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**EXTRAPOLATION FACTORS TO BE USED IN CASE OF
SMALL SAMPLES OF TOXICITY DATA (WITH A SPECIAL
FOCUS ON LD50 VALUES FOR BIRDS AND MAMMALS)**

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SUMMARY

For the evaluation of the possible environmental hazard/risk for birds and mammals of the use of an agricultural pesticide normally the lowest available LD_{50} is used. Especially in the case of only one or two LD_{50} s an underestimation of the potential hazard/risk can be a real possibility, because one can never be sure that these tested animals represent the most sensitive species.

An approach towards extrapolating laboratory toxicity data to acceptable concentrations in the field is to estimate the HC_5 , the Hazardous Concentrations for 5% of the species (Kooijman 1987, Van Straalen & Denneman 1989, Wagner & Løkke 1990 and Aldenberg & Slob 1994). Although this method formally works for $n=2$ to infinity, in practice it is applied for $n=4$ to infinity, only. However, when only one NOEC is available, the method cannot be applied. In this report, we propose to estimate an analogous HD_5 (Hazardous Dose) for LD_{50} data and to estimate the standard deviation from other LD_{50} data sets than the toxic substance at hand in case of small samples (especially those smaller than 4). The safety factors to be applied to the geometric mean of the LD_{50} s for a median estimate of the HD_5 of birds and mammals are 5.7 and 3.8, respectively. The SFs for the 95% confidence limit of the HD_5 of birds for $n= 1, 2$ and 3 are 33, 20 and 16, respectively. For mammals these SFs are 15, 10 and 8.

SAMENVATTING

Voor de inschatting van het mogelijke risico voor vogels en zoogdieren bij het gebruik van gewasbeschermingsmiddelen in de landbouw wordt in het algemeen uitgegaan van de laagste beschikbare LD_{50} . Speciaal in het geval van slechts 1 of 2 LD_{50} -waarde is de kans op onderschatting van het mogelijke risico niet denkbeeldig, omdat men nooit zeker kan zijn of de geteste soorten bij benadering een van de gevoelige soorten vertegenwoordigen.

Een methode om laboratoriumgegevens te extrapoleren naar een acceptabele concentratie voor een risicoschatting is de HC_5 -waarde, de Hazardous Concentration voor 5% van de soorten, te berekenen (Kooijman 1987, Van Straalen & Denneman 1989, Wagner & Løkke 1990 en Aldenberg & Slob 1994). Deze methode berekent uit een set van n laboratorium toxiciteitsgegevens het gemiddelde en de standaard afwijking van de log getransformeerde NOEC concentraties. Alhoewel deze methode in principe geschikt is voor $n = 2$ tot oneindig, wordt de methode in de praktijk toegepast voor $n = 4$ tot oneindig. De methode kan echter in geen geval gebruikt worden indien er slechts één NOEC voorhanden is. In dit rapport stellen we voor een HD_5 -waarde (Hazardous Dose) uit LD_{50} 's te berekenen op dezelfde manier als een HC_5 -waarde uit NOEC's. Daarnaast schatten we een standaard afwijking uit LD_{50} -datasets met informatie voor tenminste 4 soorten per stof, die gebruikt kan worden bij stoffen waarvoor minder informatie beschikbaar is. De veiligheidsfactoren voor de $HD_5(50)$ waarden voor LD_{50} 's van vogels en zoogdieren zijn 5,7 en 3,8. De $HD_5(95)$ voor vogels voor $n = 1, 2$ en 3, zijn respectievelijk 33, 20 en 16 en voor zoogdieren 15, 10 en 8.

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1. INTRODUCTION

The purpose of this report (the third one of a series in which the methodology for hazard/risk assessment of the use of pesticides in agriculture for birds and mammals will be presented) is to give a method for calculating a "safe" LD_{50} depending on the number of available data which can be used for acute hazard/risk assessment.

In part 1 of this series (Luttik 1992) a general introduction to the methodology for hazard/risk assessment for birds and mammals is presented and a synopsis of the decision scheme is given. Part 2 (Luttik 1993) describes a method of taking into account the avoidance behaviour in the evaluation of LC_{50} studies and provides a concept for the use of food avoidance behaviour in the environmental hazard/risk assessment of pesticides used in agriculture for birds.

The evaluation of the possible environmental hazard for birds and mammals arising from the use of an agricultural pesticide is usually based on the lowest available LD_{50} . Especially when one or two LD_{50} s are available, an underestimation of the potential hazard is a real possibility, because one can almost be sure that these tested animals do not represent the most sensitive species.

The general approach towards extrapolating laboratory toxicity data to an acceptable concentration in the field is to estimate the HC_5 , the Hazardous Concentrations for 5% of the species (Kooijman 1987, Van Straalen & Denneman 1989, Wagner & Løkke 1990 and Aldenberg & Slob 1994). Here follows a summary of the HC_5 approach.

One takes the logarithm of a batch of n laboratory toxicity data (NOEC):

$$x_i = \ln(NOEC_i)$$

The log-transformed data are supposed to derive from a symmetric logistic distribution. In order to estimate the 5th percentile of this distribution (i.e. the $\ln(HC_5)$), one calculates the average and (sample) standard deviation:

$$\bar{x} = \sum x_i / n$$

$$s_n = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

Extrapolation then amounts to:

$$\ln(HC_5) = \bar{x} - k_n \cdot s_n$$

so that

$$HC_5 = e^{\bar{x} - k_n \cdot s_n}$$

Extrapolation factors k_n have been tabulated for the logistic statistical distribution (Aldenbergh & Slob 1993) and the normal distribution (Wagner & Løkke 1990). There are extrapolation factors for median estimates of the HC_5 and for one-sided 95% left confidence limits of the HC_5 .

Although this procedure formally works for $n=2, 3, \dots$, in practice the method is applied for $n=4, 5, \dots$, only. For $n=2$ or 3 , the extrapolation factors are large, especially in the case of the left confidence limit, to account for the uncertainty due to estimating mean and standard deviation from such a small sample size. When only one NOEC is available, the method cannot be applied at all.

In this report, we transfer the HC_5 methodology for NOECs to LD_{50} s of birds and mammals and introduce a HD_5 analogous to the HC_5 for these data.

Second, we will explicitly address the problem of very small sample sizes, especially those smaller than 4 and including $n=1$. This can be done by using information on the standard deviation of the species toxicity distributions for other toxic substances for which data are available.

2. METHODS

2.1 A pooled standard deviation from other data sets

In this paragraph, we are going to estimate a pooled standard deviation from m $\ln(LD_{50})$ data sets for m different toxic substances of respective sizes n_1, n_2, \dots, n_m . All LD_{50} s should be in the same unit, e.g. mg/kg BW (Body Weight).

The first step is to investigate whether the sample standard deviations s_{ni} for several different toxicants are more or less independent from the means of the species $\ln(\text{LD}_{50})$ distributions. This is illustrated in Figs. 1 and 2. We may reasonably assume that the respective standard deviations are independent of the respective means.

An estimate of the 'generic' standard deviation to be used for small sample sizes of other toxicants can be calculated through the pooled estimate:

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2 + \sum (y_i - \bar{y})^2 + \dots + \sum (w_i - \bar{w})^2}{n_1 + n_2 + \dots + n_m - m}}$$

where x, y, \dots, w are the m respective $\ln(\text{LD}_{50})$ sets and s_p stands for s-pooled. Note that with one toxic substance, i.e. $m=1$, the former one-sample standard deviation estimate is obtained.

From now on we assume that s_p is a robust estimate of standard deviation (the generic standard deviation of species sensitivities), to be used when nothing is known about the variation in species sensitivity for the toxic substance under study, i.e.:

$$\sigma = s_p$$

2.2 Extrapolation with known standard deviation

Suppose we have a sample of n $\ln(\text{LD}_{50})$ data. Now n may be small, for example below 4, including the case $n=1$, and the standard deviation is given through the above estimate (s_p). Since the average of samples from a normal distribution is itself normally distributed, the left (5% one-sided) confidence limit for the mean of a normally distributed species sensitivity distribution for this substance is:

$$\mu_{95} = \bar{x} - 1.64 * \frac{\sigma}{\sqrt{n}}$$

The factor 1.64 is the Z-value of the standard normal distribution at the 5th percentile. This left confidence limit is taken as the worst case estimate of the

mean of the species sensitivity distribution. In the case $n=1$ the mean of the sample is equal to the single $\ln(LD_{50})$ data point.

A median estimate of the mean of the sensitivity distribution is:

$$\mu_{50} = \bar{x}$$

Sample averages of samples from the logistic distribution are approximately normally distributed, but since the logistic and normal distributions are quite similar the same formulae will be used here as estimates of the mean of logistic species sensitivity distributions.

