

Title: A hydrodynamic model: a tool to identify and to manage the impact of microbial pollution discharge on a coastal area.

Author: P Riou¹, N Chini¹, F Dumas²

¹Ifremer, station de Port-en-Bessin, Avenue du Gal De Gaulle, 14520 Port-en-Bessin, France

²Ifremer, Centre de Brest, BP 70, 29280 Plouzané, France

Abstract: With increased demands on coastal activities, microbial contamination of surface water is an emerging public health concern for populations using these waters for recreational or shellfish farming activities.

Sewage effluents, failing septic systems, runoff from farm feedlots and agricultural lands are important sources of contamination. To assess the impact of microbial fluxes and to achieve water quality goals, a water quality model has been developed in the west Cotentin coast (Normandy, France).

A two-dimensional hydrodynamic model, with a 75 m mesh size, was built to simulate the current and dispersion in this sector, which includes areas which are uncovered at low tide. The model was run to describe the hydrodynamic features, including decay rates to simulate microorganism behaviour.

The model was validated by simulating spatial and temporal dynamics for dry weather conditions and rainfall events by comparing the calculated concentrations to a large data base from shellfish survey monitoring.

Our modelling approach contributes to shellfish management and consumer protection, by indicating the “risk period” as defined by EU regulations.