



TOP COMPLIANCE (Pty) Ltd

Your Business' Safety Is Our Concern

QSE B-BBEE - Level Four

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Safe drinking water, water borne diseases and dehydration.

With Cholera being in the news and the current number of people killed by cholera in Hammanskraal has risen to 23, with 200 people in hospital. (IOL 30 May 2023)

Some of the water borne diseases that pose a high risk to South Africans include gastroenteritis, cholera, viral hepatitis, typhoid fever, bilharziasis and dysentery.

Water related diseases are classified into four types relating to the path of transmission:

- Waterborne diseases, such as cholera and typhoid, are the diseases that are transmitted through drinking water. The interruption of transmission is achieved by proper treatment of drinking water.
- Water-washed (water-scarce) diseases, such as polio, are diseases where the interruption of the transmission is achieved through proper attention to effective sanitation, washing and personal hygiene. Regular washing of hands, especially after going to the toilet, is the most effective measure in preventing many infections, as is proper washing and hygiene during food preparation, together with proper sanitation, waste disposal and fly control.
- Water based diseases are diseases transmitted by contact with water, e.g. recreational swimming.
- Water vector diseases, such as malaria, are diseases that are transmitted by a vector, such as the mosquito, which needs water or moisture in order to breed. Prevention of transmission is through a vector control.

Cholera – “Comma Bacterium”

Cholera is a diarrhoeal disease that is very sudden in onset. It is characterised by a massive loss of body fluids, through diarrhoea and vomiting, leading to severe dehydration, which can be fatal. The stool has the appearance of “rice water”. Infants and small children show the most rapid advance of the illness. Untreated cases of cholera can lead to death within 6 hours, depending on the degree of dehydration.

How is Cholera Transmitted?

Any person can contract the disease by ingesting water or food contaminated by a toxic strain of the bacterium called *Vibrio cholera*. This bacterium is excreted by infected individuals and can live for at least three weeks in water. The bacteria can also survive in food especially seafood.

Interesting facts

- A large number of people who drink contaminated water can become carriers with little or no symptoms at all. People who are carriers can continue to excrete the bacteria for a period of up to a few weeks.
- Vaccination of individuals with the cholera vaccine can offer slight protection against the disease, but this will only last for six months, and does not prevent infection and therefore transmission of the disease.
- After ingestion of the bacteria it takes two to four days before cholera symptoms may show.
- Antibiotics may help by shortening the duration of diarrhea.
- Rapid dehydration can only be treated by re-hydration through oral and/or intravenous fluids.
- Not all *Vibrio cholera* organisms are harmful. Non-toxic strains of the bacteria also occur naturally.

Gastroenteritis better known as the "Stomach Bug"

Gastroenteritis is a disease where there is a sudden onset of vomiting and watery diarrhoea often accompanied by moderate fever and sometimes stomach cramps. The incubation period is generally short (8 to 48 hours). The disease is sometimes referred to as "gastric flu" or "stomach bug". Gastroenteritis can be caused by a wide variety of microorganisms.

Healthy adults usually recover within a few days, but the disease can be life threatening in case of infants, the elderly and individuals in the advanced stages of HIV infection.

How is Gastroenteritis transmitted?

Transmission of the disease can occur by a variety of routes, such as eating contaminated food or drinking contaminated water. Very rapid spread within families or groups of people sharing the same utensils, or living together is common, especially with the viral forms of the disease, as it is spread via the faecal oral route with poor hygiene.

Interesting facts

- Carriers showing no symptoms can occur. Thus the importance of proper personal hygiene, washing your hands after going to the toilet, and the proper cleaning of soiled clothes with hot water.
- Vaccination is not possible as there are so many microorganisms that can cause Gastroenteritis.
- Gastroenteritis can be life threatening in the case of an individual with advanced HIV infection, thus extra vigilance to ensure clean drinking water and food is essential for such patients.
- Adequate sanitation, treatment of wastes and fly control is an added precaution.

