

# POLLUTEv10

Version 10.00  
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## Case 19: Multiphase Diffusion Test

THE PASSIVE SINK OPTION HAS BEEN USED. NOTE THE USER IS RESPONSIBLE FOR ENSURING THAT VELOCITY CHANGES ARE CONSISTENT WITH THE PASSIVE SINK.

### Layer Properties

Layer	Thickness	Number of Sublayers	Coefficient of Hydrodynamic Dispersion	Matrix Porosity	Distribution Coefficient	Dry Density
Geomembrane	0.1 cm	1	0.000216 cm <sup>2</sup> /hr	1	0 m <sup>3</sup> /kg	2.7 kg/m <sup>3</sup>
Air Space	18.2 cm	4	316.8 cm <sup>2</sup> /hr	1	0 m <sup>3</sup> /kg	2.7 kg/m <sup>3</sup>

### Boundary Conditions

#### Constant Concentration Top Boundary

Source Concentration	500 mg/L
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#### Fixed Outflow Bottom Boundary

Landfill Length	1 cm
Landfill Width	1 cm
Base Thickness	12.3 cm
Base Porosity	1
Base Outflow Velocity	0 m/a

### Velocity and Sink Profile

Time Period	Minimum Depth	Maximum Depth	Vertical Velocity	Horizontal Outflow	Phase Parameter
01	0 cm	0.1 cm	0 m/a	0 m/a	43.8
	0.1 cm	18.3 cm	0 m/a	0 m/a	0.27

### Laplace Transform Parameters

TAU	7
N	20
SIG	0
RNU	2

### Calculated Concentrations at Selected Times and Depths

Time	Depth	Concentration
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hr	cm	mg/L
1	0.000000E+00	5.00000E+02
	1.000000E-01	1.77108E-04
	4.650000E+00	7.04543E-05
	9.200000E+00	2.68747E-05
	1.375000E+01	9.11046E-06
20	1.830000E+01	6.36897E-07
	0.000000E+00	5.00000E+02
	1.000000E-01	3.62180E+01
	4.650000E+00	3.42036E+01
	9.200000E+00	3.23388E+01
40	1.375000E+01	3.06235E+01
	1.830000E+01	2.90573E+01
	0.000000E+00	5.00000E+02
	1.000000E-01	8.02196E+01
	4.650000E+00	7.83419E+01
70	9.200000E+00	7.66019E+01
	1.375000E+01	7.50001E+01
	1.830000E+01	7.35369E+01
	0.000000E+00	5.00000E+02
	1.000000E-01	1.38654E+02
100	4.650000E+00	1.37037E+02
	9.200000E+00	1.35539E+02
	1.375000E+01	1.34159E+02
	1.830000E+01	1.32899E+02
	0.000000E+00	5.00000E+02
150	1.000000E-01	1.88956E+02
	4.650000E+00	1.87564E+02
	9.200000E+00	1.86274E+02
	1.375000E+01	1.85087E+02
	1.830000E+01	1.84002E+02
200	0.000000E+00	5.00000E+02
	1.000000E-01	2.57718E+02
	4.650000E+00	2.56634E+02
	9.200000E+00	2.55629E+02
	1.375000E+01	2.54704E+02
	1.830000E+01	2.53860E+02
	0.000000E+00	5.00000E+02
	1.000000E-01	3.11279E+02
	4.650000E+00	3.10435E+02
	9.200000E+00	3.09652E+02

	1.3750000E+01	3.08932E+02
	1.8300000E+01	3.08274E+02
250	0.0000000E+00	5.00000E+02
	1.0000000E-01	3.53000E+02
	4.6500000E+00	3.52342E+02
	9.2000000E+00	3.51732E+02
	1.3750000E+01	3.51171E+02
	1.8300000E+01	3.50659E+02
300	0.0000000E+00	5.00000E+02
	1.0000000E-01	3.85497E+02
	4.6500000E+00	3.84985E+02
	9.2000000E+00	3.84510E+02
	1.3750000E+01	3.84073E+02
	1.8300000E+01	3.83673E+02
350	0.0000000E+00	5.00000E+02
	1.0000000E-01	4.10810E+02
	4.6500000E+00	4.10411E+02
	9.2000000E+00	4.10041E+02
	1.3750000E+01	4.09701E+02
	1.8300000E+01	4.09390E+02
400	0.0000000E+00	5.00000E+02
	1.0000000E-01	4.30527E+02
	4.6500000E+00	4.30216E+02
	9.2000000E+00	4.29928E+02
	1.3750000E+01	4.29663E+02
	1.8300000E+01	4.29421E+02
450	0.0000000E+00	5.00000E+02
	1.0000000E-01	4.45886E+02
	4.6500000E+00	4.45643E+02
	9.2000000E+00	4.45419E+02
	1.3750000E+01	4.45212E+02
	1.8300000E+01	4.45024E+02
500	0.0000000E+00	5.00000E+02
	1.0000000E-01	4.57849E+02
	4.6500000E+00	4.57660E+02
	9.2000000E+00	4.57485E+02
	1.3750000E+01	4.57324E+02
	1.8300000E+01	4.57177E+02
550	0.0000000E+00	5.00000E+02
	1.0000000E-01	4.67167E+02
	4.6500000E+00	4.67020E+02

	9.200000E+00	4.66884E+02
	1.375000E+01	4.66759E+02
	1.830000E+01	4.66644E+02
600	0.000000E+00	5.00000E+02
	1.000000E-01	4.74425E+02
	4.650000E+00	4.74311E+02
	9.200000E+00	4.74205E+02
	1.375000E+01	4.74107E+02
	1.830000E+01	4.74018E+02

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