Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	cotton
Enter the application sceanrio	granular, 85% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	3
Enter Application Rate for first application (lbs/acre)	2.1
Enter Application Rate for second application (lbs/acre)	0.525
Enter Application Rate for third application (lbs/acre)	0.525
Enter the application interval between first and second applications (days)	30
Enter the application interval between second and third applications (days)	30
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

	Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼	Must Enter >>	
LC50 (mg/kg-diet)		▼	Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼	Must Enter >>	
NOAEC (mg/kg-diet)		▼		
Enter the Mineau et al. Scaling Factor	1.15			

Mammals

	Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼		Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼		
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼	
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8			

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**cotton**
Application scenario	**granular, 85% incorporation efficiency**
Number of applications	3
Application Rate for first application (lbs/acre)	2.1
Application Rate for second application (lbs/acre)	0.525
Application Rate for third application (lbs/acre)	0.525
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	30
Application interval between second and third applications (days)	30
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	1.207039
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	2.647015
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	1.453822

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	Dry beans
Enter the application sceanrio	granular, 99% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	1.05
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

		Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard	▼	Must Enter >>	
LC50 (mg/kg-diet)			▼	Must Enter >>	
NOAEL (mg/kg-bw)	0.1		▼	Must Enter >>	
NOAEC (mg/kg-diet)			▼		
Enter the Mineau et al. Scaling Factor	1.15				

Mammals

		Indicate test species below	Indicate Endpoint Units Below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat	▼			
LC50 (mg/kg-diet)		rabbit	▼	Must Enter >>		
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼			
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8					

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**Dry beans**
Application scenario	**granular, 99% incorporation efficiency**
Number of applications	1
Application Rate for first application (lbs/acre)	1.05
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	0.603519
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	1.323508
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	0.726911

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	peanuts
Enter the application sceanrio	granular, 85% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	3
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

	Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼	Must Enter >>	
LC50 (mg/kg-diet)		▼	Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼	Must Enter >>	
NOAEC (mg/kg-diet)		▼		
Enter the Mineau et al. Scaling Factor	1.15			

Mammals

	Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼	Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼		
Reported Chronic Endpoint	0.4	rat ▼ mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8			

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**peanuts**
Application scenario	**granular, 85% incorporation efficiency**
Number of applications	1
Application Rate for first application (lbs/acre)	3
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	1.724341
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	3.78145
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	2.076889

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	pecan
Enter the application sceanrio	granular, 85% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	4.95
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

		Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼		Must Enter >>	
LC50 (mg/kg-diet)		▼		Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼		Must Enter >>	
NOAEC (mg/kg-diet)		▼			
Enter the Mineau et al. Scaling Factor	1.15				

Mammals

		Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼		Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼			
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8				

User Defined INPUTS

Chemical Name	Aldicarb
Use Site	pecan
Application scenario	granular, 85% incorporation efficiency
Number of applications	1
Application Rate for first application (lbs/acre)	4.95
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	2.845163
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	6.239393
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	3.426867

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	soybean
Enter the application sceanrio	granular, 99% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	3
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

		Indicate test species below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼	Must Enter >>	
LC50 (mg/kg-diet)		▼	Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼	Must Enter >>	
NOAEC (mg/kg-diet)		▼		
Enter the Mineau et al. Scaling Factor	1.15			

Mammals

		Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼		Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼			
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8				

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**soybean**
Application scenario	**granular, 99% incorporation efficiency**
Number of applications	1
Application Rate for first application (lbs/acre)	3
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	1.724341
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	3.78145
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	2.076889

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	sugarbeet
Enter the application sceanrio	granular, 85% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	3
Enter Application Rate for first application (lbs/acre)	2.1
Enter Application Rate for second application (lbs/acre)	1.05
Enter Application Rate for third application (lbs/acre)	1.05
Enter the application interval between first and second applications (days)	30
Enter the application interval between second and third applications (days)	30
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

		Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼		Must Enter >>	
LC50 (mg/kg-diet)		▼		Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼		Must Enter >>	
NOAEC (mg/kg-diet)		▼			
Enter the Mineau et al. Scaling Factor	1.15				

Mammals

		Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼		Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼			
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8				

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**sugarbeet**
Application scenario	**granular, 85% incorporation efficiency**
Number of applications	3
Application Rate for first application (lbs/acre)	2.1
Application Rate for second application (lbs/acre)	1.05
Application Rate for third application (lbs/acre)	1.05
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	30
Application interval between second and third applications (days)	30
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	1.583699
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	3.473025
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	1.907492

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	sweet potato
Enter the application sceanrio	granular, 99% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	2.1
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

	Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼	Must Enter >>	
LC50 (mg/kg-diet)		▼	Must Enter >>	
NOAEL (mg/kg-bw)	0.1	▼	Must Enter >>	
NOAEC (mg/kg-diet)		▼		
Enter the Mineau et al. Scaling Factor	1.15			

Mammals

	Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼		Must Enter >>	
LC50 (mg/kg-diet)		rabbit ▼			
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8				

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**sweet potato**
Application scenario	**granular, 99% incorporation efficiency**
Number of applications	1
Application Rate for first application (lbs/acre)	2.1
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	1.207039
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	2.647015
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	1.453822