Typhoid Fever

Typhoid fever is caused by *Salmonella typhi*. Following infection, after an incubation period of 1 to 3 weeks, the patient has a gradual onset of illness, starting with a headache, followed by fever and abdominal pain. Constipation is more common than diarrhoea in the early stages of the illness. Later bronchitis develops. The infection can last up to 3 weeks or even longer. In some individual's infection may occur with no signs of illness at all.

In some recovered cases, a chronic carrier state develops, which may persist lifelong. Such typhoid carriers should not be allowed to prepare food for others, or work in day- care centres, as they present a continual source of the organisms in their stools. They should be treated with antibiotics until three consecutive stools are negative for *Salmonella typhi*.

How is typhoid transmitted?

Typhoid bacilli are excreted in the stools of infected individuals and continue to be excreted by untreated patients after recovery for up to 4 months. The disease is transmitted via the faecal-oral route, either via drinking water or food. Flies may also play a role as a passive vector leading to food contamination.

Interesting facts

- The typhoid bacillus only lives in humans, and apparently healthy carriers are usually the source of new outbreaks.
- Infections can be acquired from ice cubes prepared from contaminated water.

Campylobacteriosis (Campy)

Campylobacteriosis is a diarrhoeal disease of the gut, caused by the bacterium *Campylobacter jejuni*. It is characterised by slight to severe diarrhoea, which may be bloody (dysenteric), together with abdominal cramps, fever and, in severe cases vomiting and convulsions. Some infections may be very mild, or no symptoms at all.

How is "Campy" transmitted?

Transmission is predominantly via the faecal-oral route. Animals, especially poultry and cattle, are an important reservoir of the bacterium. Good hygiene and cleanliness when preparing poultry for cooking is essential to prevent accidental contamination of other foods and drinks.

Preventive measures

- Never eat uncooked poultry.
- Always clean the cooking board and knives with soap and hot water after cutting up poultry.

Interesting facts

- Milk may on occasion be a source of infection, therefore, do not drink unpasteurised milk.
- If a microwave is used for cooking chicken, make sure that the chicken is well cooked, or it may be a source of infection.

Amoebic Dysentery

Amoebic dysentery is a diarrheal disease caused by the parasite *Entamoeba histolytica*. As much as 90% of infections with this parasite are without symptoms. Where symptoms occur, these appear between three days to three months of infection. The diarrhoea, when it occurs, is often bloody, and associated with tenderness in the abdomen, nausea and weight loss. Life threatening complications can occur, such as intestinal perforation.

How is amoebic dysentery transmitted?

The disease is transmitted via the faecal-oral route, the organism being excreted in the stool of an infected individual. A new infection is contracted when contaminated drinking water or food is consumed. Person to person contact also occurs, especially where hygiene is poor, but is uncommon. Common sources of infection are raw fruit or vegetables that have been irrigated with contaminated water.

Prevention

- Practice strict hygiene after going to the toilet and before preparing food.
- Do not drink contaminated water.

- Water can be disinfected by adding one teaspoon of domestic bleach to 20 litres of water, allowing it to stand for 1 hour before drinking. If water is cloudy (turbid) add 2 to 3 extra teaspoons of bleach.

Interesting facts

- 90% of cases are without any symptoms, but these can be a source of infection for others and illustrates the importance of sound sanitation practices to avoid contamination of water resources at all times.
- Vegetables eaten raw should not be irrigated with water contaminated with the parasite.
- Individuals infected with HIV are likely to be more seriously ill when infected with the organism.

Cryptosporidiosis ("Crypto")

Cryptosporidiosis, often abbreviated as “Crypto”, is the infection of the gut caused by the parasite *Cryptosporidium parvum*. From 1 to 12 days after infection there is an onset of water diarrhoea and stomach pains. Sometimes vomiting and slight fever may occur. Recovery takes place after one to two weeks in healthy people, but in individuals with advanced HIV infection, recovery is delayed, and the disease can be life threatening.

How is "crypto" spread?

Infection takes place when the parasite is ingested. Person to person contact may also spread the disease, especially where there is poor personal hygiene. Animals often serve as a reservoir for the parasite, which may be present in their faeces.

