fans, live plants, truck bays, or other sources of organic matter	☐	☐
	Construction on the premises of the device within 6 months before the index case	☐	☐
	Construction within 100 meters of the premises of the device within 6 months before the index case	☐	☐
Ornamental fountain	Intended as an ornamental fountain but utilized as an interactive fountain	☐	☐
	Inadequate disinfection for recreational use	☐	☐
	Inadequate filtration for recreational use	☐	☐
	Presence of submerged lighting	☐	☐
	Lack of a written cleaning and maintenance program	☐	☐
	Presence of dirt, organic matter, or other debris in the water basin	☐	☐
Broken/damaged sewer pipe		☐	☐
Recycling of water		☐	☐
Water temperature ≥30˚C (≥86˚F)		☐	☐
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.

Remarks

W89*