

Bad Bug Law: Bacterial Contamination Cases

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Bacterial contamination cases take as many forms as there are bacteria, but they share a common theme – very simple steps, such as cleaning properly or cooking thoroughly, could have prevented the contamination.

Take the case of an extended family that had gathered at a hotel in Georgia. One of the family members was getting married that evening. To while away the time until the wedding got underway, some of the family members took their kids down to the hotel's pool and spa area. The kids, ages 2 and 5, went swimming. The adults watched the kids and took turns holding the 5-week old newborn; they never even got in the water.

Unbeknownst to the family, my clients, legionella bacteria were breeding in the whirlpool, and becoming airborne through the bubbling water.

After the wedding, the group dispersed to two different states. Within days, the entire group was sick. The grandmother went into a coma, and was diagnosed with Legionnaire's disease. For a month she battled for her life. After she was released from the hospital, she spent another two months recovering from the illness.

The rest of the group fell ill, too, even the little five-week-old who had been in his mother's arms while she sat in the pool area. They had a less serious form of Legionnaire's disease, known as Pontiac Fever.

Most bacterial contaminations go undiscovered. The people exposed to the bacteria scatter, and by the time they realize they are ill, no one is able to trace the illnesses back to the exposure that caused them. This situation was different for three reasons: (1) the family was bright and tenacious, and they put all the facts together; (2) they all knew each other; and (3) the different families had been together for only a short time, so they were able to pinpoint where they had contracted the illness.

The family notified CDC. As the family struggled with the physical effects of the legionella, CDC was hot on the trail of its source. The family had not traveled together, and "their only common exposures were attendance at the wedding and staying in Hotel A on April 23-25." Benin, *An Outbreak of Travel-Associated Legionnaires' Disease and Pontiac Fever: The Case for Travel-Associated Legionellosis Surveillance in the United States*, at 5. The CDC went to the hotel's pool and whirlpool on May 11 and took samples. Using molecular testing, the CDC isolated a rare strain of legionella ("legionella pneumophila serogroup 6") from the whirlpool and the blood of the family members.

The CDC alerted the Cobb County Department of Health, which came to inspect the hotel's pool and whirlpool. Cobb County found a lengthy list of health and safety violations. The whirlpool pump was "not working," and both main drain gates were broken. The level of bromine was below optimal levels. Cobb County ordered the

hotel to keep the spa closed, and added that the hotel “need[ed] to maintain better daily records.”

The CDC began contacting guests of the hotel by telephone. Of the 414 guests who had stayed at the hotel between April 1 and May 11, 1999, the CDC confirmed that 24 had contracted Legionnaires’ Disease or Pontiac Fever. Of the 150 guests who had stayed at the hotel on the same weekend the family did, 12 had contracted Legionnaires’ Disease or Pontiac Fever.

After its investigation, the CDC investigators concluded that: “the source of transmission was a poorly maintained whirlpool spa.” *Id.* at 11. Noting that “the maintenance records at the hotel indicated that the whirlpool spa conditions were frequently below optimal throughout the time period examined,” CDC explained that “[w]hirlpool spa related disease is highly preventable. . . . Hotels and cruise ships must take responsibility for properly monitoring their facilities and for maintaining appropriate water conditions.” *Id.* at 12-13.

An Overview of Bacterial Contamination Cases

Each year hundreds of millions of people become ill from bacteria. Bacteria live and thrive without any help from humans. But sometimes people create the perfect conditions that allow dangerous bacteria to breed and infect people.

Legionella, for example, existed long before it had a name. But with the advent of air conditioning and hot tubs, people created environments that enabled the bacteria to breed and become airborne.

Listeria, to cite another example, is found naturally in dirt. But when a Chicago meat packing plant installed a new air conditioning unit, contaminated dust fell into the

uncovered vats of raw meat sitting on the floor below. The meat then was made into hot dogs and deli meat. One hundred people who ate the meat became gravely ill of listeriosis, and more than twenty died.

When people become ill or die because of bacteria, the result is tragic. But when people become ill or die because somebody ignored health regulations and created filthy and dangerous conditions that bred bacteria, then the result is not only tragic, but entirely preventable.

This article will address the most common legal issues that arise in bacterial contamination cases, and then describe some of the most common types of bacterial outbreaks, and some of the most common places where the outbreaks may begin.

For additional, detailed information about the various types of bacterial contamination cases, you can visit my website, at <http://www.gorbyreeves.com/pages/bacterial-infections-P.html>. The website also contains hyperlinks to numerous websites, including government and academic websites, which can teach you more about these bacterial infections.