Preventive measures

- If the drinking water has not been filtered very effectively (through an extremely small pore size filter), then it is necessary to boil the water for at least one minute.
- Adding bleach to water does not make it safe for “crypto”, unless accompanied by very intense UV light. Small, low power UV lamps are unsuitable in this regard.
- Very fine filters (0.1 to 1.0 micrometre) may remove the parasite and make the water safe.
- Boiling the water is the best way to make it safe.

Interesting facts

- Persons with advanced HIV disease should take extra precautions to avoid infection, such as boiling drinking water, especially if the drinking water treatment supply is suspect.
- As reinfection may occur, practice good personal hygiene, especially after going to the toilet.
- Persons with weakened immune systems should always wash fruit and vegetables well with clean or boiled water, and should avoid touching farm animals, especially calves and lambs.

Giardiasis

Giardiasis is the infection of the gut by the parasite *Giardia lamblia*. It is usually a mild diarrhoeal disease. "Stomach" cramps and loose creasy stools accompany it.

In some people no signs of the disease occur at all. The diarrhoea may result in associated weight loss.

How is Giardiasis transmitted?

People infected with *Giardia* in their faeces excrete the parasite. It may also be found in animal excreta. Infection occurs through contamination of drinking water as a result of inadequate sanitation, through person to person spread by poor hygiene, or through contamination of drinking water containers or food.

Interesting facts

- The disease is normally diagnosed from a stool sample.
- Food handlers should be booked off work if they become infected and avoid preparing food until they are clear of the infection.
- A common source of infection is in child day care centres, where one infant with Giardiasis may readily transmit the disease to others.

Shigellosis (Shigella Dysentery)

Shigella dysentery, and other *Shigella* species cause shigellosis. The symptoms are a sudden onset of abdominal pain, cramps and diarrhoea. There is often mucus and blood in the stools and a fever is common. Dehydration may occur in severe cases, with decreased urine production, which may progress to kidney failure if the dehydration is untreated. The infection is most common in young children of pre-school age, although people of all ages can be affected. Symptoms usually last for a few days to a week but can last longer. Asymptomatic infections also occur, where apparently well people can be a source of infection for a few weeks.

How is Shigellosis transmitted?

Shigellosis can be spread by close person-to-person contact, as well as on occasions by contaminated food or water, via the faecal-oral route. Scrupulous cleaning of hands after using the toilet, changing nappies, or prior to preparing or eating foods needs to be practiced to prevent transmission, especially if a person is infected with the organism and is excreting the bacterium in the stool.

Interesting Facts

- Recovery from shigellosis is in most cases spontaneous, except in the very young and very old, where life-threatening dehydration and other complications can occur. Special care needs to be taken by food handlers with thorough hand washing.

How to make water safe for use.

Preventative measures:

- Never drink water if you suspect it may not be safe to use or is untreated.
- Water can be disinfected by adding 1 teaspoon of domestic bleach to 20 litres of water and leaving for at least three minutes (take care to avoid burns). Where water is cloudy, add 2 to 3 extra teaspoons of bleach.
- Proper personal hygiene and sanitation infrastructure should be installed and maintained.
- Clean drinking water containers should always be used. Recontamination of stored clean water should be avoided by not inserting the hands or dirty equipment when removing water from the container.
- Wash and peel fruit and vegetables, especially lettuce before eating. Always wash fruit and vegetables, well with clean water before eating.
- Wash your hands after going to the toilet and before preparing food.
- Wash hands thoroughly with soap and water after handling pets and before eating food.
- Always wash hands after changing baby's nappies.
- Use bottled, boiled, or treated water for drinking, cooking, and personal hygiene.

- Water that has fuel, toxic chemicals, or radioactive materials in it will not be made safe by boiling or disinfection. Use bottled water or a different source of water if you know or suspect that your water might be contaminated with fuel or toxic chemicals.

Boiling water:

- If you do not have safe bottled water, you should boil your water to make it safe to drink. Boiling is the surest method to kill disease-causing germs, including viruses, bacteria, and parasites.
- If the water is cloudy, first filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle. Then, draw off the clear water and follow the steps below.
- Bring the clear water to a rolling boil for 1 minute. Let the boiled water cool.
- Store the boiled water in clean sanitised containers with tight covers.

