
1991-001

DATE OF OCCURRENCE: June, 1991
LOCATION: Casa, Arkansas
SOURCE OF INFORMATION: "Rural Water"
"Arkansas Drinking Water Update"

SUMMARY: The failure of two single check valves in a series (unapproved backflow preventer) on the service line to a commercial chicken house permitted the backflow, into the public water system, of an antibiotic administered to chickens through the chicken house water system.

DETAILS:

In response to complaints from a customer on the Casa water system, it was determined that the water system was contaminated by backflow from a commercial chicken house. The chicken house had been receiving water from both the public water system and an auxiliary well connected to the chicken house plumbing. The water system connected to the chicken house included two single check valves in series for backflow prevention. The water in the chicken house was being used to administer an antibiotic solution to the chickens.

During the week of June 23, 1991 residents in the area served by the water main became concerned when the water became noticeably discolored. When made aware of the problem, the water system manager shut off the water service to the chicken house and flushed the water line extension servicing the area. The water meter serving the chicken house was later removed until proper backflow prevention could be assured.

The presence of the antibiotic in the water could have caused severe effects in humans who were hypersensitive to the drug. Due to these and other concerns, chicken and brooder houses are considered to be a high health hazard requiring the installation of a reduced pressure backflow prevention assembly. According to the Cooperative Extension Service, there are estimated to be at least 12,000 chicken houses in Arkansas, and it can be assumed that most, if not all of these houses administer a variety of necessary chemicals to their stock.

1990-004

DATE OF OCCURRENCE: February, 1990
LOCATION: Seattle, Washington
SOURCE OF INFORMATION: Seattle Water Department
"Seattle Post Intelligencer"

SUMMARY: A valve separating the potable water system and an auxiliary water supply to an irrigation system was accidentally opened by the fire department during a routine inspection, permitting water from a pond to be pumped into the potable water system at a golf course.

DETAILS:

On February 23, 1990 the Seattle Water Department received a complaint of discolored water from a customer in a neighboring water system that obtains its supply from the Seattle system.

On February 23 and 24, 1990 positive total coliform and fecal coliform test results were received from water samples taken from a routine sample collection site near the point of supply to the neighboring system.

An investigation of water service and metering information revealed the existence of an auxiliary irrigation system supplying a golf and country club. Fluoride analysis of the water confirmed the existence of the auxiliary supply.

The golf course irrigation system was supplied from a pond on the property. A valve separating the potable water system from the irrigation system was opened by fire department personnel during a fire system inspection.

The cross connection was quickly detected because the regular sampling location for monitoring bacteriological quality was located at the club house kitchen. Bacteriological contamination of a water system through a cross connection is very difficult to trace.

1990-001

DATE OF OCCURRENCE: Summer, 1990
LOCATION: Brentwood, Tennessee
SOURCE OF INFORMATION: Astra Industrial Services

SUMMARY: During the summer of 1990, approximately 1,100 guests of a racquet and country club became ill with an intestinal disorder in two mass incidents after consuming the club's contaminated water supplied from an auxiliary well.

DETAILS:

During the summer of 1990, approximately 1,100 guests of a racquet and country club became ill with an intestinal disorder in two mass incidents after consuming the club's contaminated water. The club obtained water from both the public water system and an unauthorized private well.

In 1984 the club informed the city that it had dug an additional well and connected it to the club's plumbing to permit the club to operate completely from the well. A month later the city requested that an approved backflow preventer be installed on the service line since the club violated state and local health laws prohibiting cross connections. The city lacked staff to follow up on the request and never inspected the facilities.

In August, 1990 it was discovered by state investigators that the club's well was unsealed and located 10 feet from a malfunctioning sewage pumping station. Club employees reported that a pool of fecal contaminated water between the well and the sewage pumping station appeared to be sucked into the ground whenever the well's pump was activated.

The city was alerted that the club was using an auxiliary water supply by the fact that water bills showed usage fluctuations between zero and 848,000 gallons a month between August 1989 and October 1990. The City of Brentwood was cited by the State for failing for two years to inspect and monitor any of the 69 locations the city considered as possible sources of contamination to its water supply (cross connections). The city stated that it lacked sufficient staff to inspect all the buildings. Instead, the city chose to focus on inspecting newly built structures.