Continuing with the logistic, estimates analogous to the $\ln(HC_5)$, but now for the $\ln(LD_{50})$ distributions, are called $\ln(HD_5)$, Hazardous Dose for 5% of the species lethal dose distribution:

$$\ln(HD_5)_{95} = \mu_{95} - 1.62 * \sigma$$

for the left confidence limit and

$$\ln(HD_5)_{50} = \mu_{50} - 1.62 * \sigma$$

for the median estimate. Here the extrapolation factor to find the 5th percentile of the logistic distribution with given standard deviation is the logistic extrapolation factor for a known standard deviation: $k = 1.62$ (Aldenberg and Slob, 1993, Table 3).

The estimate of the $\ln HD_5$ after substitution is:

$$\ln(HD_5)_{95} = \bar{x} - (1.62 + \frac{1.64}{\sqrt{n}}) * \sigma$$

and

$$\ln(HD_5)_{50} = \bar{x} - 1.62 * \sigma$$

The final answer for the HD_5 then is:

$$(HD_5)_{95} = e^{\bar{x} - (1.62 + \frac{1.64}{\sqrt{n}}) * \sigma}$$

and

The new extrapolation factors are:

$$(HD_5)_{50} = e^{\bar{x} - 1.62 \cdot \sigma}$$

$$(k_n)_{95} = 1.62 + \frac{1.64}{\sqrt{n}}$$

and

$$(k_n)_{50} = 1.62$$

that can be tabulated for small n , and compared to those of Table 3 in Aldenberg and Slob (1993). The respective safety factors are:

$$SF_{95} = e^{(1.62 + \frac{1.64}{\sqrt{n}}) \cdot \sigma}$$

and

$$SF_{50} = e^{1.62 \cdot \sigma}$$

where SF is the safety factor to be applied to the geometric mean of the original concentrations. This safety factor can be tabulated for known standard deviations.

2.3 Toxicity data

For the collection of acute oral toxicity data (LD_{50}) for birds and mammals the literature present at the Toxicology Advisory Centre of the National Institute of Public Health and Environment Protection were used.

The LD_{50} values from review articles and handbooks were used as such, because acute oral studies have been carried out already for a long time and are standardized to a great extent. Only when strong indications were present about the unreliability of a study, these data were not accepted.

In some cases it was not clear if the presented data were separate data or a range (e.g. 10-40 mg/kg BW). In this case the data were treated as separate single values.

The values were prepared in the following way for the extrapolation method:

- if more than one LD_{50} value was available for a species a geometric mean value was calculated,

- if in a set of available LD₅₀s for a certain species a greater or lower than value was present, this value was not used in case the value was inside the range of values and was used as such in case the value was outside the range,
- if in a set of available LD₅₀s for a compound for a particular species only a greater or lower than value was present, this value was only used as such in the case this value was outside the range of all the other values.

Only compounds with data on 4 or more different species were used for this research. All raw data on the selected compounds are presented in the appendix.

3. RESULTS

For birds 55 compounds were found with data on 4 or more species (up to 34, see Appendix A and Table 4) and for mammals 69 compounds with data on 4 or more species (up to 14, see Appendix B and Table 5). With these data the standard deviations of the log transformed LD₅₀s for each compound can be calculated. The results of these calculations are presented in Figure 1 for the birds and in Figure 2 for the mammals. The S_p value for birds is 1.071 and for mammals is 0.829 (lines in Figures). With these S_p values safety factors can be calculated (Table 1) in the case one has only 1, 2, 3 or more LD₅₀ values (different species).

Table 1 Safety factors to be used for the hazard/risk assessment based on LD₅₀s for birds and mammals (median estimates and one-sided left confidence limits).

Number of LD ₅₀ s	Birds		Mammals	
	HD _s (50%)	HD _s (95%)	HD _s (50%)	HD _s (95%)
1	5.7	32.9	3.8	14.9
2	5.7	19.6	3.8	10.0
3	5.7	15.6	3.8	8.4
4	5.7	13.7	3.8	7.6
5	5.7	12.4	3.8	7.0
6	5.7	11.6	3.8	6.7
7	5.7	11.0	3.8	6.4
8	5.7	10.6	3.8	6.2
9	5.7	10.2	3.8	6.0
10	5.7	9.9	3.8	5.9

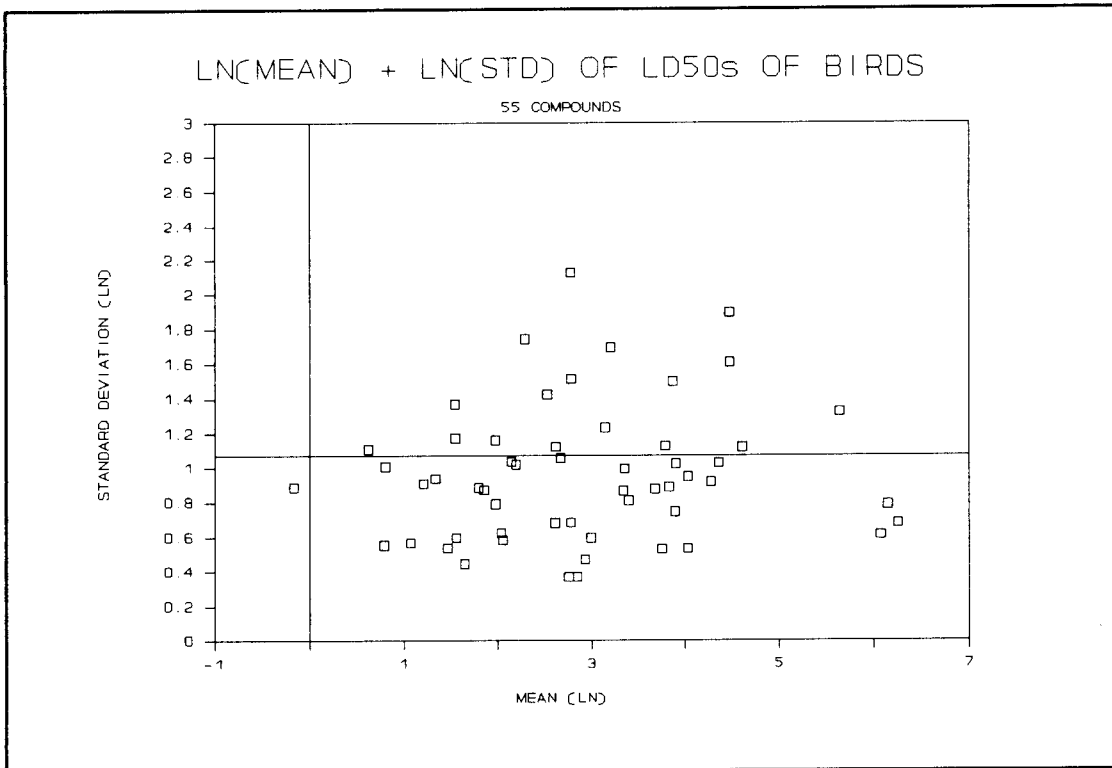


Figure 1 Standard deviations of LD₅₀s for 55 compounds for birds (horizontal line is s-pooled value).

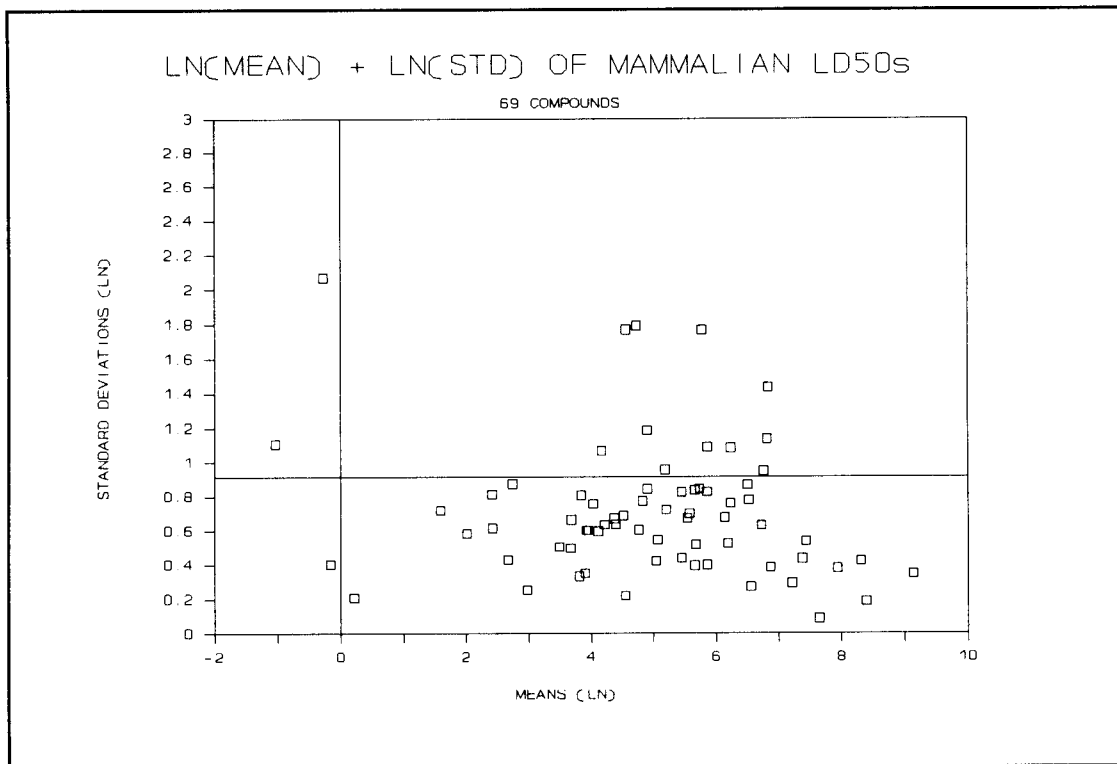


Figure 2 Standard deviations of LD₅₀s for 69 compounds for mammals (horizontal line is s-pooled value).

