



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.

Public reporting burden of this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Project Clearance Officer, 1600 Clifton Road, MS D-24, Atlanta, GA, 30333, ATTN: PRA (0920-0004) --DO NOT MAIL CASE REPORTS TO THIS ADDRESS

CDC USE ONLY

CDC Report ID

State Report ID

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) _____ Date last case became ill _____

Date of initial exposure _____ Date of last exposure _____

Date of report to CDC (other than this form) _____

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

Geographic Location

Exposure state: _____

- 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: _____

- 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: _____

City/Town/Place of exposure: _____
(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	#	Male	#	%		
Probable primary cases	#	Female	#	%		
Estimated total primary cases	#	Unknown	#	%		
Primary Case Outcomes	# Cases	Total # of case for whom info is available	Age (Number or percent of the primary cases)			
			<1 year	20-49 years	50-74 years	≥ 75 years
Died	#	#	#	%	#	
Hospitalized	#	#	#	%	#	
Visited Emergency Room	#	#	#	%	#	
Visited health care provider (excluding ER visits)	#	#	#	%	#	

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 a 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

- Estimated total number of persons with primary water exposure: _____
- 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 <i>(e.g., pool, waterpark, hot spring, well water)</i>	Total # Exposed (A)	# Ill Exposed (B)	Total # Not Exposed	# Ill Not Exposed	Attack Rate (%) (B/A)	Odds Ratio	Relative Risk	p-Value <i>(provide exact value)</i>	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: _____ %

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: _____ 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
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected							
<input type="checkbox"/> Confirmed <input type="checkbox"/> 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 Number (e.g., PulseNet tracking number)	State Lab ID (i.e., Lab tracking number)	Molecular Designation 1	Molecular Designation 2

Clinical Specimens

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

If **Yes**, from how many persons were specimens taken? _____

Specimen Type [†]	Specimen Subtype [§]	Tested for [¶] (list all that apply)

[†] 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

Test Types (Select all test types used for clinical specimens)

- | | |
|--|--|
| <input type="checkbox"/> Culture | <input type="checkbox"/> Chemical Testing |
| <input type="checkbox"/> DNA or RNA Amplification/Detection (e.g. PCR, RT-PCR) | <input type="checkbox"/> Tissue Culture Infectivity Assay |
| <input type="checkbox"/> Microscopy (e.g., fluorescent, EM) | <input type="checkbox"/> Other (describe in the general remarks) |
| <input type="checkbox"/> Serological/Immunological Test (e.g., EIA, ELISA) | <input type="checkbox"/> Unknown |

Recreational Water – Treated Venue

Implicated Water - Recreational Water Venue Description

Venue Number <i>(use this number to link the venue with water treatment or fill water data below)</i>	Water Venue <i>(e.g., spa/whirlpool/hot tub; pool- swimming pool; pool- waterpark)</i>	Water Venue Subtype <i>(select indoor, outdoor, or unknown)</i>	Setting of Exposure <i>(e.g., club, requiring membership; hotel/motel/lodge/inn; waterpark)</i>
1			
2			
3			
4			
5			

Implicated Water - Water Treatment Description

Venue Number <i>(Reference the appropriate Venue Number from above)</i>	USUAL Water Treatment Provided at Venue <i>(e.g., no treatment; coagulation; disinfection; flocculation; filtration (pool); unknown)</i>	Venue Treatment Subtype <i>(disinfection or pool filtration: e.g., UV; chlorine dioxide; bag filter; cartridge filter; unknown)</i>	Chlorination Subtype <i>(chlorine disinfection only: e.g., gaseous; sodium hypochlorite; cyanurates (stabilized chlorine))</i>

