

## เชื้อโรคที่ก่อให้เกิดโรคทางน้ำ

**Table 1: Diseases related to water and sanitation**

Group	Disease	Route leaving host	Route of infection
Diseases which are often water-borne	Cholera	faeces	oral
	Typhoid	faeces/urine	oral
	Infectious hepatitis	faeces	oral
	Giardiasis	faeces	oral
	Amoebiasis	faeces	oral
	Dracunculiasis	cutaneous	percutaneous
Diseases which are often associated with poor hygiene	Bacillary dysentery	faeces	oral
	Enteroviral diarrhoea	faeces	oral
	Paratyphoid fever	faeces	oral
	Pinworm (Enterobius)	faeces	oral
	Amoebiasis	faeces	oral
	Scabies	cutaneous	cutaneous
	Skin sepsis	cutaneous	cutaneous
	Lice and typhus	bite	bite
	Trachoma	cutaneous	cutaneous
	Conjunctivitis	cutaneous	cutaneous
Diseases which are often related to inadequate sanitation	Ascariasis	faecal	oral
	Trichuriasis	faecal	oral
	Hookworm (Ancylostoma/Necator)	faecal	oral/ percutaneous
	Schistosomiasis	urine/faeces	percutaneous
Diseases with vectors passing part of their life cycle in water	Dracunculiasis	cutaneous	percutaneous

*adapted from Bradley, D J, London School of Hygiene and Tropical Medicine, various*

**Table 2-4. Waterborne Diseases**

<i>Name</i>	<i>Causative organism</i>	<i>Source of organism</i>	<i>Disease</i>
Viral gastroenteritis	Rotavirus (mostly in young children)	Human feces	Diarrhea or vomiting
	Norwalk-like viruses	Human feces; (also, shellfish grown in polluted waters)	Diarrhea and vomiting
Salmonellosis	<i>Salmonella</i> (bacterium)	Animal or human feces	Diarrhea or vomiting
Escherichia coli--caused gastroenteritis	<i>E. coli</i> O157:H7 (bacterium) Other <i>E. coli</i> organisms	Human feces	Symptoms vary with type
Typhoid	<i>Salmonella typhi</i> (bacterium)	Human feces, urine	Inflamed intestine, enlarged spleen, high temperature — sometimes fatal
Shigellosis	<i>Shigella</i> (bacterium)	Human feces	Diarrhea
Cholera	<i>Vibrio cholerae</i> (bacterium)	Human feces; (also, shellfish grown in many coastal waters)	Vomiting, severe diarrhea, rapid dehydration, mineral loss — high mortality
Hepatitis A	Hepatitis A virus	Human feces; shellfish grown in polluted waters	Yellowed skin, enlarged liver, fever, vomiting, weight loss, abdominal pain — low mortality, lasts up to four months
Amebiasis	<i>Entamoeba histolytica</i> (protozoan)	Human feces	Mild diarrhea, dysentery, extraintestinal infection
Giardiasis	<i>Giardia lamblia</i> (protozoan)	Animal or human feces	Diarrhea, cramps, nausea, and general weakness — lasts one week to months
Cryptosporidiosis	<i>Cryptosporidium parvum</i> (protozoan)	Animal or human feces	Diarrhea, stomach pain — lasts days to weeks

Source: Adapted from American Water Works Association, *Introduction to Water Treatment: Principles and Practices of Water Supply Operations*, Denver CO, 1984.

**Table 2.4 Orally transmitted waterborne pathogens and their significance in water supplies**

Pathogen	Health significance	Persistence in water supplies <sup>a</sup>	Resistance to chlorine <sup>b</sup>	Relative infectivity <sup>c</sup>	Important animal source
<b>Bacteria</b>					
<i>Campylobacter jejuni/coli</i>	High	Moderate	Low	Moderate	Yes
<i>E. coli</i> – pathogenic <sup>d</sup>	High	Moderate	Low	Low	Yes
<i>E. coli</i> – enterohaemorrhagic	High	Moderate	Low	High	Yes
<i>Legionella</i> spp.	High	Multiply	Low	Moderate	No
<i>Salmonella typhi</i>	High	Moderate	Low	Low	No
Other salmonellae	High	May multiply	Low	Low	Yes
<i>Shigella</i> spp.	High	Short	Low	Moderate	No
<i>Vibrio cholerae</i>	High	Short	Low	High	No
<i>Yersinia enterocolitica</i>	High	Long	Low	Low	Yes
<i>Pseudomonas aeruginosa</i> <sup>e</sup>	Moderate	May multiply	Moderate	Low	No
<b>Viruses</b>					
Adenoviruses	High	Long	Moderate	High	No
Enteroviruses	High	Long	Moderate	High	No
Hepatitis A	High	Long	Moderate	High	No
Hepatitis E	High	Long	Moderate	High	Potentially
Noroviruses and Sapoviruses	High	Long	Moderate	High	Potentially
Rotavirus	High	Long	Moderate	High	No
<b>Protozoa</b>					
<i>Acanthamoeba</i> spp.	High	Long	High	High	No
<i>Cryptosporidium parvum</i>	High	Long	High	High	Yes
<i>Cyclospora cayetanensis</i>	High	Long	High	High	No
<i>Entamoeba histolytica/dispar</i>	High	Moderate	High	High	No
<i>Giardia lamblia/intestinalis</i>	High	Moderate	High	High	Yes
<i>Naegleria fowleri</i>	High	May multiply <sup>f</sup>	High	High	No
<i>Toxoplasma gondii</i>	High	Long	High	High	Yes
<b>Helminths</b>					
<i>Dracunculus medinensis</i>	High	Moderate	Moderate	High	No
<i>Schistosoma</i> spp.	High	Short	Moderate	High	

<sup>a</sup> Detection period for infective stage in water at 20°C: short, up to 1 week; moderate, 1 week to 1 month; long, over 1 month.

<sup>b</sup> When the infective stage is freely suspended in water treated at conventional doses and contact times. Resistance moderate, agent may not be completely destroyed.

<sup>c</sup> From experiments with human volunteers or from epidemiological evidence.

<sup>d</sup> Includes enteropathogenic, enterotoxigenic and enteroinvasive.

<sup>e</sup> Main route of infections is by skin contact, but can infect immunosuppressed or cancer patients orally

<sup>f</sup> In warm water

Source: WHO (2006), Table 7.1