



Pipeline

Produced by the Public Affairs staff of the Philadelphia Water Department. For more information, please contact Editor Joan Anne Przybylowicz at 685-4900.

CRYPTOSPORIDIUM

AN INTRODUCTION

Cryptosporidium, the microbe that in 1993 made 400,000 Milwaukee residents sick, has become an important concern to water treatment plants throughout the country. Cryptosporidium is not currently regulated under the Safe Drinking Water Act. The lack of regulations is not an indication of a lack of concern. Unfortunately, not enough is known about Cryptosporidium to write clearly defined guidelines for eliminating it in the water supply and to regulate it effectively. Although Federal regulations are not yet in place, Philadelphia has been sampling the city's drinking water sources, the Schuylkill and Delaware rivers, for Cryptosporidium and Giardia, another disease-causing parasite, since April 1994. Currently, we monitor for particles equivalent in size to Cryptosporidium and we check water for turbidity, a measure of suspended particles in the finished water.

To date, Cryptosporidium has not been found in Philadelphia's treated drinking water supply. However the possibility of finding Cryptosporidium in our treated water increases as new technology is developed to detect and monitor it. If Cryptosporidium is identified as the culprit in a water-borne disease outbreak here, the Philadelphia Water and Health departments are prepared to immediately issue a boil water notice over radio, television and through the newspapers. We are also prepared to hand deliver notices to customers, depending upon the size of the affected neighborhoods. A boil water notice advises customers to bring their tap water to a rolling boil for one minute before drinking or cooking with it. We would keep the public well informed every step of the way until the water supply is deemed free of harmful parasites. Philadelphia's water is safe to drink. It meets or surpasses all physical, chemical, radiological and bacterial water quality standards of the EPA Safe Drinking Water Act. We regularly sample water quality from 85 points along the City's distribution system. In addition, water treatment processes are monitored 24 hours a day, seven days a week, to ensure the production of clean and safe drinking water.

WHAT IT IS ...

Cryptosporidiosis is an intestinal disease caused by the protozoan parasite, Cryptosporidium. When the parasite is outside the bodies of warm blooded animals, it exists as an oocyst, a microorganism protected by a tough outer shell. These oocysts are everywhere in the environment. They have been found in rivers and streams, lakes and reservoirs, raw and treated sewage, and treated surface waters. The parasite has been found in cattle, sheep, swine, goats, dogs and cats as well as deer, raccoon, foxes, coyotes, beavers, muskrats, rabbits and squirrels. Consequently, animals typically found in watersheds may act as sources of infection for humans, shedding the oocysts which eventually wash into drinking water sources.

Infection can also occur from eating contaminated food, from exposure to fecally contaminated environmental surfaces and from person-to-person contact. Person-to-person transmission has been well documented in daycare centers and hospitals.

Cryptosporidium washes into drinking water supplies by way of sewage discharges, wild life, farms and stormwater runoff.

Cryptosporidium was first identified in 1907, but was not recognized as a cause of human illness until 1976. Between 1984 and 1994 there have been four major outbreaks in municipal water supplies in the U.S. The smallest of these affected 2,000 people in Texas and the largest caused about 400,000 Milwaukee residents to become ill.

HEALTH EFFECTS

The illness caused by Cryptosporidium, a protozoan parasite, is called Cryptosporidiosis. The parasite is ingested in oocyst form and breaks open in the intestine. Incubation runs from two to 12 days. Disease symptoms include diarrhea, abdominal cramps, nausea, occasional vomiting and a low grade fever. Treatment can include anti-diarrheal drugs.

Cryptosporidiosis typically lasts 10-14 days, but can linger off and on for up to 30 days. In some cases, it persists for much longer periods.

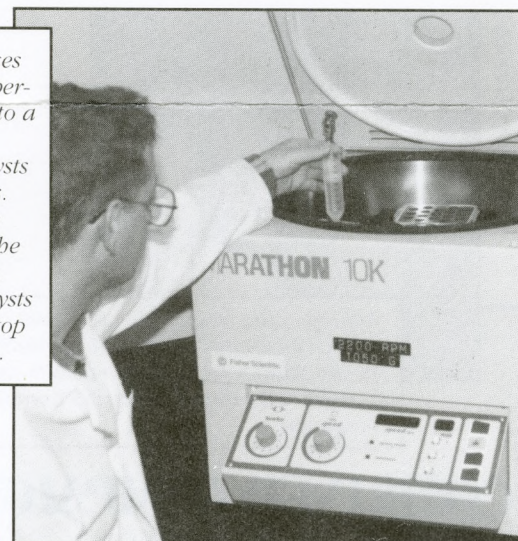
A cure for Cryptosporidiosis has not yet been found. Recovery from the disease is dependent upon the individual's immune system. The disease can be very serious or fatal for people whose immune systems are compromised—people with AIDS, people receiving cancer therapy, people taking immunosuppressive drugs for organ transplants and people with other illnesses affecting the immune system. Children, particularly those under the age of two, and elderly people are especially at risk.