In Table 2 the extrapolation constants of this method are tabulated for n together with those of Table 3 in Aldenberg and Slob (1993). The extrapolation constants for the Hazardous Dose are less severe than those for the Hazardous Concentration, because in the latter case the standard deviation is estimated for the sample itself while in the former case the standard deviation is calculated from an external data set, that can be considered as a fixed value. But for large samples the extrapolation constants are the same (i.e. 1.62).

One of the premises when carrying out the extrapolation method is that the distribution of the input data ought to be a logistic distribution. This was tested with the goodness-of-fit test of the E_TX program of Aldenberg (1993) which is based on the Kolmogorov-Smirnov test statistics according to D'Agostino & Stephens (1986).

Table 2 Extrapolation constants for the calculation of one-sided left confidence limits (95%) for the logarithmic Hazardous Concentration (HC) and Hazardous Dose (HD) for 5% of the species on the basis of the logistic distribution.

Sample size	HC ₅ (50)	HD ₅ (50)	HC ₅ (95)	HD ₅ (95)
1	---	1.62	---	3.26
2	2.49	1.62	27.70	2.78
3	2.05	1.62	8.14	2.57
4	1.92	1.62	5.49	2.44
5	1.85	1.62	4.47	2.35
6	1.81	1.62	3.93	2.29
7	1.78	1.62	3.59	2.24
8	1.76	1.62	3.37	2.20
9	1.75	1.62	3.19	2.17
10	1.73	1.62	3.06	2.14
20	1.68	1.62	2.49	1.99
30	1.66	1.62	2.28	1.92
50	1.65	1.62	2.10	1.85
100	1.63	1.62	1.95	1.78
200	1.63	1.62	1.85	1.74
500	1.63	1.62	1.76	1.69
∞	1.62	1.62	1.62	1.62

The results of these goodness-of-fit tests show (Table 3) that at the 5% significance level in 84% and 93% of the cases, for respectively birds and mammals, the hypothesis that the data are derived from the logistic distribution is not rejected. These results support the assumption that data on sensitivity of birds or mammals for a certain compound come from a logistic distribution.

Table 3 Results of goodness-of-fit tests on the data sets for birds and mammals (5, 2.5 and 1% are the significance levels at which the data could be derived from a logistic distribution).

	5%	2.5%	1%
Birds	83.6%	92.7%	92.7
Mammals	92.9%	94.3%	95.7%

In Table 4 and 5 the median estimates of the HD_5 ($HD_5(50)$) calculated with the Aldenberg and Slob method are given for the compounds. Suppose that the $HD_5(50)$ values represent the most sensitive species tested and the case that we have only one LD_{50} available for the risk assessment that happens to be the LD_{50} of the test with the most insensitive species or strain (i.e. the highest available LD_{50}) then one can calculate an underestimation factor, i.e. the ratio between the highest available LD_{50} and the $HD_5(50)$ value as estimated from the sample (U factor in Table 4 and 5). This is a kind of worst case estimate. The U factor range lies between 5 and 1029 (mean is 146) for birds and between 2 and 2778 (mean is 76) for mammals. These results affirm the fact that by carrying out a hazard/risk assessment based on only one available LD_{50} the underestimation of the real risk can be very high.

By using the safety factors for the median estimate of the HD_5 for $n=1$ of 5.7 and 3.8 for birds and mammals for the LD_{50} s of the tests with the most insensitive species or strain, these ranges of the U factor will be 0.8 to 181 (mean 27) for birds and 0.5 to 725 (mean 20) for mammals. In this case 7% and 19% of the extrapolated values will be lower than the $HD_5(50)$ s for birds and mammals, respectively.

By using the safety factors for 95% confidence limit of the HD_5 for $n=1$ of 33 and 15 for birds and mammals for the LD_{50} s of the tests with the most insensitive species or strain, these ranges of the U factor will be 0.1 to 31 (mean 4.7) for birds and 0.1 to 186 (mean 5.1) for mammals. In this case 51% and 62% of the extrapolated values will be lower than the $HD_5(50)$ s for birds and mammals, respectively.

Table 4 HD₅(50) values for birds based on LD₅₀ values, the significance levels at which the data could be derived from a logistic distribution, the sample size (number of species) and the factor of the highest available test result divided by the HD₅(50).

Compound	LD ₅₀ (mg/kg BW) HD ₅ (50)	Sign. level	n	U factor
3-chloro-p-toluidine	0.41	5%	10	1029
4-aminopyridine	1.76	5%	34	8
Aldicarb	0.75	5%	11	203
Aldrin	2.75	5%	11	187
Aminocarb	9.12	5%	4	23
Azinphos-methyl	7.71	2.5%	6	18
Camphechlor	13.3	5%	12	44
Carbofuran	0.29	5%	19	134
Carbophenothion	3.42	5%	8	92
Chlordane	2.31	5%	4	519
Chlorfenvinphos	5.16	5%	13	46
Chlormequat	134	5%	4	7
Chlorpyrifos	7.57	2.5%	17	21
Demeton	1.43	5%	12	> 27
Diazinon	0.98	5%	12	322
Dichlofenthion	13.6	2.5%	8	591
Dichlorvos	8.23	5%	9	5
Dicrotophos	1.11	5%	14	9
Dieldrin	6.37	5%	13	59
Dimethoate	6.03	5%	7	25
Dinoseb	4.54	--	5	6
Disulfoton	1.31	5%	6	> 24
Endosulfan	8.31	--	4	> 39
Endrin	0.84	5%	11	26
EPN	1.09	-	14	247
Ethoprophos	2.57	5%	9	24
Fenitrothion	5.45	5%	11	464
Fensulfothion	0.18	5%	13	211
Fenthion	1.37	5%	22	29

Compound	LD ₅₀ (mg/kg BW) HD ₅ (50)	Sign. level	n	U factor
Fonofos	6.99	5%	8	18
Gophacide	1.20	5%	7	268
Heptachlor	24.2	5%	5	83
Isofenphos	3.66	5%	4	9
Malathion	109	5%	5	14
Methiocarb	1.66	5%	31	>714
Methomyl	9.01	5%	9	5
Methyl parathion	2.77	5%	7	22
Mevinphos	0.70	5%	11	34
Mexacarbate	1.81	5%	9	28
Monocrotophos	0.41	5%	19	59
Paraquat	141	2.5%	4	29
Parathion	0.47	5%	19	340
Phorate	0.59	2.5%	8	36
Phosphamidon	1.73	5%	12	7
Pirimicarb	7.93	5%	6	7
Propoxur	2.46	5%	23	305
Sodium monofluoro- acetate	2.41	5%	10	5
Starlicide	0.55	-	30	1102
Strychnine	1.90	5%	8	59
Temephos	14.8	5%	11	> 68
Thallium sulphate	15.4	5%	4	8
Trichlorfon	22.0	5%	9	6
Trichloronat	1.13	5%	8	885
Trimethacarb	13.0	5%	7	13
Zinc phosphide	8.08	5%	6	29

Legend of Table 4 and 5:

HD₅(50) = the median estimates of the Hazardous Concentrations for 5% of the species (HD₅).

Sign.level = significance levels whether the hypothesis that the data derive from a logistic distribution should be rejected, or not.

n = number of species tested

U factor = underestimation factor (highest available test result / HD₅(50)).

Table 5 HD₅(50) values for mammals based on LD₅₀ values, the significance levels at which the data could be derived from a logistic distribution, the sample size (number of species) and the factor of the highest available test result divided by the HD₅(50).

