

Appendix K. Estimation of the Likelihood of Individual Effects to the California Red-Legged Frog from the Use of Carbaryl

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	0.22	
Enter desired threshold	12	
Enter slope of dose-response	4.62	
z score result	4.98581736	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
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. Ed Odenkirchen, June 22, 2004 EFED/OPP/USEPA		

Figure K1. Estimation of likelihood on individual mortality to the aquatic phase CRLF based on risk quotients for freshwater fish (RQ=12) following carbaryl applications to rice.

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	0.0017	
Enter desired threshold	1517	
Enter slope of dose-response	4.3	
z score result	13.678238	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
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. Ed Odenkirchen, June 22, 2004 EFED/OPP/USEPA		

Figure K2. Estimation of likelihood on individual mortality to aquatic invertebrates based on risk quotients for stoneflies (RQ=1517) following carbaryl applications to rice.

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	8.6	
Enter desired threshold	2	
Enter slope of dose-response	4.5	Is this a default slope estimate? Yes or No
z score result	1.35463498	z is the standard normal deviate
Probability associated with z	9.12E-01	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16
Chance of individual effect, ~1 in . . .	1.10E+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 K3. Estimation of likelihood on individual mortality to terrestrial invertebrates based on lowest risk quotients for honey bees (RQ=2).

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	301	
Enter desired threshold	0.35	
Enter slope of dose-response	4.5	Is this a default slope estimate? Yes or No yes
z score result	-2.0516938	z is the standard normal deviate
Probability associated with z	2.01E-02	Uses Excel NORMDIST function to estimate P with lower reporting limit of 1.0 E-16
Chance of individual effect, ~1 in . . .	4.98E+01	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 K4. Estimation of likelihood on individual mortality to terrestrial mammals based on lowest risk quotients for rats (RQ = 0.35).