

## Chapter 2 The Impact on Walkerton

### Contents

2.1	Introduction .....	42
2.2	Personal Suffering .....	42
2.2.1	Tracy Hammell and Her Son Kody .....	43
2.2.2	Betty and Norm Borth .....	45
2.2.3	The Family of Betty Trushinski .....	46
2.2.4	Indirect Impacts .....	47
2.3	General Health Effects .....	48
2.3.1	<i>Escherichia coli</i> O157:H7 .....	49
2.3.2	<i>Campylobacter jejuni</i> .....	50
2.4	Deaths and Illnesses .....	51

## **Chapter 2     The Impact on Walkerton**

### **2.1 Introduction**

The water contamination in Walkerton in May 2000 was a terrible tragedy. Seven people died and more than 2,000 became ill. Those who became ill endured enormous suffering: their families, their friends, and the entire community felt a deep sense of shock and sorrow. Compounding this suffering was the nature of the tragedy. In Walkerton, as in most other places, people trusted the drinking water and those who operated and oversaw the water system. This trust was shattered, and in the months that followed the outbreak, the people of the town anguished over why the tragedy had happened and what it meant for the future.

It is not possible to capture here the full nature of the suffering caused by the outbreak. However, in an effort to reflect the severity, as well as the diversity, of the impacts on people's lives, this chapter recounts some of the stories of personal hardship caused by the outbreak. These stories are a vital part of the Inquiry. This chapter also provides information about the general health effects of the bacteria that contaminated the water and about the number of people who died or became ill.

### **2.2 Personal Suffering**

The people of Walkerton have endured, and continue to endure, this ordeal with dignity and resilience. They obviously care very much for each other. Their pain has been enormous, and it will undoubtedly continue for a long time. Some of the town's residents, particularly the children, may experience serious long-term health effects; others continue to suffer from the unexpected loss of their loved ones.

Although they will no doubt always remember the tragedy, it is clear that the people of Walkerton are coming to grips with what has happened. During my brief stay in Walkerton, it seemed to me that their strength and their sense of community are serving them well. I am sure that Walkerton will continue to be, as it was before, a wonderful place to live, work, and raise a family.

In July 2000, I convened hearings in Walkerton over the course of four days and invited people to come and talk about the impact of the water

contamination on their lives. This gave them an opportunity to speak about their own experiences as well as those of their families and friends, and to offer their thoughts about how the outbreak had affected their community. More than 50 presentations were made by individuals, groups, and families. Some were made in public; others, when requested, were made in private. Transcripts of the hearings are available as part of the public record of the Inquiry, and they will remain as a lasting account of the hardship endured by the community.

I cannot repeat here all of the personal stories I heard during the July 2000 hearings. Instead, I will relate some stories that I think show the different kinds of suffering experienced by so many in May 2000 and the months that followed. In recounting these stories, I rely to a significant extent on the words used by the people who told them.<sup>1</sup>

### **2.2.1 Tracey Hammell and Her Son Kody**

Tracey Hammell is a Walkerton mother who told her story in a private meeting. Her two-year-old son Kody became ill and, as she said, he ended up being “the sickest little guy down there, next to the people that died.” She was still at home with him two months later when she told her story in July 2000. By that time, because he was hemolytic and uremic, Kody was unable to go to daycare or to be under anyone else’s care because it was feared that he would “catch everything that’s going.”

During the May long weekend, the Hammell family was having a garage sale. On Friday, Kody suddenly began to vomit. Mrs. Hammell took him inside to change his diaper and noticed that it was bloody. “I couldn’t even tell what it was,” she said. “I had never seen that before.”

On Saturday morning, Mrs. Hammell woke up to find Kody violently ill. At 10:00 a.m., she phoned the hospital but was told that the hospital was “backed up” and that she should not come in just yet. “Well, when can I come?” she asked. “He’s really sick.” The hospital staff told her to wait until 4:00 p.m. and to get fluids into her son in order to prevent dehydration. “Do whatever you have to do to get it in him,” they said: “get a syringe.”

---

<sup>1</sup> I should note for the record that these stories do not represent testimony under oath, as was the case in the Inquiry’s formal hearings in Part 1.

Mrs. Hammell followed their advice. She got a syringe and “shoved water down his throat.” The water may still have been contaminated, but she did not know that. Finally, she phoned the hospital again around 12:30 p.m. and said, “You’ve got to see him. He’s lifeless. His eyes are rolling in the back of his head ... [He has] diarrhea every two minutes. He can’t take it anymore.”

