Appendix O. Estimation of the Likelihood of Individual Effects to the California Delta Smelt 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.

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Figure O1. 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.

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Figure O2. 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 $logLC_k = logLC_{50} + (z/b)$		
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 O3.   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 $logLC_k = logLC_{50} + (z/b)$		
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 O4. Estimation of likelihood on individual mortality to terrestrial mammals based on lowest risk quotients for rats (RQ = 0.35).