

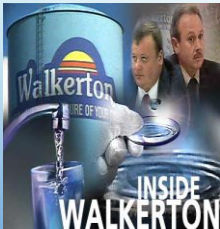
WALKERTON, ONTARIO

MAY 2000

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WALKERTON INCIDENT



• THE IMPORTANCE OF WATER OPERATORS

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WALKERTON

HAPPENED IN WALKERTON, ONTARIO, CANADA?


ESCHERICHIA COLI O157:H7 & CAMPYLOBACTER JEJUNI OUTBREAK

• WHERE DID THIS OCCUR?

• WALKERTON, ONTARIO, CANADA

• WHEN DID THIS OCCUR?

• MAY 8-22, 2000




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WALKERTON

WHERE IS WALKERTON ONTARIO?



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WALKERTON

THE FACTS SURROUNDING WALKERTON

• POPULATION 5,000

• SERVED BY THREE CHLORINATED WELLS (NO OTHER TREATMENT) - # 5,6,7

• WELLS #1,2,3 WERE ABANDONED – NEVER A WELL 4

• NO CONTINUOUS MONITORS (CHLORINE OR TURBIDITY)


• SHALLOW WELL (#5)

• WATER OPERATORS WERE GRANDPARENTED

• NO FORMAL TRAINING OR EXPERIENCE REQUIRED

• IN MAY 2000 MANY PEOPLE BECAME ILL

• ORIGINALLY, THOUGHT TO BE DUE TO FOOD POISONING, DOCTORS RECOMMENDED THAT ILL PATIENTS DRINK PLENTY OF WATER TO AVOID DEHYDRATION.



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WALKERTON: WHAT HAPPENED: A TIMELINE OF EVENTS

• MAY 8TH THRU 12TH – HEAVY RAIN

• MAY 13TH – FRANK KOEBEL TOOK A FICTITIOUS CHLORINE RESIDUAL AT WELL #5

• IT IS EXPECTED THAT ON THIS DAY PATHOGENS ENTERED THE WATER SUPPLY.

• MAY 14TH FRANK KOEBEL REPORTED ANOTHER FICTITIOUS RESULT.

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

On or soon after May 12th when bacteria entered the delivery system, well #5 was the primary source of the town's water and well #6 cycled on and off.
Well #5 was being chlorinated but chlorine residuals were not being monitored !



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Walkerton: What Happened:
A Timeline of events

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
MAY 15TH

- MAY 15TH – AGAIN NO RESIDUAL
- FRANK KOEBEL TURNED WELL #7 ON – EVEN THOUGH THE CHLORINATOR WAS BROKEN.
- WELL # 5 TURNED OFF
- SAMPLES WERE TAKEN AT THE WORKSHOP AND LABELED: 1) WELL #7 RAW, 2) WELL #7 FINISHED, AND 3) 125 DURHAM ST.
- STAN KOEBEL TOOK 1 DISTRIBUTION SAMPLE AND 3 FROM A WATER MAIN CONSTRUCTION SITE.

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
MAY 16TH

SAMPLES TAKEN ON MAY 15TH WERE SENT TO THE LABORATORY.



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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
MAY 17TH

- LAB REPORTS THAT CONSTRUCTION SITE SAMPLES WERE TC+ AND E-COLI+
- THE OTHER SAMPLES DID NOT LOOK GOOD EITHER, BUT THE LAB WOULD NEED MORE TIME TO BE SURE
- THE LOCAL HEALTH UNIT WAS NOT NOTIFIED BY THE LAB OR THE OPERATOR

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
MAY 18TH
(5 DAYS AFTER SUSPECTED CONTAMINATION)

- WIDESPREAD ILLNESS AT THE HOSPITAL
- STAN INFORMS HIS SUPERVISORS THAT **THERE ARE NO PROBLEMS AT THE SYSTEM!!!**



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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

MAY 19TH

(6 DAYS AFTER SUSPECTED CONTAMINATION)

- MORE ILLNESS, DR. CALLS LHU
- STAN WAS CONTACTED TWICE BY THE LHU. HE **REPORTS NO PROBLEMS** WITH THE SYSTEM
 - EVEN THOUGH HE KNEW
 - 1) OF A **E-COLI POSITIVE SAMPLE**
 - 2) THERE WAS **NO CHLORINATOR ON WELL #7**
- NEW CHLORINATOR IS INSTALLED AND STAN BEGINS FLUSHING AND SUPER-CHLORINATING THE SYSTEM

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

MAY 20TH

(7 DAYS AFTER SUSPECTED CONTAMINATION)