With her mother and husband, Mrs. Hammell took Kody to the hospital, which was extremely busy. The Hammells persisted, however, and a hospital bed was found in Owen Sound. Kody was given a blood test, which confirmed that he was infected with *E. coli* O157:H7. One doctor told the family there was no treatment. “All we can do is wait for him to get better,” he said, as recollected by Mrs. Hammell.

Eventually they were airlifted to London. In the helicopter, Mrs. Hammell asked the doctor whether her son might die. “Yes, he could,” the doctor replied. “We hope to get him there in time.” Fortunately, Kody survived the trip and arrived at the hospital in London, where he was to be put on dialysis the following morning. Again, Mrs. Hammell was told there was a chance Kody wasn’t going to make it. That night, he started to have heart failure and was put on dialysis. While at the hospital, he underwent surgery twice. Finally, Mrs. Hammell said, the doctors told her: “We’re sorry, but we’ve done all we can do ... It’s up to prayer and the child’s body to do the rest.”

Then one day, Mrs. Hammell recalled, the doctor ran down the hall toward her exclaiming, “Yippidy-do-dah. You did it. He finally made the turn.” The dialysis had at last taken hold. According to the doctors, Mrs. Hammell said, it was a “pure miracle” that Kody had turned himself around and survived. Throughout the endeavour, Mrs. Hammell surprised herself at how strong she could be. But since then, she has occasionally come to the point where she has thought: “Oh my goodness, why am I so depressed and how come I can’t stop crying? ... It’s scary just not knowing what’s going to happen to him next.” She said she worries constantly for her son:

I guess for the rest of his life I’m going to be scared if he gets a cold, and I hope it doesn’t affect the fluid on his lungs and I hope it doesn’t affect his heart ... Just every little virus I don’t want him to get because, you know, it’s harder on the rest of his organs.

### 2.2.2 Betty and Norm Borth

Betty Borth kept a diary tracing the illness of her husband, Norm. It is a graphic account of his 23 days in hospital in Walkerton and London after becoming ill with *E. coli* O157. As Mrs. Borth told the Inquiry, it is a “very personal” story, one that “may make a few feel uncomfortable.”

Norm was 66 years old at the time of the outbreak. He became ill on Friday, June 2. A retired bricklayer, he had been cutting and splitting firewood in the bush when he returned home, saying he felt sick and exhausted. That evening and night, Norm experienced diarrhea consisting of “pure blood and mucus” every 15–20 minutes. Betty phoned the hospital at 6:30 a.m. the next morning and was told to bring him in at 8:00 a.m. But she had difficulty getting him there. “It took me one and a half hours to get him out of the house,” she said, “because the bloody diarrhea would not slow up.”

Shortly after he was admitted to the hospital, Norm was put on intravenous. The bloody diarrhea continued every 15 minutes, and he was getting weaker; he felt sick to his stomach and the cramps were beginning to get very painful. He was frightened because “he knew people had died,” Betty said. “We had been to the funeral home three times in the past week.”

By Saturday night, Norm was too weak to get out of bed. The nurses had to put a diaper on him. Betty was joined by their daughter, Michelle, and together they changed and washed Norm constantly, “cleaning up after his trips to the toilet.” His blood pressure continued to be high, and his arms and legs began to swell. Despite his abdominal cramps, Norm could not receive painkillers because of the *E. coli*. “Even his skin hurts when you touch him,” Betty wrote in her diary. His diabetes of 20 years was now “out of control.”

On Monday, June 5, the decision was made to airlift Norm to the hospital in London. He was moved the next day. When Betty and Michelle arrived in London, Norm was being assessed by a kidney specialist. He underwent X-rays, which was a very painful procedure for him. Norm’s abdomen was distended, he was still on intravenous, the diarrhea continued, and the swelling in his arms and legs grew even worse.

Norm’s condition did not improve for over a week, and the infection continued until Sunday, June 18. Even then, the swelling in his elbows, wrists, ankles, and knees did not go away. Finally, on Sunday, June 25, he was released from

the hospital. “We are both very excited,” Betty wrote. “Sunday he comes home with six prescriptions to be filled.” However, Norm was readmitted to hospital for a short time early in July, and by the time Betty gave her testimony, he was still very weak.

### **2.2.3 The Family of Betty Trushinski**

Betty Trushinski, aged 56, died as a result of the outbreak. She is survived by her husband, two daughters, and a son – all of whom met with me privately in Walkerton – as well as by many other family members.

At the time they met with me, the Trushinski family members were deeply immersed in grief. Betty Trushinski’s husband, Frank Trushinski, showed me photos of his wife and of their family. One photo showed Mrs. Trushinski working on her deck, one of their projects. She was able to enjoy the deck for only a month before she died. “I just had to come to show [the photos] to show to you what type of person she was,” Mr. Trushinski said. “I loved her very much, and there’s not one day that goes by that I don’t have a good cry with her.”