Implicated Water - Fill Water Description

Venue Number <i>(Reference the appropriate Venue Number from above)</i>	Fill Water Type <i>(e.g., public water supply; sea water; untreated ground or surface water; unknown)</i>	IF PUBLIC WATER WAS USED TO FILL, USUAL Water Treatment Provided for Fill Water Before Coming to the Venue <i>(e.g., no treatment; disinfection; filtration (treatment plant); unknown)</i>	IF PUBLIC WATER WAS USED TO FILL, Fill Water Treatment Subtype <i>(disinfection or filtration: e.g., UV; chlorine dioxide; bag filter; cartridge filter; unknown)</i>

Recreational Water Quality

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

If No, explain: _____

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

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

Contributing Factors (Check all that apply)*	Documented/ Observed†	Suspected†
PEOPLE		
Exceeded maximum bather load	<input type="checkbox"/>	<input type="checkbox"/>
Primary intended use of water is by diaper/toddler-aged children (e.g., kiddie pool)	<input type="checkbox"/>	<input type="checkbox"/>
Heavy use by child care center groups	<input type="checkbox"/>	<input type="checkbox"/>
Fecal/vomitus accident	<input type="checkbox"/>	<input type="checkbox"/>
Patrons continued to swim when ill with diarrhea	<input type="checkbox"/>	<input type="checkbox"/>
Operator error	<input type="checkbox"/>	<input type="checkbox"/>
Intentional contamination (explain in remarks)	<input type="checkbox"/>	<input type="checkbox"/>
FACILITY DESIGN		
Combined pool filtration/recirculation systems led to cross-contamination	<input type="checkbox"/>	<input type="checkbox"/>
Hygiene facilities (e.g., toilets, diaper changing facilities) inadequate or distant	<input type="checkbox"/>	<input type="checkbox"/>
Some spray feature water bypasses filtration/treatment system and returns to feature unfiltered/untreated	<input type="checkbox"/>	<input type="checkbox"/>
No supplemental disinfection installed that would have inactivated pathogen (e.g., <i>Cryptosporidium</i>)	<input type="checkbox"/>	<input type="checkbox"/>
Water temperature $\geq 30^{\circ}\text{C}$ ($\geq 86^{\circ}\text{F}$)	<input type="checkbox"/>	<input type="checkbox"/>
Cross-connection with wastewater or non-potable water	<input type="checkbox"/>	<input type="checkbox"/>
Disinfectant control system malfunctioning, inadequate, or lacking (e.g., hand feed chemicals)	<input type="checkbox"/>	<input type="checkbox"/>
Incorrect settings on disinfectant control system	<input type="checkbox"/>	<input type="checkbox"/>
pH control system malfunctioning, inadequate, or lacking (e.g., hand feed chemicals)	<input type="checkbox"/>	<input type="checkbox"/>
Incorrect settings on pH control system	<input type="checkbox"/>	<input type="checkbox"/>
Filtration system malfunctioning or inadequate (e.g., low flow rate)	<input type="checkbox"/>	<input type="checkbox"/>
Supplemental disinfection system malfunctioning or inadequate (e.g., ultraviolet light, ozone)	<input type="checkbox"/>	<input type="checkbox"/>
MAINTENANCE		
Insufficient system checks so breakdown detection delayed	<input type="checkbox"/>	<input type="checkbox"/>
No preventive equipment maintenance programs to reduce breakdowns	<input type="checkbox"/>	<input type="checkbox"/>
Ventilation insufficient for indoor aquatic facilities	<input type="checkbox"/>	<input type="checkbox"/>
Chemical handling error (e.g., chemical hookup, improper mixing or application)	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance chemicals not flushed from system before opening to swimmers	<input type="checkbox"/>	<input type="checkbox"/>
Recirculation pump off or restarted with swimmers in water	<input type="checkbox"/>	<input type="checkbox"/>
Low or zero water flow combined with continuous feed of chemicals resulted in excess chemicals in water	<input type="checkbox"/>	<input type="checkbox"/>
Extensive slime/biofilm formation	<input type="checkbox"/>	<input type="checkbox"/>
Recent construction	<input type="checkbox"/>	<input type="checkbox"/>
Cyanurate level excessive	<input type="checkbox"/>	<input type="checkbox"/>
Lack of draining/cleaning	<input type="checkbox"/>	<input type="checkbox"/>
Stagnant water in spa piping was aerosolized	<input type="checkbox"/>	<input type="checkbox"/>
POLICY AND MANAGEMENT		
No aquatics operators on payroll who have completed state/local training	<input type="checkbox"/>	<input type="checkbox"/>
Untrained/inadequately trained staff on duty	<input type="checkbox"/>	<input type="checkbox"/>
Remote monitoring system replaces on-site water quality testing	<input type="checkbox"/>	<input type="checkbox"/>
Unclear communication chain for reporting problems	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate water quality monitoring (e.g., inadequate test kit, inadequate testing frequency)	<input type="checkbox"/>	<input type="checkbox"/>
Employee illness policies absent or not enforced	<input type="checkbox"/>	<input type="checkbox"/>
No or inadequate policies on good chemical handling and storage practices	<input type="checkbox"/>	<input type="checkbox"/>
No operator on duty at the time of incident	<input type="checkbox"/>	<input type="checkbox"/>
Facility falls outside aquatic health code	<input type="checkbox"/>	<input type="checkbox"/>
No shock/hyperchlorination policy	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>
Unknown	<input type="checkbox"/>	<input type="checkbox"/>