Ken Sarkis of our Bureau of Laboratory Services demonstrates how Cryptosporidium cysts are isolated in treated water. Ken must first neutralize the chlorine in the water. Then, he lets the water flow at 1.2 gallons per minute through a filter where an eluting solution (a mild detergent) absorbs any cysts which may be present into the fibers of the filter.

Photos: Bernie Rosenberg

Next, Ken places tubes of the fiber-filled water into a centrifuge to separate the cysts from the fibers. The centrifuge concentrates the water samples, allowing the cysts to float to the top of the solution.



AND WHAT WE'RE DOING

Testing for Cryptosporidium is a lengthy process. To collect a sample, a large quantity of water, about 100 liters, must pass through a filter which traps any cysts. This process takes approximately 3-6 hours. The filter is then sent to a laboratory for analysis, which requires several days. By the time the results of the test are available, the water sampled has already been distributed and consumed.

A negative result does not guarantee that the tested water supply is free of Cryptosporidium, nor does a positive result necessitate emergency action. It is important to note that the detection of Cryptosporidium alone should not trigger a boil water notice. Results are judged in conjunction with other factors such as turbidity levels of finished water, watershed activity, ongoing water quality testing in the distribution system and reports of an increase in intestinal diseases from the medical community.

Because testing and identifying Cryptosporidium is a lengthy and dubious process, monitoring devices have been developed that can pinpoint particles the same size as Cryptosporidium. Other devices provide continuous monitoring of turbidity, which measures the number of suspended particles in finished water. Both devices are good indicators of the performance of water treatment plant filter processes, our main defense against Cryptosporidium.



Here, Ken transfers the concentrated solution to a manifold with membranes that filter out any cysts which may be present.

The Cat's Meow - Sewer Maintenance Night Crew #642

To Whom It May Concern:

If you are over forty years old, you'll remember when you could call the Fire Department to get your cat out of the tree. Well, those days are over, or so I thought. On Wednesday, November 9th at approximately 9:15 PM, I witnessed the most amazing thing, but let me start at the beginning.

At the corner of the 5600 block of Crowson Street in Germantown, a gray cat was seen by children to have fallen into the sewer. Neighbors lifted the top plate off and indeed a large gray cat was at water level about five feet down. They put a board inside, hoping that the cat would climb out on its own, but the cat wouldn't climb up, scared, I'm sure. Instead, it went further into an adjoining tunnel but could still be heard frantically meowing. We closed the lid of the sewer and a call was placed to the SPCA. We were told it would be quite some time before they could get a truck to us. Someone then said, "Call the Water Department," and at that mention you could hear the laughter. "The Water Department, they won't do anything but raise your bill or cut you off. They can't do a thing about this." Well, get ready for this.

The call was placed and about two hours later a large white PWD truck rolled up with a crew asking the whereabouts of the cat. They opened the sewer and put a light inside. No cat, no meows, nothing seen at all but sewer water and the adjoining tunnel. They went to the manhole about six feet away and removed that cover. No cat, no meows, only someone saying the sewer rats may have got him. "Not if I can help it," one of the PWD workers said. "I'm going in to get the cat." "Yikes," I said, "down into that stuff; in the dark?"

The crew went into immediate action like a military movement, they all acted as one, no questions asked. A tester was inserted into the sewer to check for sewer gas. Uh Oh, the meter was sounding off. "Sewer gas," said a PWD worker. Another PWD worker suggested they check again. Again the meter sounded the warning of gas. A worker stated that if the cat stayed at this end of the line, he was dead from the gas. The PWD worker doing the test decided it could be the exhaust from their truck being sucked into the manhole setting off the meter. The truck was turned off. It worked, the truck was the source. I ran into the house and grabbed the first camera I could find and began taking photos because I knew no one would believe this story.

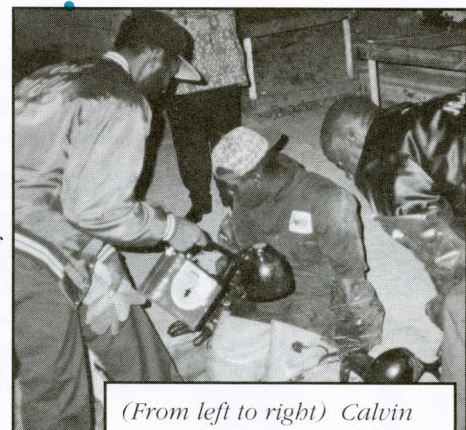
No faster than you could say "kitty litter" a worker was at the bottom of the sewer, knee deep in water calling for the cat. At first attempt, nothing was seen. He bent over again, sewer water on his chest to look into the tunnel. "He's here, the cat is in the tunnel, but I can't reach him." Another PWD worker went into the open manhole to try from the other end. I went over to that manhole, looked down and the PWD worker had crawled on his stomach into the tunnel and completely disappeared inside. I started snapping photos and came back to the sewer in time to hear the PWD worker shout, "I got him." He raised his hands to street level above his head with a beautiful gray cat. The cat's feet hit the sidewalk and before you could see his eyes he took off like a bullet up the street into the bushes gone but not forgotten. Oh, the SPCA was pulling up at this time, just in time to see the cat run up the street.