Mrs. Trushinski’s children also expressed their feelings of deep loss for their mother. “She was young, energetic, enthusiastic, and vibrant,” said one of her daughters, Janice King. “She didn’t hold an office of high power or wealth,” said Mrs. King, “but daily she showed acts of kindness and charity ... We had over 945 people come through the wake telling us how she impacted their life, how she made differences in their life.” Her daughter continued:

She died in the hospital away from her home, hooked up to machines and tubes in a coma. She suffered terribly for ten days. She never had a chance to understand her illness. She couldn’t put her affairs in order or say goodbye. There was no time. She just got sicker and sicker ... and we were always ten steps behind the illness. Her dreams of her retirement with Dad and travelling were stolen, all because the water was unsafe and nobody told her.

Mrs. Trushinski’s son, Terry Trushinski, also spoke. He recalled telling his mother about how his own little boy was growing up, but said that now he cannot share those experiences with her. “I was born and raised in Walkerton and have lots of memories of this town,” he said,

but now I can't remember anything. When I think of Walkerton I think of *E. coli* and the death of my mother. I find it difficult to be in Walkerton. I don't enjoy it like I once did ... This tragedy has affected me every day.

#### **2.2.4 Indirect Impacts**

In addition to the heartrending suffering caused by illness and loss of life, the Walkerton community suffered in many indirect ways. Children were unable to attend their own schools, businesses throughout the region suffered, and residents experienced a high degree of anxiety in the aftermath of the tragedy. Many people came forward to tell me about these indirect impacts.

Many said they came to feel unsafe in their own community and did not know when they would be able to trust that life would continue as it had before the outbreak. In the words of Lois Steffler, a local resident, "Our lives have been turned upside-down." She continued:

It has affected our lives in the sense that you can't seem to get your feet back on the ground ... I haven't slept since the *E. coli* thing started because you could hear the helicopter go over morning, noon and night. Your skin stood up because you didn't know who was it, who's sick this time? Are they going to live? ...

[I]n my family alone my mother has been sick and my aunt has been sick and you don't know, like, a month or two months down the road, is everything going to flare up then and you are going to find out the long-term effect on people? You don't know.

There were also some unexpected side-effects of the outbreak, such as the reaction that some people had to the chlorine that was used to disinfect Walkerton's water supply in the aftermath. Although the residents could not drink the local water for more than six months, they continued to use it for washing and household functions. I heard from B.L., a Walkerton resident who, it turned out, had a serious sensitivity to chlorine. She needed to drink a lot of water because of a pre-existing bowel condition and became sick during the outbreak. During the decontamination, she became bedridden after chlorine was put into the water pipes leading to her house. She called a poison control telephone number and was told to get out of Walkerton for 24–48 hours.

While staying with her sister, B.L. coughed for two days and had to go to hospital. She was told that if she did not leave Walkerton until after the decontamination process was finished, she risked burning her lungs.

There was also significant impact on businesses in Walkerton. The financial losses suffered by local residents are discussed in a paper prepared for the Part 2 report of this Inquiry. Here I would like to briefly tell some of the stories of the local business owners themselves. Among others, I heard from Rick Lekx, president of the Walkerton District Chamber of Commerce, and from Gary McGregor, owner of the Pizza Delight in Walkerton. They told me that their livelihoods were affected when people stopped coming through the area, and they do not know how long recovery will take.

Mr. Lekx spoke about the rolling shocks to businesses as news of the outbreak emerged. The first businesses to be significantly affected were restaurants, which were forced to close because they relied on the town's water supply and needed to protect their customers. The motels and bed & breakfasts lost bookings. Retail stores experienced significantly less business, in some cases as little as 10% of the norm. Tourism operators throughout the region were similarly affected. Some businesses found it necessary to lay off employees.

As businesses turned to alternative water sources, many reopened in the weeks after the outbreak. Mr. McGregor, however, told me that they experienced disruptions because tests on the water system would cause the businesses to close down and reopen intermittently, until a stable water delivery system was in place. As a result, he had to lay off all the staff at his Pizza Delight. Even working toward remedying the situation "required an enormous investment in time and effort" by the staff of the Walkerton District Chamber of Commerce and by volunteers in community.

### **2.3 General Health Effects**

Most of the people who died or became ill in Walkerton were infected with one of two bacteria: *Escherichia coli* O157:H7 and *Campylobacter jejuni*. Some background information about these bacteria and the ways in which they can affect human health may shed more light on the impact of the outbreak and on the threats posed by these pathogens. The following information is intended to complement the poignant stories recounted above. It provides an



indication of the potentially serious consequences of the microbiological contamination of drinking water.