Legal Issues in Bacterial Contamination Cases

In bacterial contamination cases, the legal question is whether the defendant had a negligent or reckless disregard for the health of the plaintiff that ate its food, or swam in its pool, or breathed its air. Usually the issues revolve around liability and causation, and discovery is all-important to resolving these issues.

(1) Causation.

Causation is the chief legal issue in bacterial contamination cases. Medical tests may confirm that a person has a bacterial illness, but bacteria are ubiquitous.

Pinpointing the place and time where the person came in contact with a particular type of bacteria can be nearly impossible.

Government has become the leveling factor in bacterial cases. When an outbreak becomes big enough to reach the attention of regulators – at the Food and Drug Administration or at the Centers for Disease Control, for example – the agencies will send in teams to test the facility. Without this prompt and scientific evidence of where the outbreak originated, most bacterial contamination cases are simply impossible to prove.

(2) Liability.

When causation is settled, liability becomes the next hurdle. Bacteria only grow when the conditions are right. If a pool is maintained with the proper chemicals and at the appropriate temperature, bacteria will not grow in it. If the office building or the hospital cleans its cooling tower, bacteria get cleaned out, too. Probably the most chilling aspect of bacterial contamination cases is that often the illness was entirely preventable.

Companies find it tempting to scrimp on maintenance of anything, and all the more so in areas that generate no profit. Pools and spas and cooling towers are not profit centers. A hotel does not get more money because it has a pool; the pool is just an amenity it needs in order to compete with the hotel down the street. A hospital cannot generate a list of revenues from its cooling tower; its patients simply expect the climate to be comfortable. A meat packing plant or a restaurant does not make extra profit because it keeps its food areas clean and cooks its meat thoroughly; for the most part, the customers will never know.

(3) Discovery.

Discovery is the critical battleground in a bacterial contamination case, particularly on the issue of liability. Discovery probably will revolve around three chief issues: maintenance, training, and institutional disregard for public health.

Maintenance

The company's maintenance procedures, as well as its actual maintenance record, will be open to scrutiny in the case. For example, in the Legionnaire's disease case described above, the hotel's pool logs were critical evidence because they showed that the chemicals had not been maintained properly.

The local health department's findings also were important. Although the health department's records showed that the department had inspected the pool very infrequently, three years earlier the department had shut down the same spa because both the chlorine and pH were too high.

The hotel's pool maintenance logs also showed that even after the hotel knew that people had nearly died from Legionnaire's disease contracted from its spa, the maintenance did not improve. Pool logs showed that a key chemical remained chronically outside the ideal, and even the legal, range.

Ironically, less than three months after the spa was reopened, testing showed the pool/spa had legionella again. Furthermore, in the annual inspection the next year, the local county health department had to shut down the spa again, because both the chlorine and pH were too high.

Training

Large companies typically have formalized training procedures. These training procedures may show that cleaning and maintenance were not high on the institution's priority list.

In the Legionnaire's disease case, the hotel chain's training manuals allotted 15-20 minutes for training maintenance employees on how to properly answer the phone, and 30 – 40 minutes for training them on how to set up a meeting room. But the hotel devoted only 45 minutes to an hour to training the maintenance employees on everything they needed to know about the pool, from what hours the pool would be open, to how to test the chemicals.

Institutional Disregard for Health and Safety

When a case involves an institution with many locations, records from the other locations may be important. An institution that scrimps on maintenance and training at one location, may well have problems at its other locations.

For example, in the Legionnaire's disease outbreak case, the hotel chain had approximately 100 hotels. We got the public health records for every county in every state where the hotel chain had a hotel. The records showed that 18 different health departments had shut down 25 of the hotel chain's pools or spas. In one state, the health department had notified the hotel that 15 members of a swim team had contracted a skin disease from the hotel spa.

Some types of bacteria that may lead to contamination

A number of bacteria are regularly implicated in bacterial cases: legionella, listeria, sakazakii and e. coli. These particular bacteria are extremely dangerous, and yet fairly easy to eliminate with simple cleaning or cooking.

Listeria

Listeria is a bacteria found in soil and the environment. One species of listeria, *Listeria monocytogenes*, can cause serious bacterial infections called listeriosis. The first case of human listeriosis was detected in 1929.

CDC estimates that 2500 Americans are infected with listeriosis each year. Of the 2500 infected, 500 will die. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm.

Listeriosis usually begins with fever, muscle ache, and sometimes flu-like symptoms such as nausea, diarrhea and vomiting. For some people, these symptoms will be all they experience. For others, the disease progresses to far more serious symptoms, such as brain infections. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm. According to CDC, “if infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.” *Id.* The disease may not turn serious until 1 to 6 weeks after a person is first infected.