- LHU CALLS STAN AGAIN, HE TELLS THEM THAT HE **HAS A RESIDUAL**, STILL DOES NOT REPORT THE E.COLI+ SAMPLE
- ANOTHER EMPLOYEE ANONYMOUSLY CALLS THE LHU AND REPORTS THE E. COLI+ SAMPLES
- LHU CALLS STAN ABOUT THE SAMPLES AND HE TELLS THEM THAT ONLY THE CONSTRUCTION SITE SAMPLES WERE E-COLI+ (NOT THE OTHER SAMPLES)

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

MAY 21TH

(8 DAYS AFTER SUSPECTED CONTAMINATION)

- HOSPITAL CONFIRMS E-COLI IN STOOL OF A PATIENT
- LHU ISSUES **BOIL WATER ORDER**
- STAN DOES NOT PROVIDE ANY OTHER INFORMATION


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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

MAY 22TH

(9 DAYS AFTER SUSPECTED CONTAMINATION)

- STAN INFORMS LHU THAT WELL #6 WAS INOPERABLE DUE TO ELECTRICAL PROBLEMS
- MINISTRY OF ENVIRONMENT (STATE HEALTH DEPARTMENT) ASKED FOR LAB RESULTS
- STAN ASKS HIS BROTHER FRANK KOEBEL TO **REVISE THE OPERATION REPORT** TO SHOW THAT THE WELL #7 WAS FUNCTIONING WITH A CHLORINATOR
- FIRST VICTIM DIES


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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

MAY 23TH

(10 DAYS AFTER SUSPECTED CONTAMINATION)

- STAN TURNS IN ALTERED OPERATION REPORT FOR WELL #7
- LAB NOTIFIES LHU THAT MAY 21ST SAMPLES WERE TC+ AND E-COLI+
- LHU MAKES STAN AWARE OF THE RESULT. STAN TELLS THEM OF THE MAY 15TH RESULT.
- WELL # 5 IS THE ONLY WELL THAT TESTS POSITIVE FOR E-COLI
- SECOND VICTIM DIES



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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

Once the cause of the outbreak was confirmed, authorities responded quickly. On **May 31st, 2000**, the Premier of Ontario set up an independent **"Commission of Inquiry"** under Justice Dennis O'Connor, and detailed hydrogeological studies began.

Starting in July 2000, and lasting 9 months, the hearing heard from 114 witnesses including two former ministers of the Environment.


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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS

> "FOR YEARS, THE [WALKERTON PUBLIC UTILITIES COMMISSION] OPERATORS ENGAGED IN A HOST OF IMPROPER OPERATING PRACTICES, INCLUDING FAILING TO USE ADEQUATE DOSES OF CHLORINE, FAILING TO MONITOR CHLORINE RESIDUALS DAILY, MAKING FALSE ENTRIES ABOUT RESIDUALS IN DAILY OPERATING RECORDS, AND MISSTATING THE LOCATIONS AT WHICH MICROBIOLOGICAL SAMPLES WERE TAKEN. THE OPERATORS KNEW THAT THESE PRACTICES WERE UNACCEPTABLE AND CONTRARY TO MINISTRY OF ENVIRONMENT GUIDELINES AND DIRECTIVES."

JUSTICE DENNIS O'CONNOR

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
WHAT HAPPENED TO THE OPERATORS?

- STAN KOEBEL WAS SENTENCED TO 1 YEAR IN JAIL
- FRANK KOEBEL RECEIVED HOUSE ARREST
- BOTH BROTHERS ARE LIVING WITH THE FACT THAT THEIR NEGLIGENCE CAUSED PERMANENT INJURY AND DEATH!

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WALKERTON: WHAT HAPPENED:
A TIMELINE OF EVENTS
WHAT HAPPENED WITHIN THE COMMUNITY?

- COMMUNITY - 7 PEOPLE DIED, 2,300 SICK
 - UNABLE TO USE THE WATER SUPPLY FOR 8 MONTHS
 - LASTING ANXIETY
 - WORRY ABOUT FUTURE
 - LACK OF CONFIDENCE IN SAFETY OF WATER SUPPLY
- ECONOMIC IMPACT
 - DECLINE IN PROPERTY VALUES
 - REMEDIATION OF WATER DISTRIBUTION SYSTEM - ENTIRE SYSTEM NEEDED DISINFECTION
 - ESTIMATED ECONOMIC IMPACT OF \$155 MILLION

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WHAT CAN WE LEARN FROM WALKERTON?

- MANY THINGS! IN PARTICULAR..
 - OPERATORS NEED TO BE TRAINED AND HAVE THE KNOWLEDGE, SKILLS AND ABILITY TO OPERATE A WATER TREATMENT AND/OR DISTRIBUTION SYSTEM.
 - LOCAL HEALTH DEPARTMENT'S NEED TO KNOW THE OPERATORS RUNNING THEIR WATER SYSTEMS. THIS CAN BE ACHIEVED THROUGH ON-SITE ASSESSMENTS.

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CAPT Derek Chambers, USPHS

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