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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S.No. | **Source** | **Model Equation** | **Dimension** | **Required Parameters** | **State** | **Source Dimension** | **Domain Dimension** | | | **Processes** | | | **Notes** | **Parametrs needed** |
| **Length** | **Width** | **Thickness** | **Chemical** | **Biological** | **Biochemical** |
| 1 | Van genuchten (1985) |  | 1-D | 1 | transient |  | Semi-Infinite | NA | NA | linear equilibrium sorption | Sequential 1st order decay |  |  |  |
| 2 | Latinopoulos et al.(1988) |  | 2-D | 2 | transient | line source | Semi-infifnite | Infinite | NA | linear adsorption | 1st-order decay |  |  |  |
| 3 | Domenico (1987) |  | 3D | 11 | transient | Patch source | Semi-infinite | infinite | Infinite |  | 1st order-decay |  |  |  |
| 4 | Batu and Van genuchten (1990) |  | 2D |  | Transient | Line source | Semi-infinite | infinite | NA | linear equilibrium sorption | 1st order-decay |  |  |  |
| 5 | F.J.Leij et al. (1993) |  | 3D |  | transient | Planar source | Semi-infinite | Infinite | Infinite | Linear retardation,Non-equilibrium solute transport, Sorption | First-order decay |  |  |  |
| 6 | V. batu(1996) |  | 3D |  |  | Rectangular | source |  |  | Linear equilibrium isotherm | decay |  |  |  |
| 7 | F.J.Leij et al. (2000) |  | 3D |  | Transient | Planar | Infinite | infinite | Semi-infinite |  | First-order degradation |  | First type condition |  |
|  |  |  |  | Second type condition |  |
|  |  |  |  | Third type condition (Film diffusion) |  |
|  |  |  |  | Third type condition(vertical flow) |  |
| 8 | Ham et al. (2004): |  | 2-D | 5 | steady | point source | Infinite | Infinite | NA | Instantaneous rxn | Zero-order reaction |  |  |  |
| 9 | Chu et al. (2005): |  | 2-D | 6 | steady | line source | Infinite | infinite | NA | Instantaneous rxn | double monod |  |  |  |
| 10 | Liedl et al. (2005) |  | 2D | 5 | Steady | Rectangular, fully penetrating | Semi-Infinite | NA | 0 – Aquifer thickness | Instantaneous reaction |  |  | Parameter sensitivity for Lmax, M>\alpha\_TV>Conc. |  |
| 11 | Cirpka et al. (2006) |  | 2-D | 4 | steady | line source | Semi-Infinite | NA | semi-infinite | Quasi-Instantaneous rxn |  |  |  | The seepage velocity (v), injection width (h),transverse dipersion coeff. (Dz) |
| 12 | BIOSCREEN–AT – Karanovic et al. (2007) |  | 3D | 11 | Transient | Planar Source | Semi-infinite | Infinite | (Infinite)  from water tbale to relatively large depth | equilibrium sorption | first order reaction |  |  |  |
| 13 | Cirpka and valocchi (2007) |  | 2-D |  | Steady-state | line source | Semi-infinite |  |  | Instantaneous rxn | Double-Monod kinetics with first-order biomass decay |  | The first biomass-decay model assumes a constant first-order decay coefficient, while the second assumes that the decay coefficient depends upon the electron-acceptor concentration |  |
|  |  |  |  | Double-Monod kinetics with concentration-dependent biomass decay |  |  |  |
| 14 | Srinivasan and clement (2008a) |  | 1-D |  | transient |  | Semi-infinite | NA | NA | Sorption | Sequential 1st - order decay |  |  |  |
| 15 | Singh et al. (2009) |  | 1-D |  | transient | Point-Source | finite | NA | NA |  |  |  |  |  |
| 16 | Jaiswal et al. (2009) |  | 1-D |  | Transient | Point source | semi-infinite  , finite | NA | NA |  |  |  |  |  |
| 17 | Gutierrez-Neri et al.(2009) |  | 3-D | 8 | steady | planar source (x,z) |  |  |  | Instantaneous rxn | 1st-order decay |  |  |  |
| 18 | Hunkeler et al. (2010) |  | 2-D , 3-D |  | transient | planar source |  |  |  | Instantaneous rxn | 1st-order decay |  |  |  |
| 19 | Kumar et al. (2010) |  | 1-D |  | transient | (point source)  Continuous input concentration of uniform nature | Semi-infinite | NA | NA |  |  |  | Dispersion through inhomogeneous medium |  |
|  |  | (Point source)  Continuous input concentration of increasing nature(α≠1) |  |  |  |  |
|  |  | (Point source Continuous input concentration of increasing nature(α=1) |  |  |  |  |
|  |  | (Point source Continuous input concentration of uniform nature |  |  |  | Temporally dependent dispersion along uniform and steady Flow |  |
|  |  | (Point source Continuous input concentration of increasing nature |  |  |  |  |
| 20 | Liedl et al (2011) |  | 3-D | 6 8 | steady | planar source | Semi-Infinite | infinite | 0- Aquifer thichkness | Instantaneous rxn |  |  |  |  |
| 21 | Yadav and Jaiswal (2011) |  | 2-D |  | Transient | point source | semi-infinite | Semi-infinite | NA |  | 1st-order decay |  |  |  |
| 22 | Guerrero et al. (2013) |  | 1-D |  | transient |  | semi-infinite domain and finite domain |  |  | linear equilibrium sorption | 1st-order decay |  |  |  |
| 23 | Chen et al. (2016) |  | 2-D |  |  | Irregular shapes of linear, planar and volumetric sources | finite length |  | NA | linear isothermal equilibrium sorption | Sequential 1st-order decay |  |  |  |
| 24 | Sanskrityayn et al. (2017) |  | 1-D |  | transient solute transport | Instantaneous point source | infinite | NA | NA |  | First-order decay |  |  |  |
|  | continuous point source | NA | NA |  |  |  |
| 25 | Subhrangshu Purkayastha & Bimlesh Kumar (2020) |  | 1-D |  | transient |  | finite | NA | NA | linear sorption | 1st-order decay |  | Non-reactive solute |  |