Compound	LD ₅₀ (mg/kg BW) HD ₅ (50)	Sign. level	n	U factor
1,1,1-Trichloroethane	4767	5%	4	3
1,2-Dibromoethane	26.7	5%	4	16
2,4-D	185	5%	5	6
Acephate	118	5%	4	17
Aldicarb	0.39	5%	4	3
Aldrin	25.9	5%	5	4
Atrazine	139	5%	4	29
Barban	153	5%	4	10
Bendiocarb	17.1	5%	5	9
Bentazone	416	5%	4	3
Brodifacoum	0.018	-	6	2778
Bromophos-ethyl	13.8	5%	4	40
Camphechlor	24.3	5%	9	15
Carbaryl	141	5%	8	14
Carbofuran	2.60	5%	6	13
Carbophenothrion	3.65	5%	4	342
Chloralose	61.2	5%	4	16
Chlordane	61.4	5%	5	16
Chlordimeform	70.1	5%	4	9
Chloridazon	600	5%	4	6
Chlorpyrifos	43.6	5%	4	46
Chlorpyrifos-methyl	1765	5%	4	2
Dazomet	108	5%	4	6
Diazinon	57.7	5%	5	8
Dichlobenil	103	5%	4	44
Dichlorophen	693	5%	4	4
Dieldrin	27.5	5%	14	8
Dimethoate	51.3	5%	9	12
Dinocap	10.9	5%	4	183
Diquat	30.8	5%	6	14
DNOC	14.8	5%	8	14

Compound	LD ₅₀ (mg/kg BW) HD ₅ (50)	Sign. level	n	U factor
Edifenphos	135	5%	4	5
Endrin	3.46	5%	4	13
EPN	15.1	5%	4	6
EPTC	59.5	-	4	53
Ethiofencarb	70.6	5%	5	7
Fenamidophos	3.2	5%	6	31
Fenthion	30.7	5%	5	33
Fentin-acetate	8.3	5%	4	59
Ferrous sulfate	265	5%	6	19
Formothion	101	5%	4	5
Heptachlor	62.9	5%	5	3
Hexachlorobenzene	1354	5%	4	3
Isobenzan	1.37	5%	7	15
Lindane	26.4	5%	4	21
Malathion	127	5%	4	98
Mecarbam	16.6	5%	5	6
Metaldehyde	168	5%	5	7
Methamidophos	12.4	-	6	3
Methidathion	10.8	5%	6	19
Methiocarb	11.1	5%	4	12
Methomyl	6.35	1%	4	8
Omethoate	24.3	5%	5	4
Oxydemeton-methyl	20.0	5%	4	6
Paraquat	21.8	5%	10	12
Parathion	2.68	5%	8	21
PCP	85.0	5%	6	4
Phenthoate	74.6	5%	6	63
Pirimiphos methyl	797	5%	6	3
Pyriminil	4.56	5%	12	877
Silvex	460	5%	4	3
Sodium-fluoroacetate	0.046	5%	5	54
TCA	3143	5%	5	2
Thiodicarb	50.5	5%	5	11
Thiometon	36.8	5%	4	7
Thiophanate-methyl	1854	5%	5	4
Thiram	69.2	2.5%	5	58
Trichlorfon	78.3	5%	6	17
Trichloronat	12.9	5%	5	8

4. DISCUSSION AND RECOMMENDATIONS

In this report a method is described for calculating safety factors to be used in case of small samples of LD₅₀s. But the method is generally applicable and can be used for example for small samples of NOECs and LC50 values.

In addition safety factors can be calculated for different chemical families. For birds the ln standard deviations of the LD50s for carbamates and organophosphorus compounds are 0.95 and 1.01, respectively. These ln standard deviations are a little bit lower than the ln standard deviation of 1.07 of the total sets of compounds. For mammals the ln standard deviations for carbamates and organophosphorus compounds are 0.69 and 0.78, respectively. They are also a little bit lower than the ln standard deviation of 0.83 of the total set of compounds.

The safety factor for $n=1$ based on the HD₅ for birds is approximately 1.5 to 2 times as big as the one for mammals (5.7 versus 3.8 and 33 versus 15). The difference between these safety factors is a reflection of the difference between the pooled ln standard deviations for birds and mammals; 1.071 and 0.829, respectively. The following question can be raised: are the standard deviations for birds really greater than the standard deviations for mammals. In contrast with the available data for birds the information on mammals is to a great extent based on representatives of only two orders: Rodents and Lagomorphs, 56% and 17%, respectively). But the pooled ln standard deviation for the compounds with less than 60% representatives of the Rodents and Lagomorphs is even smaller than the pooled ln standard deviation for the total data set. This result leads to the conclusion that the difference between the pooled ln standard deviations is a real difference.

It is recommended to use the safety factors of the one-sided 95% confidence limit of the HD₅ based on the pooled ln standard deviations in case of only 1, 2 and 3 available LD₅₀s and for $n \geq 4$ the Aldenberg and Slob method.

It is proposed to use the more conservative method (95% confidence limit) for the extrapolation, because the pooled ln standard deviation that is used is not a worse case value.

When there are indications that the estimated standard deviation (according to Aldenberg and Slob) for data sets with $n \geq 4$ could be unreliable, it should be considered to use the safety factors based on the pooled ln standard deviation.

In case there are indications that the available LD₅₀ could be derived from a test with a sensitive species it should be considered to use the safety factor for the median estimate of the HD₅.

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Appendices

- A) Toxicity data for birds
- B) Toxicity data for mamals
- C) References

Appendix A LD₅₀ toxicity data for birds (mg/kg BW)

Compound	Species	LD ₅₀	Reference
3-chloro-p-toluidine	Agelaius phoeniceus	1	Schafer et al., 1983
		2.37	Schafer et al., 1983
	Agelaius tricolor	2.37	Schafer et al., 1983
	Anas platyrhynchos	42.2	Schafer et al., 1983
	Columba livia	13.3	Schafer et al., 1983
	Coturnix coturnix	1	Schafer et al., 1983
	Falco sparverius	422	Schafer et al., 1983
	Melopsit. undulatus	31.6	Schafer et al., 1983
	Passer domesticus	316	Schafer et al., 1983
	Quelea quelea	31.6	Schafer et al., 1983
		42.2	Schafer et al., 1983
	Sturnus vulgaris	3.16	Schafer et al., 1983
		4.22	Schafer et al., 1983
	Turdus migratorius	< 3.16	Schafer et al., 1983
4-aminopyridine	Agelaius phoeniceus	1.78	Schafer et al., 1983
		8.5	Schafer et al., 1983
	Agelaius tricolor	4.22	Schafer et al., 1983
	Anas platyrhynchos	4.22	Schafer et al., 1983
	Aratinga canicularis	12	Schafer et al., 1983
	Aratinga pertinax	10	Schafer et al., 1983
	Carpodaxus mexicanus	5.62	Schafer et al., 1983
	Cassidix major	2.37	Schafer et al., 1983
		3.16	Schafer et al., 1983
	Columba livia	7.5	Schafer et al., 1983
	Columbina talpacoti	< 25	Schafer et al., 1983
	Corvus brachyrhynchos	2.37	Schafer et al., 1983
	Coturnix coturnix	7.65	Schafer et al., 1983
		8.05	Schafer et al., 1983
	Cyanocorax yncas	< 10	Schafer et al., 1983
	Euplectes orix	1.78	Schafer et al., 1983
		2.37	Schafer et al., 1983
	Falco sparverius	5.62	Schafer et al., 1983
	Larus delawarensis	5.62	Schafer et al., 1983
	Melopsit. undulatus	5.62	Schafer et al., 1983
	Molothrus ater	4.22	Schafer et al., 1983
	Molothrus bonariensis	< 1	Schafer et al., 1983
	Myiopsitta monachus	12	Schafer et al., 1983
	Passer domesticus	3.8	Schafer et al., 1983
		7.5	Schafer et al., 1983
	Passer luteus	2.37	Schafer et al., 1983
		2.74	Schafer et al., 1983
Phasianus colchicus	5.62	Schafer et al., 1983	
	7.5	Schafer et al., 1983	
Pica nuttalli	2.37	Schafer et al., 1983	
Pica pica	2.37	Schafer et al., 1983	
Ploceus cucullatus	1.78	Schafer et al., 1983	

