



## **Modeling of virus outbreaks caused by geochemical perturbations**

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A model has been developed to assess the potential virus outbreak that a physicochemical perturbation in the inflow water can cause in a fully saturated porous media. The model aimed to define and quantify the processes that cause a sudden change in virus concentration in the outflow due to variations in pH, temperature, dissolved organic matter concentration and ionic strength. The effects of sudden pulses and permanent changes are evaluated. This conceptual model is then translated into a numerical one where steady state conditions are simulated followed by a physicochemical perturbation (keeping constant or varying the flux conditions), and the fraction of retained, mobilized and remobilized viruses is tracked as a function of space and time. Experimental data from different sites has been gathered in order to fit the model and serve as a validation for its results.