According to The Bad Bug Book published by the FDA, listeria is usually associated with “raw milk, supposedly pasteurized fluid milk, cheeses (particularly soft-ripened varieties), ice cream, raw vegetables, fermented raw-meat sausages, raw and cooked poultry, raw meats (all types), and raw and smoked fish.” See <http://www.cfsan.fda.gov/~mow/chap6.html>. Listeria can multiply even in refrigerated foods. *Id.*

Usually healthy people are not at serious risk from listeria. CDC explains that the groups at highest risk are pregnant women (who may experience stillbirths or

miscarriages), newborns, the elderly, people with weakened immune systems, or cancer, diabetes, or kidney disease, and people who take glucocorticosteroid medications. CDC estimates that people with AIDS are 300 times more likely to get listeriosis. The Bad Bug Book suggests that people taking antacids or cimetidine also may be at risk, and that even healthy people may be at risk if the food item is very heavily contaminated with listeria. *Id.*

Legionella or Legionnaire's Disease

Legionella pneumophila, the type of bacteria that cause Legionnaire's disease, is found naturally in water such as lakes and rivers. In nature, however, legionella is rarely dangerous, because it is so diluted.

The illness caused by legionella is called Legionellosis, and it comes in two forms: Legionnaire's disease is the more serious form and involves pneumonia; the milder version is called Pontiac Fever.

Pontiac Fever debuted in Pontiac, Michigan, in 1968. 95 of 100 employees of the Oakland County Health Department, and 49 of 170 visitors to the Department, became sick. CDC sent three investigators into the building, and they, too, became sick. CDC sent three more investigators, who also became sick. At last the outbreak was traced to an evaporative condenser in the basement. This condenser was vented to the roof just two meters from an air intake unit. *See Legionnaire's Disease Pathogenicity and Design Considerations*, Penn State's Department of Architectural Engineering, at <http://www.engr.psu.edu/ae/iec/abe/topics/legionnaires.asp>.

In 1976, a group of people attending the American Legion Convention in Philadelphia came down with a mysterious illness, and several died. Medical experts

studying the phenomenon traced the outbreak to bacteria found in the air conditioning unit at the hotel where the conventioners had stayed. The disease became known as Legionnaire's disease. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_g.htm.

Legionnaire's disease disproportionately affects smokers and people with chronic lung disease or weakened immune systems (premature infants, transplant recipients, AIDS sufferers, hospital inpatients, etc.). For that reason, outbreaks of Legionnaire's disease in hospitals are extremely dangerous. CDC estimates that "8,000 to 18,000 people get Legionnaire's disease in the United States each year." As many as 30% of those die, according to CDC statistics. *Id.* The incubation period of Legionnaire's disease is from two to fourteen days, but can be shorter in cases of Pontiac Fever. *Id.*

While large outbreaks do receive media attention, experts believe that: "this disease usually occurs as a single, isolated case not associated with any recognized outbreak." See, e.g., Medicinenet.com, http://www.medicinenet.com/legionnaire_disease_and_pontiac_fever/article.htm. In fact, many experts believe that the incidence of Legionnaire's disease is much higher than reported, because many cases either are not identified as the Legionnaire's disease form of pneumonia, or are never associated with a particular outbreak.

Legionella becomes dangerous when it is allowed to breed in the warm, stagnant water of cooling towers and whirlpools. People become infected when they breathe in the mist that contains the legionella bacteria. Outbreaks have happened in office buildings, hotels and hospitals, and around pools and whirlpools in hotels and cruise ships. A recent outbreak was believed to be the result of water droplets spraying from

an air conditioner unit on the top of a building. The spray reached the sidewalk area below, infecting passersby.

Legionella can breed when air conditioners, pools, or whirlpools are not properly cleaned. It also can be distributed through poorly designed buildings or cooling systems that direct contaminated water droplets directly into the air that people breathe. On the other hand, Legionnaire's disease is almost always preventable with good maintenance and building design.

E. coli

Escherichia coli 0157:H7, a particularly serious type of e coli, comes from "eating undercooked, contaminated ground beef," and "sprouts, lettuce, salami, unpasteurized milk and juice, and swimming in or drinking sewage-contaminated water," according to CDC. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/escherichiacoli_g.htm. E. coli can be spread person-to-person via fecal contact.

