Biomass/bio kinetics

How to write a mass balance equation(s):

Mass balance analysis is based on the principle that mass is neither created nor destroyed but the form of mass can be altered. (Liquid to gas). A word statement can be written as follows:

Rate of accumulation = rate of flow of reactant into system boundary – rate of flow of reactant out of system boundary + rate of generation of reactant within system boundary

In simpler terms: accumulation = inflow – outflow + generation

Preparation of mass balance equation:

1. Prepare a simplified or flow diagram of system or process for which the mass balance is to be prepared
2. Draw a system or control volume boundary to define limits over which the mass balance is to be applied. Proper selection of the system or control volume boundary is extremely important because in many situations it may be possible to simplify mass-balance computations.
3. List all the pertinent data and assumptions that will be used in the preparation of materials balance on the schematic or flow diagram
4. List all the rate expressions for the biological or chemical reactions that occur within control volume.
5. Select a convenient basis on which numerical calculations will be based.