		4.22	Schafer et al., 1983
	<i>Ploceus taeniopterus</i>	4.22	Schafer et al., 1983
		4.87	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	2.37	Schafer et al., 1983
	<i>Scardafel. squammata</i>	> 4	Schafer et al., 1983
	<i>Spiza americana</i>	10	Schafer et al., 1983
	<i>Sporophila minuta</i>	< 7.2	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	4.9	Schafer et al., 1983
	<i>Tangavius aeneus</i>	3.16	Schafer et al., 1983
	<i>Turdus migratorius</i>	4.22	Schafer et al., 1983
	<i>Volatia jacarina</i>	10	Schafer et al., 1983
	<i>Zenaida asiatica</i>	13.3	Schafer et al., 1983
	<i>Zenaida macroura</i>	8.1	Schafer et al., 1983
		8.5	Schafer et al., 1983
	<i>Zonotrichia atricapilla</i>	5.62	Schafer et al., 1983
	<i>Zonotrichia leucophrys</i>	5.62	Schafer et al., 1983
Aldicarb	<i>Agelaius phoeniceus</i>	1.78	Schafer et al., 1983
		1.9	Balcomb et al., 1984
	<i>Anas platyrhynchos</i>	3.4	Hudson et al., 1972
		1.92	Hudson et al., 1972
		3.6	Hudson et al., 1972
		6.73	Hudson et al., 1972
		4.44	Hudson et al., 1972
	<i>Callipepla californica</i>	2.58	Hudson et al., 1984
		4.67	Hudson et al., 1984
	<i>Colinus virginianus</i>	2.0	Hill & Camardese, 1984
		2.5	Hill & Camardese, 1984
		32.9	Archives RIVM/ACT
	<i>Columba livia</i>	3.16	Schafer et al., 1983
	<i>Coturnix coturnix</i>	4.22	Schafer et al., 1983
	<i>Gallus gallus</i>	9	Bunyan & Jennings, 1976
	<i>Passer domesticus</i>	0.75	Schafer et al., 1983
		3.8	Balcomb et al., 1984
	<i>Phasianus colchicus</i>	152	Bunyan & Jennings, 1976
		5.34	Hudson et al., 1972
	<i>Quiscalus quiscula</i>	0.75	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	4.22	Schafer et al., 1983
Aldrin	<i>Agelaius phoeniceus</i>	23.7	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	520	Hudson et al., 1984
	<i>Colinus virginianus</i>	6.59	Hudson et al., 1984
	<i>Columba livia</i>	56.2	Schafer et al., 1983
		55	Tucker & Crabtree, 1970
	<i>Coturnix coturnix</i>	42.2	Schafer et al., 1983
	<i>Dendrocygna bicolor</i>	29.2	Hudson et al., 1984
		8.77	Hudson et al., 1984
	<i>Gallus gallus</i>	25.5	Tucker & Crabtree, 1970
	<i>Passer domesticus</i>	13.3	Schafer et al., 1983
		7.2	Schafer, 1972
		14.5	Bakre & Rajasekaran, 1989
	<i>Phasianus colchicus</i>	16.8	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	7.5	Schafer et al., 1983

	<i>Sturnus vulgaris</i>	5	Schafer et al., 1983
		23.7	Schafer et al., 1983
		7.2	Schafer, 1972
Aminocarb	<i>Agelaius phoeniceus</i>	50	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	22.5	Hudson et al., 1984
	<i>Phasianus colchicus</i>	42.2	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	> 100	Schafer et al., 1983
		212	Schafer et al., 1983
Azinphos-methyl	<i>Agelaius phoeniceus</i>	8	Schafer et al., 1983
		8.5	Schafer et al., 1983
	<i>Alectoris chukar</i>	74.9	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	136	Hudson et al., 1984
	<i>Colinus virginianus</i>	60	Hudson et al., 1984
		120	Hudson et al., 1984
	<i>Phasianus colchicus</i>	74.9	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	27	Schafer et al., 1983
Camphechlor	<i>Anas platyrhynchos</i>	30.8	Hudson et al., 1984
		70.7	Hudson et al., 1984
	<i>Callipepla californica</i>	23.7	Hudson et al., 1984
	<i>Colinus virginianus</i>	85.5	Hudson et al., 1984
	<i>Columba livia</i>	200	Maier-Bode, 1965
		250	Maier-Bode, 1965
	<i>Coturnix coturnix</i>	80	Maier-Bode, 1965
		100	Maier-Bode, 1965
	<i>Grus canadensis</i>	100	Hudson et al., 1984
		316	Hudson et al., 1984
	<i>Dendrocygna bicolor</i>	99	Hudson et al., 1984
	<i>Eromophila alpestris</i>	581	Hudson et al., 1984
	<i>Gallus gallus</i>	139	Sherman & Ross, 1961
	<i>Perdix perdix</i>	23.7	Hudson et al., 1984
	<i>Phasianus colchicus</i>	40	Hudson et al., 1984
	<i>Tympan. phasianellus</i>	19.9	Hudson et al., 1984
Carbofuran	<i>Agelaius phoeniceus</i>	0.422	Schafer et al., 1983
		2.3	Balcomb et al., 1984
	<i>Anas platyrhynchos</i>	0.28	Rand, 1989
		0.48	Rand, 1989
		0.53	Rand, 1989
		0.74	Rand, 1989
		0.41	Rand, 1989
		0.64	Rand, 1989
		0.32	Rand, 1989
		0.50	Rand, 1989
		0.33	Rand, 1989
		0.52	Rand, 1989
		0.51	Hudson et al., 1984
		0.48	Hudson et al., 1984
		0.397	Hudson et al., 1984
	<i>Carpodaxus mexicanus</i>	0.75	Schafer et al., 1983
	<i>Colinus virginianus</i>	12	Hill & Camardese, 1984
		12	Hill & Camardese, 1984
		5.04	Hudson et al., 1984

		3.64	Rand, 1989
		6.99	Rand, 1989
		8.0	Wiemeyer & Sparling, 1991
	<i>Columba livia</i>	1.33	Schafer et al., 1983
	<i>Coturnix coturnix</i>	1.3	Rand, 1989
		2.1	Rand, 1989
		3.16	Rand, 1989
		1.9	Sherman & Ross, 1969
		1.7	Sherman & Ross, 1969
	<i>Dendrocygnus bicolor</i>	0.238	Hudson et al., 1984
	<i>Falco sparverius</i>	0.6	Wiemeyer & Sparling, 1991
	<i>Gallus gallus</i>	25	Rand, 1989
		38.9	Rand, 1989
		6.3	Sherman et al., 1967
	<i>Molothrus ater</i>	1.33	Schafer et al., 1983
	<i>Otus asio</i>	1.9	Wiemeyer & Sparling, 1991
	<i>Passer domesticus</i>	1.33	Schafer et al., 1983
		2.63	Nath & Mehrota, 1980
		1.1	Archives RIVM/ACT
		2.2	Archives RIVM/ACT
	<i>Phasianus colchicus</i>	2.38	Rand, 1989
		7.22	Rand, 1989
		4.15	Hudson et al., 1984
	<i>Quelea quelea</i>	0.48	Gras & Cisse, 1986
		0.422	Schafer et al., 1983
		0.562	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	1.33	Schafer et al., 1983
		3.16	Schafer et al., 1983
	<i>Serinus canarius</i>	3	Archives RIVM/ACT
		5	Archives RIVM/ACT
	<i>Streptopelia risoria</i>	7	Hill & Camardese, 1984
	<i>Sturnus vulgaris</i>	5.62	Schafer et al., 1983
	<i>Turdus merula</i>	2.5	Archives RIVM/ACT
		3.5	Archives RIVM/ACT
Carbophenothion	<i>Agelaius phoeniceus</i>	7.5	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	121	Hudson et al., 1984
	<i>Branta canadensis</i>	29	Jennings et al., 1975
		35	Jennings et al., 1975
	<i>Columba livia</i>	34.8	Jennings et al., 1975
	<i>Coturnix coturnix</i>	56.8	Jennings et al., 1975
	<i>Gallus gallus</i>	316	Stanley & Bunyan, 1979
	<i>Phasianus colchicus</i>	269	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	5.62	Schafer et al., 1983
Chlordane	<i>Anas platyrhynchos</i>	1200	Hudson et al., 1984
	<i>Callipepla californica</i>	14.1	Hudson et al., 1984
	<i>Colinus virginianus</i>	83	Agro. Handbook, 1994
	<i>Phasianus colchicus</i>	24	Hudson et al., 1984
		72	Hudson et al., 1984
Chlorfenvinphos	<i>Agelaius phoeniceus</i>	10	Schafer et al., 1983
		13.3	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	85.5	Hudson et al., 1984

	<i>Carpodacus mexicanus</i>	23.7	Schafer et al., 1983
	<i>Columba livia</i>	16.4	Bunyan et al., 1971
		13.3	Schafer et al., 1983
	<i>Coturnix coturnix</i>	148	Bunyan et al., 1971
		17.8	Schafer et al., 1983
		178	Schafer et al., 1983
	<i>Gallus gallus</i>	44	FAO, 1973a
		62.5	FAO, 1973a
		240	FAO, 1973a
		36.6	FAO, 1973a
		29.1	Sherman et al., 1967
	<i>Molothrus ater</i>	13.3	Schafer et al., 1983
	<i>Passer domesticus</i>	13.3	Schafer et al., 1983
	<i>Phasianus colchicus</i>	107	Bunyan et al., 1971
		63.5	Hudson et al., 1984
	<i>Quelea quelea</i>	13	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	17.8	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	3.16	Schafer et al., 1983
		23.7	Schafer et al., 1983
	<i>Zonotrichia atricapilla</i>	178	Schafer et al., 1983
Chlormequat chloride	<i>Anas platyrhynchos</i>	265	Hudson et al., 1984
	<i>Colinus virginianus</i>	555	Agro. Handbook, 1994
	<i>Gallus gallus</i>	920	Agro. Handbook, 1994
Chlorpyrifos	<i>Phasianus colchicus</i>	261	Agro. Handbook, 1994
	<i>Agelaius phoeniceus</i>	13.3	Schafer et al., 1983
	<i>Alectoris graeca</i>	60.7	Hudson et al., 1984
		61.1	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	75.5	Hudson et al., 1984
		112	Hudson et al., 1984
		145	Hudson et al., 1972
		29.4	Hudson et al., 1972
		50.4	Hudson et al., 1972
		83.3	Hudson et al., 1972
	<i>Branta canadensis</i>	40	Hudson et al., 1984
		80	Hudson et al., 1984
	<i>Callipepla californica</i>	68.3	Hudson et al., 1984
	<i>Colinus virginianus</i>	32	Hill & Camardese, 1984
		108	Hill & Camardese, 1984
		32	Hill & Camardese, 1984
	<i>Columba livia</i>	26.9	Hudson et al., 1984
		10	Schafer et al., 1983
	<i>Corvus brachyrhynchos</i>	>31.6	Schafer et al., 1983
	<i>Coturnix coturnix</i>	15.9	Hudson et al., 1984
		17.8	Hudson et al., 1984
		13.3	Schafer et al., 1983
	<i>Gallus gallus</i>	25	FAO, 1973b
		35	FAO, 1973b
		32	FAO, 1973b
		63	FAO, 1973b
	<i>Grus canadensis</i>	25	Hudson et al., 1984
		50	Hudson et al., 1984