* 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

Recreational Water – Untreated Venue

Implicated Water - Recreational Water Venue Description

Water Venue <i>(e.g., canal; lake; river/stream; ocean)</i>	IF SPRING OR HOT SPRING, Water Venue Sub-type <i>(select indoor, outdoor or unknown)</i>	Setting of Exposure <i>(e.g., beach-public; camp/cabin/recreational area)</i>

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

* 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

Drinking Water

Implicated Water - Drinking Water System Description

Water System* <i>(e.g., commercially-bottled water, community water system, individual water system)</i>	Public Water System EPA ID Number†	Water Source <i>(select ground water, surface water or unknown)</i>	Water Source Description <i>(e.g., spring; well; lake)</i>	Setting of Exposure <i>(e.g., airport, mobile home park)</i>	USUAL Water Treatment Provided <i>(e.g., no treatment, disinfection, home filtration)</i>	Water Treatment Subtype <i>(disinfection or filtration: e.g., boiling; chlorine; rapid sand filter; reverse osmosis)</i>

* 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 water system within a specific state. The water system ID number can be found at <http://www.epa.gov/safewater/dwinfo/index.html> by first selecting a state and then selecting a county.

Drinking Water Quality

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

Yes No Unknown Not applicable

If **Yes**, explain: _____

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

Yes No Unknown Not applicable

If **Yes**, explain: _____

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

Yes No Unknown Not applicable

If **Yes**, explain: _____

§ 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 Contaminated 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 table below) No Unknown

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

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

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 table below) No Unknown

Treatment Contributing Factors (Check all that apply)*	Documented/ Observed†	Suspected‡
Change in treatment process (explain in remarks)	<input type="checkbox"/>	<input type="checkbox"/>
No disinfection	<input type="checkbox"/>	<input type="checkbox"/>
Temporary interruption of disinfection	<input type="checkbox"/>	<input type="checkbox"/>
Chronically inadequate disinfection	<input type="checkbox"/>	<input type="checkbox"/>
No filtration	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate filtration	<input type="checkbox"/>	<input type="checkbox"/>
Deficiencies in other treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion in or leaching from pipes or storage tanks	<input type="checkbox"/>	<input type="checkbox"/>
Pipe/component failure or break (e.g., pipes, tanks, valves)	<input type="checkbox"/>	<input type="checkbox"/>
Contamination during construction or repair of pipes/components	<input type="checkbox"/>	<input type="checkbox"/>
Construction or repair of pipes/components without evidence of contamination	<input type="checkbox"/>	<input type="checkbox"/>
Operator error	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>
Unknown	<input type="checkbox"/>	<input type="checkbox"/>

* 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? Yes (specify in table below) No Unknown