1989-006

DATE OF OCCURRENCE: October, 1989
LOCATION: Kennewick, Washington
SOURCE OF INFORMATION: City of Kennewick,
Washington Department of Health

SUMMARY: A "dirty, black water" complaint alerted the water purveyor to the cross connection of seven water softeners to the sewer line.

DETAILS:

On October 4, 1989 the City of Kennewick Water Department received a complaint from a customer concerning "dirty, black water". The water department cross connection specialist investigating the complaint determined that the "dirty water" incident was confined to the customer's house.

A water softener was found in a closet off the family room. The discharge hose was inserted approximately 4-inches into the sewer line. The black "gunk" found at the end of the discharge hose was recognized by the homeowner as being like the black stuff that came out of the bath tub faucet.

The distributor for the water softener stated that installation of the softeners is done by independent contractors. The distributor could only provide a list of softener sales for the last two years. Of the nineteen units sold, six units were sold to other customers in Kennewick.

An inspection was made of these six units. All were cross connected to a sewer line. At one location the homeowner reported "dirty yellow smelly water" had occurred in June of 1989.

All of the water softeners inspected were by-passed until their discharge pipe was isolated with an approved air gap.

1988-016

DATE OF OCCURRENCE: November, 1988
LOCATION: Cave Creek, Arizona
SOURCE OF INFORMATION: Phoenix Gazette, Nov. 2, 1988

SUMMARY: Illegal private wells are suspected as source of contamination of arsenic in the city water supply.

DETAILS:

Health officials, puzzled by high levels of arsenic in the Cave Creek water supply, advised anyone with illegal private wells to disconnect them from the home and use that water for purposes other than drinking and cooking.

Authorities believe that source of the poisoning may be illegal wells contaminating the system. Through a cross connection, water from private wells in homes also hooked up to the Cave Creek Water Co.'s municipal system could infiltrate the city's supply.

The municipal water system suspected that the arsenic naturally occurring deposits cannot manufacture arsenic, it is usually leaches into a well from found in rock formations and soil.

The arsenic levels in the Cave Creek supply are dangerous only if ingested over a 20 to 40 year period. State law sets the maximum contaminant level for the poison at 0.05 mg/l. Cave Creek's water samples averaged 0.072 mg/l.

1988-Q15

DATE OF OCCURRENCE: June, 1988
LOCATION: Bella Glade, Florida
SOURCE OF INFORMATION: "The Gainesville Sun" June 26, 1988
"Tampa Tribune" June 25, 1988

SUMMARY: A man died of insecticide intoxication after drinking water from a bottle filled with contaminated water from a faucet at an airstrip.

DETAILS:

A city worker who died a day after cutting grass near an airstrip was killed by pesticides, but officials aren't sure how the poison got into a bottle of water the man sipped from as he worked.

The man got off his riding mower near the grass airstrip to fill his bottle from a faucet. He drank the water and continued working, but then fell ill and went to the hospital, where he died the next morning.

The Chief Medical Examiner's report shows "Complications due to insecticide intoxication and chronic alcoholism" killed the man. The report also shows his blood-alcohol level as 0.23 percent.

Water from the faucet used to fill the bottle is often used to dilute pesticides that are pumped into crop dusting planes, and officials speculate that insecticides had been sucked into the water line. Samples taken later from the faucet did not show any trace of pesticide.

1987-010

DATE OF OCCURRENCE: June, 1987
LOCATION: Gridley, Kansas
SOURCE OF INFORMATION: "The Gridley Gleam", Vol 5, No. 6

SUMMARY: The water supply to ten residences and one business were contaminated with the herbicide Lexon DF as a result of backsiphonage caused by a water main break.

DETAILS:

On June 20, 1987 a resident of Gridley, Kansas returned home after several days absence and noticed a chemical smell when filling the washing machine. City officials concluded that the problem was caused by "sludge in the pipes" that had been flushed out when the water came back on and recommended that the pipes be flushed for a couple of hours.

On July 1, the resident complained that there was still a problem and that the grass had died where it was watered. City officials then contacted the State Department of Health and Environment.

The State officials took water samples to determine if there may have been chemical contamination. It was concluded that some water mains were contaminated with a herbicide, later identified as Lexon DF, following the break in a water main on June 17. A tank at a nearby feed store which had contained the herbicide was being filled with water at the time of the water main break and some of the contents of the tank were siphoned into the water main.