	Meleagris gallopavo	32	Archives RIVM/ACT
		63	Archives RIVM/ACT
	Passer domesticus	21	Hudson et al., 1984
		10	Schafer et al., 1983
	Phasianus colchicus	8.41	Hudson et al., 1984
		17.7	Hudson et al., 1984
	Quelea quelea	16	Gras & Cisse, 1986
	Quiscalus quiscula	5.62	Schafer et al., 1983
		13.3	Schafer et al., 1983
	Streptopelia risoria	157	Hill & Camardese, 1984
	Sturnus vulgaris	75	Schafer et al., 1983
		5	Schafer, 1972
Demeton	Agelaius phoeniceus	2.37	Schafer et al., 1983
		22	Schafer et al., 1983
	Alectoris graeca	15.1	Hudson et al., 1984
	Callipepla californica	10.6	Hudson et al., 1984
	Carpodaxus mexicanus	2.38	Hudson et al., 1984
	Columba livia	13.3	Schafer et al., 1983
		8.48	Hudson et al., 1984
	Coturnix coturnix	13.3	Schafer et al., 1983
		8.48	Hudson et al., 1984
	Passer domesticus	5.62	Schafer et al., 1983
		9.52	Hudson et al., 1984
	Phasianus colchicus	8.21	Hudson et al., 1984
	Quelea quelea	1.33	Schafer et al., 1983
	Quiscalus quiscula	1.78	Schafer et al., 1983
	Sturnus vulgaris	13.3	Schafer et al., 1983
		>39	Schafer et al., 1983
		22	Schafer, 1972
	Tympan. phasianellus	4.76	Hudson et al., 1984
Diazinon	Agelaius phoeniceus	2	Schafer et al., 1983
		3.16	Schafer et al., 1983
		1.8	Balcomb et al., 1984
	Anas platyrhynchos	3.54	Hudson et al., 1984
	Anser spec.	14.7	Archives RIVM/ACT
		2.75	Hayes & Laws, 1991
	Colinus virginianus	10	Hill & Camardese, 1984
		8	Hill & Camardese, 1984
	Columba livia	3.16	Schafer et al., 1983
	Coturnix coturnix	4.22	Schafer et al., 1983
	Gallus gallus	8.4	Sherman & Ross, 1959
		40.8	Hayes & Laws, 1991
	Meleagris gallopavo	6.81	Hayes & Laws, 1991
	Passer domesticus	7.5	Schafer et al., 1983
		2.5	Balcomb et al., 1984
	Phasianus colchicus	4.33	Hudson et al., 1984
	Quiscalus quiscula	7.5	Schafer et al., 1983
	Sturnus vulgaris	110	Schafer et al., 1983
		316	Schafer et al., 1983
Dichlofenthion	Agelaius phoeniceus	14	Schafer et al., 1983
		17.8	Schafer et al., 1983

	<i>Columba livia</i>	75	Schafer et al., 1983
	<i>Coturnix coturnix</i>	316	Schafer et al., 1983
	<i>Gallus gallus</i>	148	Hayes & Laws, 1991
	<i>Passer domesticus</i>	56.2	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	75	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	80	Schafer et al., 1983
		2370	Schafer et al., 1983
Dichlorvos	<i>Agelaius phoeniceus</i>	13.3	Schafer et al., 1983
		17.8	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	7.78	Hudson et al., 1984
	<i>Columba livia</i>	23.7	Schafer et al., 1983
	<i>Coturnix coturnix</i>	23.7	Schafer et al., 1983
	<i>Gallus gallus</i>	14.8	Sherman & Ross, 1961
	<i>Passer domesticus</i>	17.8	Schafer et al., 1983
	<i>Phasianus colchicus</i>	11.3	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	13.3	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	11	Schafer et al., 1983
		42.2	Schafer et al., 1983
Dicrotophos	<i>Agelaius phoeniceus</i>	1	Schafer et al., 1983
		1.6	Schafer et al., 1983
	<i>Alectoris graeca</i>	9.63	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	4.24	Hudson et al., 1984
	<i>Branta canadensis</i>	2.28	Hudson et al., 1984
	<i>Callipepla californica</i>	1.89	Hudson et al., 1984
	<i>Carpodaxus mexicanus</i>	2.83	Hudson et al., 1984
	<i>Columba livia</i>	2	Hudson et al., 1984
		2.38	Tucker & Haegele, 1971
		4.22	Schafer et al., 1983
	<i>Coturnix coturnix</i>	4.32	Hudson et al., 1984
		7.5	Schafer et al., 1983
	<i>Passer domesticus</i>	3	Hudson et al., 1984
		4.22	Schafer et al., 1983
	<i>Phasianus colchicus</i>	3.21	Hudson et al., 1984
	<i>Quelea quelea</i>	1.5	Gras & Cisse, 1986
		1.33	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	1.78	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	2.7	Schafer et al., 1983
		10	Schafer et al., 1983
	<i>Tym. phasianellus</i>	2.31	Hudson et al., 1984
Dieldrin	<i>Agelaius phoeniceus</i>	17.8	Schafer et al., 1983
	<i>Alectoris graeca</i>	23.4	Tucker & Haegele, 1971
		25.3	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	381	Tucker & Haegele, 1971
	<i>Branta canadensis</i>	50	Stanley & Bunyan, 1979
		150	Stanley & Bunyan, 1979
	<i>Callipepla californica</i>	8.78	Hudson et al., 1984
	<i>Columba livia</i>	23.7	Schafer et al., 1983
		26.6	Hudson et al., 1984
		67	Maier-Bode, 1965
		250	FAO, 1973a
	<i>Coturnix coturnix</i>	56.2	Schafer et al., 1983

		69.7	Hudson et al., 1984
	Gallus gallus	48	Stanley & Bunyan, 1979
		20	Maier-Bode, 1965
		30	Maier-Bode, 1965
	Passer domesticus	13.3	Schafer et al., 1983
		47.6	Hudson et al., 1984
	Perdix perdix	8.84	Hudson et al., 1984
	Phasianus colchicus	79	Hudson et al., 1984
	Quiscalus quiscula	42.2	Schafer et al., 1983
	Sturnus vulgaris	237	Schafer et al., 1983
Dimethoate	Agelaius phoeniceus	6.6	Schafer et al., 1983
		17.8	Schafer et al., 1983
	Anas platyrhynchos	41.7	Hudson et al., 1984
		63.5	Hudson et al., 1984
		40	Agro. Handbook, 1994
	Colinus virginianus	10	Hill & Camardese, 1984
	Coturnix coturnix	82	Archives RIVM/ACT
		86	Archives RIVM/ACT
		103	Archives RIVM/ACT
		152	Archives RIVM/ACT
	Gallus gallus	36.6	Sherman & Ross, 1961
		30	EHC 90, 1989
		50	EHC 90, 1989
		108	Agro. Handbook, 1994
	Phasianus colchicus	20	Hudson et al., 1984
		15	Agro. Handbook, 1994
	Sturnus vulgaris	31.6	Schafer et al., 1983
Dinoseb	Agelaius phoeniceus	7.5	Schafer et al., 1983
	Anas platyrhynchos	27	Hudson et al., 1984
	Gallus gallus	26	Agro. Handbook, 1994
	Phasianus colchicus	26.4	Hudson et al., 1984
	Sturnus vulgaris	7.1	Schafer et al., 1983
		8.3	Schafer et al., 1983
Disulfoton	Agelaius phoeniceus	3.16	Schafer et al., 1983
	Anas platyrhynchos	6.54	Hudson et al., 1984
	Colinus virginianus	28	Agro. Handbook, 1994
		12	Hill & Camardese, 1984
		29	Hill & Camardese, 1984
	Phasianus colchicus	11.9	Hudson et al., 1984
	Quiscalus quiscula	2.37	Schafer et al., 1983
	Sturnus vulgaris	>31.6	Schafer et al., 1983
Endosulfan	Anas platyrhynchos	27.8	Hudson et al., 1972
		6.47	Hudson et al., 1972
		7.89	Hudson et al., 1972
		34.4	Hudson et al., 1972
		33	Hudson et al., 1984
		45	Hudson et al., 1984
		31.2	Hudson et al., 1984
	Passer domesticus	35	Schafer, 1972
	Phasianus colchicus	80	Hudson et al., 1984
		160	Hudson et al., 1984

