



Developing engineering solutions using hydroinformatic tools for the protection of shellfish and water-contact recreation waters from contamination by the *Norovirus*

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Sewage effluent in coastal waters used for oyster culture and water-contact recreation poses a risk to human health. The primary pathogen in outbreaks of gastroenteritis following consumption of raw oysters is the *Norovirus* or “winter vomiting bug”. The virus is life-threatening to patients with compromised immune systems, the very young and the very old. It is not life-threatening to healthy adults. The *Norovirus* is a colloidal particle 27-38nm in diameter. It is highly infectious especially in the case of projectile vomiting. The minimum infective dose is very low, between one and ten ingested particles. The virus has a long survival time in coastal water from 7 days (summer T90) to 30 days (winter T90). These times are ten times those for the indicator bacteria used in regulatory instruments for the protection of oysters and the quality of coastal waters where oysters are produced. The *Norovirus* virus is endemic in many countries. Outbreaks of “winter vomiting” may occur all year round and are often made public in Ireland by the closure of hospitals to visitors.

The goals of the research are: (a) to quantify the risk of *Norovirus* infection through coastal waters and consumption of oysters, (b) to evaluate possible containment of treated sewage effluent, rather than dilution, and (c) to make a prototype early alert system. Cork Harbour will provide the case material for the research.