### 2.3.1 *Escherichia coli* O157:H7

*Escherichia coli* is a species of bacteria that normally inhabits the large intestines of mammals, including humans. Most *E. coli* bacteria are harmless to healthy humans and do not cause disease. However, some forms of *E. coli* are enteropathogenic, meaning they cause disease through the intestines.

*E. coli* O157:H7, a subgroup of *E. coli*, produces verotoxins that cause hemorrhagic colitis and, in some cases, hemolytic uremic syndrome (HUS). It was one of the two primary pathogens involved in the Walkerton outbreak. The minimum infective dose in young children is generally 10–200 live bacteria, but in adults it may be higher, as many as 1,000–10,000 live bacteria.

Cattle are a common reservoir of *E. coli* O157:H7. The bacteria can be transmitted from cattle to humans through contaminated raw meat, unpasteurized milk, apple cider, and water, among other means. Secondary transmission through person-to-person contact is also possible. In Ontario, the incidence of *E. coli* O157:H7 infection in humans is highest in cattle-producing areas, such as Bruce and Grey Counties in Southwestern Ontario, and in some regions in Eastern Ontario.

On average, 17% of people exposed to *E. coli*-contaminated water become ill. Incubation periods for *E. coli* O157:H7 range from 16 hours to eight days.<sup>2</sup> In the overwhelming majority of cases, the incubation period is three or four days.

A person infected with *E. coli* O157:H7 will experience intestinal disease marked by diarrhea that lasts an average of (but sometimes longer than) four days. Bloody diarrhea often occurs 24 hours after the onset of illness, and the infected person may experience severe abdominal pain. The illness usually resolves itself without treatment (other than rehydration and electrolyte replacement) after about four days. Infected people may continue to shed *E. coli* O157:H7 in their stools for many months.

---

<sup>2</sup>The incubation period for a pathogen is the period of time between one's exposure to the pathogen and the onset of illness.

In some people, particularly children under five years of age and the elderly, *E. coli* O157:H7 infection can have more serious consequences. In particular, it may cause hemolytic uremic syndrome (HUS), in which the verotoxins produced by *E. coli* O157:H7 cause acute kidney failure, anemia, and low platelet counts. Sometimes the small blood vessels of the brain are also affected by the verotoxin produced by *E. coli* O157:H7. HUS is a life-threatening condition.

Approximately 10–15% of children infected with *E. coli* O157:H7 develop HUS. Of these children, approximately 80% will need at least one blood transfusion to maintain their hemoglobin, and about 50% require kidney dialysis to treat the HUS. Roughly 10% of those who recover from kidney failure will have permanent damage to their kidneys that may interfere with their growth. When they become adults, these children may require a kidney transplant. Approximately 5% of children who contract HUS from *E. coli* O157:H7 will die.

The overwhelming majority of the adults who develop HUS from *E. coli* O157:H7 are the very elderly. The mortality rate for very elderly people afflicted with HUS is higher than that for children because the very elderly are generally more vulnerable to the disease because of pre-existing health conditions. For example, a person with pre-existing lung and heart problems often cannot withstand the fluid shifts associated with diarrhea.

It is generally believed that once a person has been exposed to verotoxin-producing *E. coli* O157:H7, she or he will develop protective antibodies to prevent subsequent reinfection by the same strain of *E. coli*. There is some suggestion that diarrhea-induced HUS can recur; however, there is no evidence of reported cases of *E. coli* O157:H7-induced HUS recurring.<sup>3</sup>

### 2.3.2 *Campylobacter jejuni*

*Campylobacter jejuni* is the most common type of *Campylobacter* bacteria that causes human illness. It was also implicated in the Walkerton outbreak. *C. jejuni* is frequently found in the feces of domestic fowl, cattle, swine, sheep, goats, and wildlife, including birds and deer. Most human infections are caused

---

<sup>3</sup> It is possible, though very rare, for a person who has experienced *E. coli* O157:H7-induced HUS to experience another form of HUS that is not associated with diarrhea. Recurrent HUS is uncommon, but possible, among people with certain types of non-diarrhea-induced HUS. HUS that is caused by *E. coli* O157:H7 is diarrhea-induced.

by the ingestion of contaminated foods, usually undercooked poultry. *C. jejuni* can also be passed to humans through unpasteurized milk, direct contact with animals, person-to-person transmission, and, of course, water.