(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)

Distribution and Storage Contributing Factors (Check all that apply)*	Documented/ Observed†	Suspected†
Cross-connection of potable and nonpotable water pipes resulting in backflow	<input type="checkbox"/>	<input type="checkbox"/>
Low pressure or change in water pressure in the distribution system	<input type="checkbox"/>	<input type="checkbox"/>
Change in water flow direction in the distribution system	<input type="checkbox"/>	<input type="checkbox"/>
Mixing of treated water from different sources	<input type="checkbox"/>	<input type="checkbox"/>
Pipe/component failure or break (e.g., pipes, tanks, valves)	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion in or leaching from pipes or storage tanks	<input type="checkbox"/>	<input type="checkbox"/>
Contamination of mains during construction or repair	<input type="checkbox"/>	<input type="checkbox"/>
Construction or repair of mains without evidence of contamination	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled flushing of the distribution system	<input type="checkbox"/>	<input type="checkbox"/>
Contamination of storage facility	<input type="checkbox"/>	<input type="checkbox"/>
Aging water distribution components (e.g., pipes, tanks, valves)	<input type="checkbox"/>	<input type="checkbox"/>
Water temperature $\geq 30^{\circ}\text{C}$ ($\geq 86^{\circ}\text{F}$)	<input type="checkbox"/>	<input type="checkbox"/>
Intentional contamination (explain in remarks)	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>
Unknown	<input type="checkbox"/>	<input type="checkbox"/>

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 table below) No Unknown

Factors Not Under the Jurisdiction of a Water Utility or Contributing Factors at the Point of Use (Check all that apply)*	Documented/ Observed†	Suspected†
<i>Legionella</i> species in water system	<input type="checkbox"/>	<input type="checkbox"/>
Cross-connection of potable and nonpotable water pipes resulting in backflow	<input type="checkbox"/>	<input type="checkbox"/>
Lack of backflow prevention in plumbing	<input type="checkbox"/>	<input type="checkbox"/>
Low pressure or change in water pressure in the plumbing	<input type="checkbox"/>	<input type="checkbox"/>
Change in water flow direction in the plumbing	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion in or leaching from pipes or storage tanks	<input type="checkbox"/>	<input type="checkbox"/>
Pipe/component failure or break (e.g., pipes, tanks, valves)	<input type="checkbox"/>	<input type="checkbox"/>
Aging plumbing components (e.g., pipes, tanks, valves)	<input type="checkbox"/>	<input type="checkbox"/>
Contamination of plumbing during construction or repair	<input type="checkbox"/>	<input type="checkbox"/>
Construction or repair of plumbing without evidence of contamination	<input type="checkbox"/>	<input type="checkbox"/>
Deficiency in building/home-specific water treatment after the water meter or property line	<input type="checkbox"/>	<input type="checkbox"/>
Deficiency or contamination of equipment/devices using or distributing water	<input type="checkbox"/>	<input type="checkbox"/>
Contamination during commercial bottling	<input type="checkbox"/>	<input type="checkbox"/>
Contamination during shipping, hauling, or storage	<input type="checkbox"/>	<input type="checkbox"/>
Contamination at point of use – Tap	<input type="checkbox"/>	<input type="checkbox"/>
Contamination at point of use – Hose	<input type="checkbox"/>	<input type="checkbox"/>
Contamination at point of use – Commercially-bottled water	<input type="checkbox"/>	<input type="checkbox"/>
Contamination at point of use – Container, bottle, or pitcher	<input type="checkbox"/>	<input type="checkbox"/>
Contamination at point of use – Unknown	<input type="checkbox"/>	<input type="checkbox"/>
Water temperature $\geq 30^{\circ}\text{C}$ ($\geq 86^{\circ}\text{F}$)	<input type="checkbox"/>	<input type="checkbox"/>
Intentional contamination (explain in remarks)	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>
Unknown	<input type="checkbox"/>	<input type="checkbox"/>

* 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