		190	Hudson et al., 1984
		>320	Hudson et al., 1984
Endrin	<i>Sturnus vulgaris</i>	35	Schafer et al., 1983
	<i>Agelaius phoeniceus</i>	2.37	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	5.64	Hudson et al., 1984
		22.3	Hudson et al., 1972
		3.37	Hudson et al., 1972
		2.9	Hudson et al., 1972
		5.33	Hudson et al., 1972
	<i>Callipepla californica</i>	1.19	Hudson et al., 1984
	<i>Columba livia</i>	5.62	Schafer et al., 1983
		2	Hudson et al., 1984
		5	Hudson et al., 1984
	<i>Coturnix coturnix</i>	4.22	Schafer et al., 1983
	<i>Falco sparverius</i>	1.5	Schafer et al., 1983
	<i>Myiopsitta monachus</i>	<2.1	Schafer et al., 1983
	<i>Passer domesticus</i>	1.78	Schafer et al., 1983
		2.4	Schafer, 1972
	<i>Phasianus colchicus</i>	1.78	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	0.316	Schafer et al., 1983
		5.62	Schafer et al., 1983
<i>Sturnus vulgaris</i>	2.37	Schafer et al., 1983	
	3.16	Schafer et al., 1983	
<i>Tym. phasianellus</i>	1.06	Hudson et al., 1984	
	0.75	EHC DR.04, 1989	
	1.5	EHC DR.04, 1989	
EPN	<i>Agelaius phoeniceus</i>	3.16	Schafer et al., 1983
	<i>Alectoris graeca</i>	14.3	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	7.09	Hudson et al., 1984
		3.08	Hudson et al., 1984
	<i>Callipepla californica</i>	36.3	Hudson et al., 1984
	<i>Columba livia</i>	4.22	Schafer et al., 1983
		5.9	Hudson et al., 1984
	<i>Colinus virginianus</i>	220	Agro. Handbook, 1994
		31	Wiemeyer & Sparling, 1991
	<i>Coturnix coturnix</i>	10	Schafer et al., 1983
		5.25	Hudson et al., 1984
	<i>Falco sparverius</i>	4	Wiemeyer & Sparling, 1991
	<i>Molothrus ater</i>	5.62	Schafer et al., 1983
	<i>Otus asio</i>	274	Wiemeyer & Sparling, 1991
	<i>Passer domesticus</i>	2.37	Schafer et al., 1983
		12.6	Hudson et al., 1984
	<i>Phasianus colchicus</i>	53.4	Hudson et al., 1984
		> 165	Agro. Handbook, 1994
	<i>Quiscalus quiscula</i>	4.22	Schafer et al., 1983
<i>Sturnus vulgaris</i>	7.5	Schafer et al., 1983	
Ethoprophos	<i>Agelaius phoeniceus</i>	4.22	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	61	Agro. Handbook, 1994
		12.6	Hudson et al., 1984
	<i>Columba livia</i>	13.3	Rand, 1989
	<i>Coturnix coturnix</i>	7.5	Rand, 1989

	Gallus gallus	5.6	Agro. Handbook, 1994
	Passer domesticus	4.2	Schafer et al., 1983
		4.8	Balcomb et al., 1984
	Phasianus colchicus	4.21	Hudson et al., 1984
	Quiscalus quiscula	10	Rand, 1989
	Sturnus vulgaris	7.5	Rand, 1989
Fenitrothion	Agelaius phoeniceus	17.8	Schafer et al., 1983
		25	Schafer et al., 1983
	Anas platyrhynchos	1190	Hudson et al., 1984
		2550	FAO, 1975
		1662	Hudson et al., 1984
	Carpodaxus mexicanus	316	Schafer et al., 1983
	Colinus virginianus	27.4	Hudson et al., 1984
		32	Hudson et al., 1984
		23.6	Hudson et al., 1984
	Coturnix coturnix	56.2	Schafer et al., 1983
		140	FAO, 1978
		115	FAO, 1978
	Gallus gallus	500	FAO, 1978
	Passer domesticus	316	Schafer et al., 1983
	Phasianus colchicus	34.5	FAO, 1975
		55.6	Hudson et al., 1984
	Quelea quelea	19	Gras & Cisse, 1986
	Sturnus vulgaris	11	Schafer et al., 1983
	Tympan. phasianellus	53.4	Hudson et al., 1984
Fensulfothion	Agelaius phoeniceus	0.237	Schafer et al., 1983
		0.316	Schafer et al., 1983
	Anas platyrhynchos	0.749	Hudson et al., 1984
	Callipepla californica	1.68	Hudson et al., 1984
		1.19	Hudson et al., 1984
	Colinus virginianus	1.2	Hill & Camardese, 1984
		2.4	Hill & Camardese, 1984
		1.2	Hill & Camardese, 1984
		40	Agro. Handbook, 1994
	Columba livia	0.562	Schafer et al., 1983
	Coturnix coturnix	1.78	Schafer et al., 1983
	Gallus gallus	0.991	Sherman & Ross, 1961
		2.5	Mills, 1973
		5	Mills, 1973
	Passer domesticus	0.316	Schafer et al., 1983
	Phasianus colchicus	1.34	Hudson et al., 1984
	Quelea quelea	0.237	Schafer et al., 1983
	Quiscalus quiscula	0.422	Schafer et al., 1983
	Streptopelia	2.1	Hill & Camardese, 1984
	Sturnus vulgaris	0.562	Schafer et al., 1983
Fenthion	Agelaius phoeniceus	1.69	Schafer et al., 1983
		3.5	Schafer et al., 1983
		1.8	Schafer et al., 1972
	Alectoris graeca	25.9	Hudson et al., 1984
	Anas platyrhynchos	5.94	Hudson et al., 1984
		15	FAO, 1973a

	1	FAO, 1973a
	2	FAO, 1973a
<i>Branta canadensis</i>	12	Hudson et al., 1984
<i>Callipepla californica</i>	15	Hudson et al., 1984
<i>Carpodaxus mexicanus</i>	13.3	Schafer et al., 1983
	10	Hudson et al., 1984
<i>Colinus virginianus</i>	4	Hudson et al., 1984
	7.0	Wiemeyer & Sparling, 1991
	3.1	Wiemeyer & Sparling, 1991
<i>Columba livia</i>	1.78	Schafer et al., 1983
	4.63	Hudson et al., 1984
<i>Coturnix coturnix</i>	17.8	Schafer et al., 1983
	10.6	Hudson et al., 1984
<i>Falco sparverius</i>	1	Schafer et al., 1983
	1.33	Schafer et al., 1983
	1.4	Wiemeyer & Sparling, 1991
<i>Gallus gallus</i>	28.4	Hudson et al., 1984
	30	FAO, 1973a
	28	FAO, 1973a
	30	FAO, 1973a
	40	FAO, 1973a
<i>Molothrus ater</i>	7.5	Schafer et al., 1983
<i>Otus asio</i>	3.9	Wiemeyer & Sparling, 1991
<i>Passer domesticus</i>	2.37	Schafer et al., 1983
	5.62	Schafer et al., 1983
	22.7	Hudson et al., 1984
<i>Phasianus colchicus</i>	17.8	Hudson et al., 1984
<i>Pica pica</i>	4.22	Schafer et al., 1983
	5.62	Schafer et al., 1983
<i>Quelea quelea</i>	1.33	Schafer et al., 1983
	2.6	Hudson et al., 1984
<i>Quiscalus quiscula</i>	4.22	Schafer et al., 1983
	7.5	Schafer et al., 1983
<i>Sturnus vulgaris</i>	5.3	Schafer et al., 1983
	17.8	Schafer et al., 1983
<i>Turdus migratorius</i>	5.62	Schafer et al., 1983
<i>Xan. xanthocephalus</i>	2.37	Schafer et al., 1983
<i>Zenaida macroura</i>	2.37	Schafer et al., 1983
	2.5	Hudson et al., 1984
Fonofos <i>Agelaius phoeniceus</i>	10	Schafer et al., 1983
<i>Anas platyrhynchos</i>	16.9	Hudson et al., 1984
	128	Agro. Handbook, 1994
<i>Colinus virginianus</i>	12	Hill & Camardese, 1984
	14	Hill & Camardese, 1984
<i>Columba livia</i>	13.3	Schafer et al., 1983
<i>Coturnix coturnix</i>	31.6	Schafer et al., 1983
<i>Passer domesticus</i>	13.3	Schafer et al., 1983
<i>Quiscalus quiscula</i>	17.8	Schafer et al., 1983
<i>Sturnus vulgaris</i>	42.2	Schafer et al., 1983
Gophacide <i>Agelaius phoeniceus</i>	4.22	Schafer et al., 1983
	4.46	Schafer et al., 1983

