

Toi Te Ora
Public Health Service
BAY OF PLENTY DISTRICT HEALTH BOARD
Serving Bay of Plenty and Lakes Districts

Questions & answers about viruses

What types of viruses are in wastewater?

- There are over 150 different types of enteric viruses found in raw sewage.
- Types of viruses found in wastewater depend on those circulating in the community

“What are the harmful/worse viruses from a public health point of view?”

- A virus known to cause illness is a public health risk.
- The level of harm is based on the:
 - extent of disease
 - number of people who may be exposed
 - likelihood of exposure to enough viral particles to cause an illness and;
 - level of defence a person or population has against infection/illness.

What health effects do viruses cause?”

Disease	Symptoms
Acute viral gastroenteritis	causes vomiting and/or diarrhoea, fever, abdominal pain, headache, and body aches.
Respiratory illnesses	cause cold-like symptoms, sore throat, bronchitis, pneumonia and pink eye (conjunctivitis).
Viral hepatitis A-E	Hepatitis A causes fever, tiredness, anorexia, nausea and abdominal pain followed by jaundice (yellowing of skin and eyes).

“How effective will the RLC WWTP MBR Membrane Plant of 0.04 microns be against viruses”

- A 0.04 micron filter equals 40 nanometres (nm).
- Viruses range in sizes (rotavirus - 60nm, norovirus 20nm, adenovirus 70-90nm).

Therefore, the current 0.04 filter at the Rotorua WWTP will be effective against rotavirus and adenovirus but not norovirus. Note: clumping of viruses commonly occurs which means that some viruses may be retained by a filter with pore size larger than a single virus.

A 0.01 micron would be needed for treatment to be effective against all viruses. *However* the degree of treatment needed to protect public health is dependent on where the treated wastewater will be discharged.