Model of gall bladder or udder:

$$\frac{dm_A}{dt} = Q_{in} \times c_{in} - Q_{out}(t) \times c_A$$

$$\frac{d(m_A/V_A)}{dt} = \frac{dc_A}{dt} = \frac{1}{V_A} \times \frac{dm_A}{dt} - \frac{m_A}{V_A^2} \times \frac{dV_A}{dt}$$

$$\frac{dV_A}{dt} = Q_{out}(t)$$

where Q are volumetric flow rates, m is mass or amount, c are concentrations, V is volume. The model is of a single compartment 'A'. The flow into the compartment is constant, but the flow out is time-varying.

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