Appendix J. Example Individual Effect Chance Model Outputs

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	0.043		
Enter desired threshold	0.47		
Enter slope of dose-response	6.96		
z score result	-2.28219891	z is the standard normal deviate	
Probability associated with z	1.12E-02	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	8.90E+01	Calculated as 1/P	

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.1. Estimation of likelihood on individual mortality to aquatic invertebrates based on risk quotients for stoneflies (RQ=0.47) following dimethoate applications to cottonwood (highest RQ for acute exposures to aquatic invertebrates).

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	0.39		
Enter desired threshold	9.6		
Enter slope of dose-response	2		yes
z score result	1.96454247	z is the standard normal deviate	
Probability associated with z	9.75E-01	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	1.03E+00	Calculated as 1/P	

Note:Effects probability is based of default slope estimate of 4.5

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.2. Estimation of likelihood on individual mortality to terrestrial invertebrates based on risk quotients for honeybees (RQ=9.6) following dimethoate applications to herbaceous ornamentals (lowest RQ for acute exposures to terrestrial invertebrates). Lower bound of default slope (slope = 2) is used.

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	0.39		
Enter desired threshold	9.6		
Enter slope of dose-response	9		yes
z score result	8.8404411	z is the standard normal deviate	
Probability associated with z	1.00E+00	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	1.00E+00	Calculated as 1/P	

Note:Effects probability is based of default slope estimate of 4.5

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.3. Estimation of likelihood on individual mortality to terrestrial invertebrates based on lowest risk quotient for honeybees (RQ=9.6) following dimethoate applications to herbaceous ornamentals (lowest RQ for acute exposures to terrestrial invertebrates). Upper bound of default slope (slope = 9) is used.

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	358		
Enter desired threshold	0.69		
Enter slope of dose-response	4.5	**Is this a default slope estimate? Yes or No**	yes
z score result	-0.72517909	z is the standard normal deviate	
Probability associated with z	2.34E-01	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	4.27E+00	Calculated as 1/P	

Note:Effects probability is based of default slope estimate of 4.5

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.4. Estimation of likelihood on individual mortality to terrestrial mammals based on highest risk quotient for mammals (RQ=0.69) following dimethoate applications to non-cropland areas adjacent to vineyards.

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	5.4		
Enter desired threshold	2.06		
Enter slope of dose-response	2.54		no
z score result	0.79722274	z is the standard normal deviate	
Probability associated with z	7.87E-01	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	1.27E+00	Calculated as 1/P	

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.5. Estimation of likelihood on individual mortality to terrestrial amphibians (prey) based on highest acute dose-based risk quotient for this taxa (RQ=2.06) following dimethoate applications to non-cropland areas adjacent to vineyards.

IEC V1.1 - Individual Effect Chance Model Version 1.1

Predictor of chance of individual effect using probit dose-response curve slope and median lethal estimate

Enter LC_{50} or LD_{50}	332		
Enter desired threshold	0.96		
Enter slope of dose-response	10.1		no
z score result	-0.17906055	z is the standard normal deviate	
Probability associated with z	4.29E-01	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16	
Chance of individual effect, **~1 in . . .**	2.33E+00	Calculated as 1/P	

This is based on the formula $\log LC_k = \log LC_{50} + (z/b)$

where: z is the standard normal deviate and b equals slope

Works for dose-response models based on a probit assumption (i.e. log normal distribution of individual sensitivity)

Note: Excel cannot calculate probabilities for extremes in z scores beyond -8.2
Probability is defaulted to 10^{-16}, which is the limit of Excel reporting.

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Figure J.6. Estimation of likelihood on individual mortality to terrestrial amphibians (prey) based on highest acute dietary-based risk quotient for this taxa (RQ=0.96) following dimethoate applications to non-cropland areas adjacent to vineyards.