

Webinar: Water quality modelling: part 2		
#	Question	Answer
1	Having trouble with the sound, will the recording be sent out?	Yes. A link to the recording will be emailed out after the event
2	Only some strains of E Coli are pathogenic to humans. E Coli is often used as a proxy pathogen because it indicates faecal pollution from mammals which may be the source of other pathogens.	Yes, true.
3	How does primary/secondary contact recreation affect a drinking water catchment?	Thanks Eugene. Here in Australia the water quality of waterways are monitored against various water quality objects. Often a drinking water reservoir will have other recreational uses which fall into the primary and secondary contact objectives.
4	How to calibrate and validate the modelling results? will pathogens modelling apply to all general urban water quality treatment design, or will it only apply to some high-risk projects such as hospitals?	Hi Max. The TUFLOW FV pathogens model looks at the advection, dispersion and interaction with the receiving environment. Calibration to concentrations is one component but additionally understanding the interaction of pathogens within the environment is equally important. I hope the presentation will answer some of those questions and demonstrate how the model can be applied within a lake system and to any discharges that may contain pathogens.
5	How do you model pathogen transport- via Euler or Lagrangian model? Have you solved the radiation? How you tackle the large time-scale involved in the systems?	Pathogens are simulated using an Euler scheme. Surface radiation is sourced from Global Atmospheric Models using automated TUFLOW FV techniques. It is then dynamically attenuated through the depth of the water column by TUFLOW FV using extinction calculations. We use the GPU compute capability of TUFLOW FV to execute long timescale simulations in a practicable amount of time. GPU compute is typically 40-100 times faster than CPU compute
6	<p>1. How boundary condition influence Pathogens?</p> <p>2. In the example except inflow how the boundary condition has been determined?</p> <p>3. Do pathogens have any relation with Nitrogen or carbon cycle?</p> <p>4. Can you briefly tell about the data preparation for the modelling? (e.g. How we get the the data of dead pathogens)</p>	<p>1. Boundary conditions provide inputs of pathogens to the TUFLOW FV model. These can be diffuse (e.g. from catchment runoff) or point (e.g. water treatment plant) or a combination of both.</p> <p>2. The boundary conditions in the example model were hypothetical, and not based on other modelling or measurements. They were just for example purposes only.</p> <p>3. Pathogen viability can be linked to dissolved organic carbon concentrations but this has not been activated as yet as it is very complex (and difficult to parameterise) science that requires detailed field programs to support.</p> <p>4. Dead pathogens are computed by TUFLOW FV. We would typically set dead pathogen inflow concentrations to be zero, but this could also be set using monitoring data.</p>
7	Is this the most updated pathogen model version which can connect with TUFLOW?	Yes - this is the TUFLOW FV Water Quality (WQ) Module. It connects directly with TUFLOW FV. Pathogens have been added to the WQ Module since the last Commercial Release, and are now in beta testing. Pathogen simulation will be included in the next update TUFLOW FV Commercial Release, which is expected to be in the next month or two
8	Are there any sources for pathogens in the model, i.e. growth of pathogens?	No. Growth of pathogens was not simulated.

9	can you send documents in email	Can you please email us at <a href="mailto:info@tuflow.com">info@tuflow.com</a> . We will then be able to contact you.
10	Does artificial light kill pathogens?	Yes. Artificial ultraviolet (UV) light is used in specialised equipment in some wastewater treatment plants to kill pathogens before release of treated water to the environment. UV treatment is not universal because it can be quite expensive to implement and maintain
11	Can TUFLOW be used to model pathogen transport through soil	Not at present
12	thank you Michael and the team	Pleasure! Thank you for joining