What a group of guys these PWD workers were, what dedication and readiness. I'll never look at that white PWD truck the same again. Nine hearty meows to this crew.

Marty Regusters, "A Leo," Committee Person, 12th Ward, 4th Division



Sewer Maintenance Crew Chief Donald Drakton emerges from a sewer manhole after searching for the missing cat.



(From left to right) Calvin Harrington, a semi-skilled laborer, Norman Simon and Booker T. Joe, Jr., sewer maintenance inspectors, hope to find the cat that fell down the mouth of a sewer inlet.

Photos: Martin Regusters



Photo: Bernie Rosenberg

Nothing could stop Debbie Levinson of Data Management and Joe Mullen of Audits and Special Studies from rallying PWD employees to another banner year for the Combined Campaign.

COMBINED CAMPAIGN

As Co-Chairs of the Combined Campaign, Joe Mullen, Administrative Support Specialist in the Finance Division and Debbie Levinson, Systems Programmer Project Specialist in Data Management, have been working hard. This year's campaign got off to a great start, gathering \$70,000 worth of pledges in the first two weeks. The goal is \$130,000, a little more than the average the Department has contributed each year for the past five years. As of December 15, we have received \$120,000 in pledges. The top five contributing units are: The Bureau of Laboratory Services, Inorganics Lab; Biosolids; Construction; Water Revenue Customer Relations; and Distribution. Other units which deserve recognition include: Water Conveyance Headquarters, which made 408 percent of its goal; Public Affairs, which made 290 percent of its goal; and Data and Flow Control, which achieved 255 percent of its goal.

"December 15 is the last day to get the full payroll deductions for the year, but it's never too late to give," points out Mullen.

Debbie Levinson believes that, "The Combined Campaign is important because it helps other people besides yourself. But you never know, you could be one of the people who needs it some day."

The Water Department has traditionally been one of the biggest contributors to the City's Combined Campaign, second only to the Fire Department. "We usually contribute about a tenth of the total collection," points out Levinson. "Imagine what it would be like if everybody contributed as much as we do."

Congratulations to Joe Mullen and Debbie Levinson for their fine work in coordinating this year's campaign and thanks to everyone who contributed.



Photo: Bernie Rosenberg

Fish out of water? Not Juanita Jones and Terry Parran, semi-skilled laborers from Sewer Maintenance, who proved they could swim with the best of them. Juanita and Terry are the first females ever to complete training for shoring ditches sponsored by PECO Energy.

Another First For Sewer Maintenance Unit

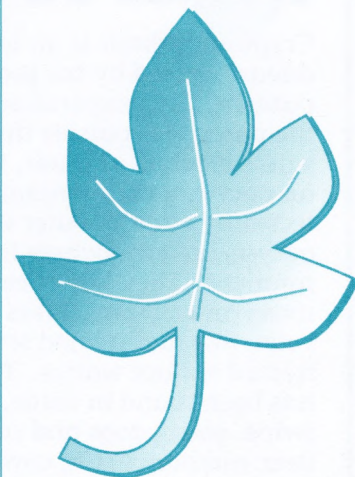
During the past three years, Water Distribution and Sewer Maintenance employees have participated in shoring and excavating courses sponsored by PECO Energy. Over the course of three days, participants learn to use different types of earthmoving equipment such as backhoes, appropriate sign language to direct equipment operators, the correct way to dig an excavation to protect utilities, how to brace the excavation with the proper support to prevent cave-ins and, most importantly, they learn safety skills to protect themselves and their co-workers. The training is hands-on and trainees must dig an excavation to pass the course. According to Richard Goode, Sewer Maintenance Superintendent, "This training gives our employees the necessary skills to dig a trench safely. Before the training course was developed, our employees learned how to do this work on the job. The training gives them time to develop these skills."

During the most recent course, two semi-skilled laborers from Sewer Maintenance were the first females ever to go through the training sponsored by PECO Energy. Terri Parran, an employee with five years at Sewer Maintenance and Juanita Jones, a new employee with only six months, joined the ranks of PWD employees who completed the course.

Semi-skilled laborers are required to use tools and heavy equipment including jackhammers. Terri, previously a laborer for the Water Department, decided to become a semi-skilled laborer because the position paid more. "It's an adventure. I didn't think I would like it, but much to my surprise, I really enjoy being out there on the street. It's a lot of hard work. If you're willing to work, though, and work together, it can be done."

For Juanita, working as a semi-skilled laborer has been a learning experience. "It can be dangerous, so you have to be careful and work closely with the rest of the crew. I've gained a lot of confidence doing this type of work. Since I'm a new employee, I knew I had to pass this course. After the first day, I knew I could do it."

To help with your gardening needs, we will be providing monthly tips, **Growing With EarthMate**, that you can use to plan your lawn and garden needs.



JANUARY

Spruce up those withered trees!

Prune trees to remove dead, damaged or diseased branches. You can also prune to improve the shape of a tree. Spread a 2" layer of EarthMate compost on the soil around the base of your trees. EarthMate insulates roots against the cold, conserves moisture, prevents erosion and weed growth and provides organic matter. To ensure free air exchange, allow 2" of space between the EarthMate compost cover and your tree trunks.