Input Sheet for Earthworm Fugacity Model

Model Scenario Identification

Enter the pesticide or degradate name	Aldicarb
Enter the use site	citrus
Enter the application sceanrio	granular, 85% incorporation efficiency

User Defined Fugacity Model Parameters

Enter the number of applications (Maximum of 7)	1
Enter Application Rate for first application (lbs/acre)	24.95
Enter the expected soil half-life (days)	55
Enter the pesticide octanol/water partitioning coefficient (Kow)	14
Do you wish to use the pesticide organic carbon/water partitioning coefficient (koc) or the soil water partitioning coefficient (Kd)	Koc ▼
Enter the pesticide organic carbon/ water partitioning (Koc) coefficient	6
Enter the pesticide Henry's Law Coefficient	0.0000172

Please answer the following model scenario questions

Do you wish to use the default soil organic carbon fraction of 0.02 (y/n)?	yes ▼
Do you wish to use the default soil bulk density value (1.3 g/cm3) for treated soils (y/n)?	yes ▼
Do you wish to use the default water volumetric fraction (0.3) for treated soils (y/n)?	yes ▼

User Defined Toxicity Parameters

		Indicate test species below		Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	1	mallard ▼			
LC50 (mg/kg-diet)		▼	Must Enter >>		
NOAEL (mg/kg-bw)	0.1	▼	Must Enter >>		
NOAEC (mg/kg-diet)		▼	Must Enter >>		
Enter the Mineau et al. Scaling Factor	1.15				

Mammals

		Indicate test species below	Indicate Endpoint Units Below	Optional Test Organism Body weight (g)	Optional Test Species Name
LD50 (mg/kg-bw)	0.9	rat ▼			
LC50 (mg/kg-diet)		rabbit ▼	Must Enter >>		
Reported Chronic Endpoint	0.4	rat ▼	mg/kg-bw ▼		
Estimated Chronic Diet Concentration Equivalent to Reported Chronic Daily Dose	8				

User Defined INPUTS

Chemical Name	**Aldicarb**
Use Site	**citrus**
Application scenario	**granular, 85% incorporation efficiency**
Number of applications	1
Application Rate for first application (lbs/acre)	24.95
Application Rate for second application (lbs/acre)	0
Application Rate for third application (lbs/acre)	0
Application Rate for fourth application (lbs/acre)	0
Application Rate for fifth application (lbs/acre)	0
Application Rate for sixth application (lbs/acre)	0
Application Rate for seventh application (lbs/acre)	0
Application interval between first and second applications (days)	0
Application interval between second and third applications (days)	0
Application interval between third and fourth applications (days)	0
Application interval between fourth and fifth applications (days)	0
Application interval between fifth and sixth applications (days)	0
Application interval between sixth and seventh applications (days)	0
Expected soil half-life (days)	55
Pesticide octanol/water partitioning coefficient (Kow)	14
Pesticide organic carbon/water partitioning coefficient (Koc)	6
Pesticide Henry's Law coefficient	0.0000172
Assumed Soil organic carbon fraction	0.02
Assumed Soil Density (g/cm^3)	1.3
Soil water volumetric fraction	0.3

Constants

R	Universal gas constant	8.314
T	System teperature assumed to be 298 degrees K	298
lipid	fraction of lipid in organism 0.01 (Cobb et al. 1995)	0.01
ρearthworm	earthworm density assumed 1g/cm3	1

MODEL OUTPUTS

Soil Degradation rate constant (k)	calculated assuming first order kinetics with following equation k = ln(0.5)/((half life)(-1))	0.012603
Soil pore space volumetric fraction	=1-(bulk density/partical densitiy of 2.65 mineral soils)	0.509434
Kd	If a Kd was selected on input sheet, that input is referenced here, if Koc was selected then Kd=(chemical Koc)(0.02 assumed fraction of soil organic carbon)'	0.12
Maximum Concentration in soil (Csoil mg/kg)	Csoil is the maximum concentration (mg/kg) of chemical in bulk soil. This is a chemical concentration averaged over a 15 cm soil depth was used to reflect a concentration across the earthworm occupied area of soil.	14.34077
Zearthworm	Zearthworm is the fugacity capacity of chemical in earthworms =(lipid)(Kow)(ρearthworm)/H	8.14E+03
Zsoil	Zsoil is the fugacity capacity of chemical in soil = (Kd)(ρsoil)/H	9.07E+03
Zwater	Zwater is the fugacity capacity of chemical in water = 1/H	5.81E+04
Csoil water	Csoil water is the concentration of chemical in soil water = Csoil/Kbw	31.44906
Kbw	Kbw is the bulk soil-to-water partitioning coefficient = (ρsoil)(Kd)+θ +(ε-θ)(Kaw)	0.456
Kaw	Kaw is the air-to-water partitioning coefficient = H/RT	6.94E-09
C earthworm	Concentration in whole earthworm mg/kg = [(Csoil)(Zearthworm/Zsoil)]+[(Csoil water)(Zearthworm/Zwater)]	17.27279