Disinfecting water:

- If you don't have safe bottled water and if boiling is not possible, you can make small quantities of water safer to drink by using a chemical disinfectant, such as unscented household chlorine bleach, iodine, or chlorine dioxide tablets.
- Disinfectants can kill most harmful or disease-causing viruses and bacteria, but most disinfectants* are not as effective as boiling for killing more resistant germs, such as *Cryptosporidium* and *Giardia*.
- Chlorine dioxide tablets can kill *Cryptosporidium* if you follow the manufacturer's instructions correctly.

Using bleach to disinfect water:

- Bleach comes in different concentrations. Check the label of the bleach you are using to find its concentration before you start to disinfect water.
- If the water is cloudy, first filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle. Then, draw off the clear water and follow the steps below.
- Follow the instructions on the bleach label for disinfecting drinking water.
- If the label doesn't have instructions for disinfecting drinking water, check the "active ingredient" on the label to find the sodium hypochlorite percentage. Then use the information in the tables below as a guide. Add the appropriate amount of bleach using a medicine dropper, teaspoon, or metric measure.
- Stir the mixture well.
- Let it stand for at least 30 minutes before you drink it.
- Store the disinfected water in clean, sanitised containers with tight covers.
- Making water safe to use with bleach having a 5%–9% concentration of sodium hypochlorite. If the water is cloudy, murky, coloured, or very cold, add double the amount of bleach listed below.

Using chemical tablets to disinfect water:

- If you do not have safe bottled water, water treatment tablets can be used to disinfect water. These tablets are popular among campers and hikers worldwide. They are available in different sizes and made to treat specific amounts of water.
- Follow the manufacturer's instructions on the label or in the package.
- Chlorine dioxide tablets can kill germs, including *Cryptosporidium*, if you follow the manufacturer's instructions correctly.
- Iodine, tablets with iodine (tetraglycine hydroperiodide), or chlorine tablets kill most germs, but not *Cryptosporidium*.
- Water that has been disinfected with iodine is NOT recommended for pregnant women, people with thyroid problems, or those with known hypersensitivity to iodine.
- It is also not recommended for continuous use.

- Do not use it for more than a few weeks at a time.

Filtering water:

- Many portable water filters can remove disease-causing parasites such as *Cryptosporidium* and *Giardia* from drinking water with filter pore size small enough (absolute pore size of 1 micron or smaller).
- Portable water filters do not remove viruses, and most portable filters do not remove bacteria either.
- Carefully read and follow the manufacturer's instructions for the water filter you are using.
- After filtering, add a disinfectant such as iodine, chlorine, or chlorine dioxide to the filtered water to kill any viruses and bacteria.

Ultraviolet Light (UV Light):

- Ultraviolet light (UV light) can be used to kill some germs.
- Portable units that deliver a measured dose of UV light help disinfect small amounts of clear water.
- UV light does not work well on cloudy water because small particles may block germs from the light.
- If the water is cloudy, first filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle.
- Then, draw off the clear water and disinfect it using the UV light.
- In emergencies, the sun's rays can improve the quality of water. This method may reduce some germs in the water.
- Fill clean and clear plastic bottles with clear water. Solar disinfection is not as effective on cloudy water because small particles may block germs from the light.
- If the water is cloudy, first filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle. Then, draw off the clear water and disinfect that water using the sun.
- Lay the bottles down on their side and in the sun for 6 hours (if sunny) or 2 days (if cloudy). Laying down the bottles allows the sun's rays to disinfect the water inside more effectively.
- Putting the bottles on a dark surface will also help the sun's rays disinfect the water more effectively.

Dehydration

Dehydration is caused by not drinking enough fluid or by losing more fluid than you take in. Fluid is lost through sweat, tears, vomiting, urine or diarrhea. The severity of dehydration can depend on a number of things, such as climate, level of physical activity, illness and diet.