E. coli 0157:H7 can cause severe bloody diarrhea and abdominal cramps. In 2-7% of cases, victims develop "hemolytic uremic syndrome," in which the red blood cells are destroyed and the kidneys fail. This complication is most common in children under 5 years of age, and in the elderly. CDC warns that: "About one-third of persons with hemolytic uremic syndrome have abnormal kidney function many years later, and a few require long-term dialysis. Another 8% of persons with hemolytic uremic syndrome have other lifelong complications, such as high blood pressure, seizures, blindness, paralysis, and the effects of having part of their bowel removed."

For more information about the four recognized classes of E. coli, see [The Bad](#)

Bug Book, by the Food and Drug Administration's Center for Food Safety and Applied Nutrition, at <http://vm.cfsan.fda.gov/~mow/intro.html>.

Sakazakii bacteria in baby formula

Enterobacter Sakazakii is a bacteria that can cause meningitis, and ultimately death or permanent neurological impairment, in newborns who drink milk made from powdered infant formula contaminated with the bacteria. In 2002, Mead Johnson Nutritionals recalled a batch of its powdered infant formula, saying it had received a report that a premature male infant had died after being given milk made from the contaminated formula.

After the incident, the FDA issued a letter to health care professionals, warning them that: "Clusters of E. sakazakii infections have been reported in a variety of locations over the past several years among infants fed milk-based powdered infant formula products from various manufacturers." The FDA reported that one study had "tested milk-based powdered infant formula products obtained from a number of different countries," and had "found that E. sakazakii could be recovered from 20 (14%) of 141 samples." The agency added that the fatality rate among neonates "has been reported to be as high as 33%." The FDA recommended that powdered infant formulas not be used in neonatal intensive care settings unless no alternative is available. See FDA letter, <http://vm.cfsan.fda.gov/>.

In a press release, Dr. Matthew Kuehnert of the CDC agreed that: "alternatives to powdered forms should be chosen when possible." He explained that: "in general, powdered formula is not sterile, and this means that it commonly contains all types of bacteria, as many foods do. Although food is not sterile, proper handling and

preparation greatly reduces the risk of food-borne disease from harmful bacteria, but there are certain people, such as newborns or persons with impaired immune systems, that can become ill from certain food-borne bacteria.” The CDC added: “We believe that the risk is very low for healthy infants who consume powdered formulas. We believe that the highest risk is for newborn infants in hospital settings who consume powdered formulas.” See CDC press release at <http://www.cdc.gov/od/oc/media>.

Common Places Where Bacterial Contaminations Occur

Bacterial cases often come about because the contamination becomes obvious after it occurs in a large-scale, public way, such as through a swimming pool or a whirlpool, or because contaminated food was widely distributed through restaurants or grocery stores.

Swimming pools and whirlpools: “Recreational Water Illnesses”

When bacteria contaminate the water in swimming pools and hot tubs, people swimming in the pools can wind up with recreational water illnesses (RWI's). Some bacteria, like legionella, can become airborne in the aerosol spray from a hot tub, and in that case, even people who are not in the water can become ill. Bacteria in pools and hot tubs have caused illnesses at hotels, on cruise ships, at water parks, and at local neighborhood swim clubs.

To protect swimmers, pool operators must regulate water pH and use chemicals such as bromine or chlorine. If a pool gets heavy use, the chemicals and pH have to be checked regularly throughout the day. When the pH and chemicals get out of whack, bacteria seize the opportunity to multiply.

Fecal contamination is an especial problem, because it can make chlorine

dramatically less effective. Fecal contamination commonly enters a pool from a leaky diaper. See CDC's report at: <http://www.cdc.gov/od/oc/media/pressrel/r990706.htm>.

Food poisoning

CDC estimates that there are 76 million cases of food poisoning each year nationwide. Of those cases, about 325,000 result in someone being hospitalized, and about 5,000 result in death. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfection_g.htm.

Food can become contaminated at any point along the chain: animals can harbor microbes, vegetables can be sprayed with contaminated water, food can be improperly stored or prepared, and persons handling the food can use poor hygiene.

Although some bacteria are killed only by boiling, most parasites, viruses and bacteria are killed by heating meat and fish to an internal temperature above 160°F (raw poultry should be heated to 180°F). See <http://www.fda.gov/bbs/topics/ANSWERS/ANS00393.html>.

Food poisoning can take days to develop, depending on the type of bacteria or parasite that is ingested. The University of California-Davis notes: "Eating a substance and getting sick immediately afterwards is not the typical course for food poisoning. Most people are not aware that food eaten several days previously can be the cause of food poisoning." See <http://calpoison.org/public/food.html>.

CONCLUSION

Bacterial contaminations can be dangerous or deadly, and often they are preventable. When people or companies create unsafe or unhealthy conditions that allow bacteria to breed and infect others, they may be liable.

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