*C. jejuni* bacteria proliferate in the bowel wall. Approximately half of those people infected with *C. jejuni* experience symptoms such as diarrhea, cramping, fever, and acute abdominal pain; the other half do not develop symptoms. Approximately a third of those who experience symptoms develop bloody diarrhea and, in 0.15% of people infected (usually the elderly, young children, and infants), the bacteria spread in the bloodstream.

The infective dose for *C. jejuni* is about 100,000 live bacteria, and the average incubation period is three to four days. Approximately 20% of people exposed to *C. jejuni* bacteria become ill.

Diarrhea associated with *C. jejuni* lasts an average of two to seven days, but in 10–20% of cases it may continue for more than a week. About 5–10% of those people who suffer from diarrhea as a result of *C. jejuni* infection experience a relapse after recovering from the first episode. The vast majority of people recover fully from *C. jejuni* infection and experience no long-term adverse effects, but 0.05% of infected people develop nerve damage (Guillain Barre syndrome), and 0.6% develop reactive arthritis. The reactive arthritis rarely lasts more than several months.

*C. jejuni* does not usually have the severe consequences associated with *E. coli* O157:H7. The fatality rate is much lower for *C. jejuni* (0.1%) than for *E. coli* O157:H7 (0.8%), and there is no known association between *C. jejuni* and HUS.

## 2.4 Deaths and Illnesses

The Office of the Chief Coroner and its expert review panel identified seven deaths associated with the Walkerton outbreak. In four cases, the sole cause of death was infection as a result of the outbreak. In three cases, infection contributed to death, but other factors also played a role. In those three cases, *E. coli* was the probable organism responsible for contributing to one death, and *C. jejuni* for the other two. Further details about the results of the investigation into deaths associated with the outbreak, as they relate to the issue of the onset of illness in the community, are discussed in Chapter 4 of this report.

It is estimated that a total of 2,321 people became sick as a result of the outbreak. This calculation is based on the work of the Bruce-Grey-Owen Sound Health Unit and a Health Canada team that carried out epidemiological and environmental investigations to determine the cause and scope of the outbreak. I discuss the methodology used to carry out this work in Chapter 4 as it relates to the physical cause of the contamination. In this section, I briefly outline the conclusions reached about the number and types of illnesses caused by the outbreak.

To determine the scope of the outbreak, Health Canada developed a case definition that included anyone who had developed certain symptoms associated with *E. coli* O157:H7 or *C. jejuni* between April 15 and June 30, after exposure to Walkerton water. In terms of symptoms, the case definition included anyone who had diarrhea or bloody diarrhea, produced stool specimens positive for *E. coli* O157:H7 or *C. jejuni*, or who had HUS.

By August 31, 2000, Health Canada and the local Health Unit had identified 1,346 people as meeting the case definition. Of these, 65 were hospitalized, 27 developed HUS, and seven died. Of the 1,346 identified cases, 675 people submitted stool samples, of which 163 were positive for *E. coli* O157:H7, 97 were positive for *C. jejuni*, 12 were positive for both, and 20 tested positive for other pathogens.<sup>4</sup>

Of the 675 people who submitted stool samples, 57% submitted samples that tested negative for both *E. coli* and *Campylobacter*. A negative test result does not necessarily mean the person was not infected. It might also mean that (1) the person had stopped or was intermittently shedding the bacteria, (2) the culture was not tested before the bacteria died, (3) the culture was mishandled, or (4) another pathogen was responsible for the symptoms. Accordingly, it is possible that some or all of the people who tested negative were in fact infected, or had previously been infected.

Using the results of a descriptive study, Health Canada also identified a significant number of unreported cases of illnesses. This is to be expected in milder cases of illness, where the primary symptoms are gastrointestinal illness. In the

---

<sup>4</sup> Those testing positive for other pathogens included 7 for *Campylobacter coli*, 2 for *Escherichia coli* VT, and 11 for *Salmonella*, *Yersinia*, or *Aeromonas*. In addition, 815 stools were examined for ova and parasites. There were 4 positive *Giardia* and 2 positive *Cryptosporidium* results. Only 39 stools were examined for viruses: all tested negative.

descriptive study, 740 Walkerton residents were identified as having become sick in May, whereas the expected number of cases, based on the attack rate for the bacteria, was 1,286. Thus, Health Canada and the Health Unit estimated that reports were received from only 58% of the expected cases (740 of 1,286) and, accordingly, that 42% of the cases of illness in the community went unreported. By applying this estimate of the rate of unreported illness to the number of identified cases (1,346), Health Canada estimated that a total of 2,321 people became ill as a result of the outbreak.<sup>5</sup>

---

<sup>5</sup>This assumes that the reporting rate was the same for both residents and non-residents of Walkerton and that it remained the same throughout the outbreak.