The State officials warned the ten residences and one business supplied by the water main not to use the water for cooking or drinking until test results showed the water was safe. They also noted that if herbicide was present in the water, boiling the water would not destroy it.

1979-003

DATE OF OCCURRENCE: June 1979
LOCATION: Meridian, Idaho
SOURCE OF INFORMATION: Department of Health and Welfare,
State of Idaho

SUMMARY: The backsiphonage of "stagnant water" containing high bacterial counts occurred from a fire sprinkler system through a leaking alarm check valve.

DETAILS:

On June 18, 1979 the residents of the City of Meridian, Idaho reported their water supply had an odor and taste of onions. During this period, the city was routinely flushing fire hydrants throughout the area involved. As with the complaints, the odor would occur but a consistent pattern could not be determined. The city's water system is supplied by four wells and a 500,000 storage tank which rides on the system. The wells have an alternate pumping schedule and the water system is looped. This arrangement had a contributing affect on the odor occurrence.

By isolating portions of the water system, and conducting a premise by premise inspection, the source of the contamination was narrowed to one area containing a supermarket, car wash and a church printing firm. The nearest fire hydrant was flushed and the odor became very strong. The final inspection revealed that the alarm check valve on the fire sprinkler system in the supermarket was leaking. When the city water pressure was reduced during hydrant flushing, the alarm check valve clapper would leak, but the clapper would not open enough to set off the

alarm. When the service was turned off to the supermarket, the odor and taste problem did not occur during hydrant flushing. Water samples taken from the sprinkler system identified *Clonothrix fusa* and *Zoogleora ramigera* bacteria in sufficient concentration that would cause the onion taste and odor problem.

1979-001

DATE OF OCCURRENCE: March 1979
LOCATION: Kulm, North Dakota
SOURCE OF INFORMATION: American Water Works Association
"Opflow", May 1979

SUMMARY: Contamination of a municipal water system by DDT due to backsiphonage from a garden hose type aspirator sprayer.

DETAILS:

During the summer of 1979 the residents of Kulm, North Dakota complained that their water had an iodine-like taste. The water left a burning sensation on the lips and throat for 10 to 15 minutes. Residents reported both the burning sensation and minor stomach disorders. Both the southeast and north side of town was affected. The mayor notified the state health department. The National Guard was called in to provide an alternate supply of water.

The distribution system was flushed eight times over a period of three days to remove the contamination. Laboratory analysis confirmed the presence of DDT at both locations. A trace amount of DDT was found in the samples taken after repeated flushing of the system, however, none of the levels were high enough to be toxic to humans.

Backflow prevention and cross connection control in Kulm was reviewed. During the survey, two Kulm residents were found filling sprayers containing herbicide with their garden hoses. The ends of the hoses were immersed in the herbicide water and the hoses had no backflow preventer. If a negative pressure developed in the water system, the herbicide could have been drawn into the water system.

Apparently this is how the DDT was introduced. Subsequent demands on the system spread the DDT contamination. The ultimate source of the DDT was never found. The identification of the banned substance only adds to complicate the matter. The sampling done by the state health department was done after the fact hence the levels of DDT could have been even higher at the initial time of contamination.

1969-002

DATE OF OCCURRENCE: August, 1969
LOCATION: Worcester, Massachusetts
SOURCE OF INFORMATION: FCCCHR, University of Southern California
Howard D. Hendrickson

SUMMARY: 83 football team members and coaching staff were stricken with infectious hepatitis by drinking water contaminated by a backsiphonage incident.

DETAILS:

A water line, serving a series of sunken sprinkler boxes used for irrigation, was extended to a faucet used by football player for drinking water during practice. Children played on the field and used the irrigation boxes as toilets, 4 of the children had infectious hepatitis.

Early one morning there was a fire in nearby Worcester, firefighting pumpers reduced the pressure in the water line to the practice field to below atmospheric, causing backsiphonage.

83 football team members and their coaching staff drank the contaminated water at the faucet and became ill with infectious hepatitis. Nearly every game of the season was cancelled.

Subsequent tests made by flooding the boxes with dyed water and opening fire hydrants in the area below the practice field showed water could flow from the pits to the faucet.