Homemade rehydration solution:

- Give the person a drink made with 6 level teaspoons of sugar and 1/2 level teaspoon of salt dissolved in 1 litre of clean cool water. (Boil the water for a few minutes if not sure it is safe to use)
- Be very careful to mix the correct amounts. Too much sugar can make the diarrhoea worse. Too much salt can be extremely harmful to the person.
- Making the mixture a little too diluted (with more than 1 litre of clean water) is not harmful.

Symptoms of severe dehydration:

- Dry mouth lips and eyes.
- Headache.
- Dizziness and light-headedness.
- Decreased skin turgor.
- Tiredness and lethargy or coma.
- Low or no urine output.

- Urine looks dark yellow.
- No tears.
- Sunken eyes.
- Sunken fontanels (the soft spot on the top of the head) in an infant.

Treatment for severe dehydration:

- Seek immediate medical help if you suspect someone is severely dehydrated.
- Give small but frequent amounts of fluids.
- They may need to be admitted to hospital for treatment. Babies, infants, and elderly people will need urgent treatment if they become dehydrated.

Prevention of dehydration

- You should drink plenty of fluids to avoid becoming dehydrated; you should drink 1.2 liters (6-8) glasses of fluid every day.
- If you are active, or if the weather is particularly hot, there is a greater risk that you will become dehydrated. To prevent becoming dehydrated, you should increase your fluid intake.
- As different people sweat at different rates, it is very difficult to provide specific recommendations about how much fluid you should drink. However, you should drink more than normal while exercising, and it is particularly important to keep well hydrated if you are exercising in warm conditions. This is because you will sweat more, and fluid will be lost from your body more rapidly.
- However, drinking more fluid than your body can process can reduce the amount of sodium (salt) in your blood. This can lead to a serious and potentially fatal condition called hyponatremia (low salt level).
- If you start to feel discomfort and bloating from drinking, stop drinking and allow time to recover.
- If you, your child, or someone you are caring for is ill, particularly with a fever, vomiting or diarrhea, there is a high risk of becoming dehydrated, so it is important to start replacing fluid as soon as possible. If they cannot keep down fluids, they need to get to a hospital as soon as possible.

If you are thirsty, you are already dehydrated.

We never know the wealth of water until the well is dry!

<u>Occupational health and safety auditing and consulting</u> 	 <u>Online safety shop</u>		
			

First aid equipment	Signage	Legal posters	Safety Equipment
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Courses offered by Top Compliance (Pty) Ltd

ONSITE TRAINING	
First Aid Courses:	
Level 1 - US 119567 - Perform basic life support and first aid procedures	2 days
Level 2 - US 120496 - Provide risk-based primary emergency care/first aid in the workplace	3 days
Level 3 - US 376480 - Provide first aid as an advanced first responder	3 days
Level 1 & 2 - US 119567 & 120496	3 days
Level 1, 2 & 3 - US 119567, 120496 & 376480	5 days
Level 2 & 3 - US 120496 & 376480	3 days
Child and infant CPR & choking	6 hours
Adult CPR & choking	6 hours
Adult CPR & choking and AED	1 day
Occupational Health and Safety Courses	
Safety representative – Legal Liability	1 day
The Occupational Health and Safety Act & responsibilities of management – Legal Liability	1 day
Hazard Identification and Risk Assessment	1 day
Food facility health & safety course in terms of R638	6 hours
Basic Ladder Safety	6 hours
Fire Fighting and Prevention Courses	
Fire Marshal - Basic firefighting	6 hours
Fire & Evacuation marshal - Basic firefighting with emergency action planning	1 day

ONLINE VIRTUAL CLASSROOM	
Occupational Health and Safety Courses	
Safety representative – Legal Liability	07h45 – 16h00
The Occupational Health and Safety Act & responsibilities of management – Legal Liability	07h45 – 16h00
Hazard Identification and Risk Assessment	07h45 – 15h00
Food facility health & safety course in terms of R638	07h45 – 14h00
Fire Fighting and Prevention Courses	
Fire Marshal - Basic firefighting	07h45 – 13h00
Fire & Evacuation marshal - Basic firefighting with emergency action planning	07h45 – 15h00