	<i>Alectoris graeca</i>	322	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	24	Hudson et al., 1984
	<i>Aquila chrysaetos</i>	2.5	Hudson et al., 1984
		5	Hudson et al., 1984
	<i>Columba livia</i>	15.9	Schafer et al., 1983
	<i>Phasianus colchicus</i>	161	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	17.8	Schafer et al., 1983
Heptachlor	<i>Anas platyrhynchos</i>	2000	Hudson et al., 1984
	<i>Colinus virginianus</i>	125	EHC 38, 1984
	<i>Gallus domesticus</i>	62.4	Sherman & Ross, 1961
	<i>Passer domesticus</i>	465	Bakre & Rajasekaran, 1989
	<i>Phasianus colchicus</i>	150	EHC 38, 1984
		400	EHC 38, 1984
Isofenphos	<i>Anas platyrhynchos</i>	33	Archives RIVM/ACT
	<i>Colinus virginianus</i>	13	Hill & Camardese, 1984
		19	Hill & Camardese, 1984
	<i>Coturnix coturnix</i>	13	RTECS, 1993
		10	Archives RIVM/ACT
		5	Archives RIVM/ACT
		12.5	Archives RIVM/ACT
	<i>Gallus gallus</i>	3	RTECS, 1993
		16	Archives RIVM/ACT
Malathion	<i>Agelaius phoeniceus</i>	400	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	1485	Hudson et al., 1984
	<i>Eromophila alpestris</i>	403	Hudson et al., 1984
	<i>Gallus gallus</i>	370	Sherman & Ross, 1959
		850	Maier-Bode, 1965
	<i>Phasianus colchicus</i>	167	Hudson et al., 1984
Methiocarb	<i>Agelaius phoeniceus</i>	4.67	Schafer et al., 1983
		12.6	Schafer et al., 1983
	<i>Agelaius tricolor</i>	5.62	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	13.3	Schafer et al., 1983
		12.8	Hudson et al., 1984
		7.1	Agro. Handbook, 1994
		9.4	Agro. Handbook, 1994
	<i>Bombycilla cedrorum</i>	5.62	Schafer et al., 1983
	<i>Callipepla californica</i>	24	Archives RIVM/ACT
	<i>Carpodaxus mexicanus</i>	2.37	Schafer et al., 1983
		3	Schafer et al., 1983
	<i>Cassidix major</i>	4.22	Schafer et al., 1983
	<i>Colinus virginianus</i>	19.6	Schafer et al., 1983
		24	Schafer et al., 1983
	<i>Columba livia</i>	13.3	Schafer et al., 1983
		27.3	Schafer et al., 1983
	<i>Corvus brachyrhynchos</i>	7.5	Schafer et al., 1983
	<i>Coturnix coturnix</i>	8.84	Schafer et al., 1983
		10.4	Schafer et al., 1983
		5	Agro. Handbook, 1994
		14	Agro. Handbook, 1994
	<i>Eromophila alpestris</i>	4.22	Schafer et al., 1983
		31.4	Hudson et al., 1984

	<i>Euplectes orix</i>	5.62	Schafer et al., 1983
		7.5	Schafer et al., 1983
	<i>Gallus gallus</i>	175	Agro. Handbook, 1994
		190	Agro. Handbook, 1994
		179	Archives RIVM/ACT
	<i>Grus canadensis</i>	23.7	Schafer et al., 1983
	<i>Mel. undulatus</i>	1.33	Schafer et al., 1983
	<i>Molothrus ater</i>	7.5	Schafer et al., 1983
	<i>Passer domesticus</i>	17.8	Schafer et al., 1983
	<i>Passer luteus</i>	5.62	Schafer et al., 1983
	<i>Phasianus colchicus</i>	13.3	Schafer et al., 1983
		>1000	Schafer et al., 1983
		270	Hudson et al., 1984
		56	Archives RIVM/ACT
		1000	Archives RIVM/ACT
	<i>Ploceus cuculatus</i>	7.5	Shefte et al., 1982
	<i>Ploceus taeniopterus</i>	4.87	Schafer et al., 1983
		7.5	Schafer et al., 1983
	<i>Quelea quelea</i>	4.22	Schafer et al., 1983
		7.5	Schafer et al., 1983
		3.2	Gras & Cisse, 1986
	<i>Quiscalus quiscula</i>	10	Schafer et al., 1983
	<i>Scardafella inca</i>	4.22	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	11.3	Schafer et al., 1983
		>50	Schafer et al., 1983
		13	Agro. Handbook, 1994
	<i>Xan. xanthocephalus</i>	3.16	Schafer et al., 1983
	<i>Zebauda auriculata</i>	3.16	Schafer et al., 1983
	<i>Zenaida asiatica</i>	10	Schafer et al., 1983
	<i>Zenaida macroura</i>	10	Schafer et al., 1983
	<i>Zonotrichia atricapilla</i>	3.16	Schafer et al., 1983
Methomyl	<i>Agelaius phoeniceus</i>	10	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	15.9	Hudson et al., 1984
		15	RTECS, 1993
	<i>Columba livia</i>	10	Schafer et al., 1983
	<i>Coturnix coturnix</i>	23.7	Schafer et al., 1983
	<i>Gallus gallus</i>	28	RTECS, 1993
	<i>Passer domesticus</i>	13.3	Schafer et al., 1983
		31.6	Schafer et al., 1983
	<i>Phasianus colchicus</i>	15	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	13.3	Schafer et al., 1983
		23.7	Schafer et al., 1983
	<i>Sturnus vulgaris</i>	13.3	Schafer et al., 1983
		42.2	Schafer et al., 1983
Methyl parathion	<i>Agelaius phoeniceus</i>	10	Schafer et al., 1983
		23.7	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	60.5	Hudson et al., 1984
		10	Hudson et al., 1984
		6.6	Hudson et al., 1984
	<i>Colinus virginianus</i>	7.56	Hudson et al., 1984
	<i>Falco sparverius</i>	3.08	Rattner & Franson, 1983

	Phasianus colchicus	8.21	Hudson et al., 1984
	Quelea quelea	5	Gras & Cisse, 1986
	Sturnus vulgaris	7.5	Schafer et al., 1983
Mevinphos	Agelaius phoeniceus	1.78	Schafer et al., 1983
	Anas platyrhynchos	4.63	Hudson et al., 1979
	Columba livia	4.22	Schafer et al., 1983
	Coturnix coturnix	23.7	Schafer et al., 1983
	Gallus gallus	7.52	Sherman & Ross, 1961
	Passer domesticus	1.78	Schafer et al., 1983
	Phasianus colchicus	1.37	Hudson et al., 1984
	Quelea quelea	1.4	Gras & Cisse, 1986
	Quiscalus quiscula	4.22	Schafer et al., 1983
	Sturnus vulgaris	3.9	Schafer et al., 1983
		7.5	Schafer et al., 1983
	Tym. phasianellus	1.13	Archives RIVM/ACT
		1.34	Hudson et al., 1984
Mexacarbate	Agelaius phoeniceus	10	Schafer et al., 1983
		13.3	Schafer et al., 1983
	Alectoris graeca	5.24	Tucker & Haegele, 1971
	Anas platyrhynchos	3	Tucker & Haegele, 1971
	Columba livia	5.62	Schafer et al., 1983
		6.47	Tucker & Haegele, 1971
	Coturnix coturnix	2.37	Schafer et al., 1983
		3.21	Tucker & Haegele, 1971
	Passer domesticus	7.5	Schafer et al., 1983
		50.4	Tucker & Haegele, 1971
	Phasianus colchicus	4.5	Tucker & Haegele, 1971
	Quiscalus quiscula	7.5	Schafer et al., 1983
	Sturnus vulgaris	23.7	Schafer et al., 1983
		31.6	Schafer et al., 1983
Monocrotophos	Agelaius phoeniceus	1	Schafer et al., 1983
	Alectoris graeca	6.49	Tucker & Haegele, 1971
	Anas platyrhynchos	4.76	Hudson et al., 1984
	Aquila chrysaetos	0.188	Hudson et al., 1984
	Branta canadensis	1.58	Hudson et al., 1984
	Callipepla californica	0.763	Hudson et al., 1984
	Carpodaxus mexicanus	8.1	Hudson et al., 1984
		24.3	Hudson et al., 1984
	Colinus virginianus	0.944	Hudson et al., 1984
		0.8	Wiemeyer & Sparling, 1991
	Columba livia	4.22	Schafer et al., 1983
		2.83	Tucker & Haegele, 1971
	Coturnix coturnix	4.22	Schafer et al., 1983
		3.71	Tucker & Haegele, 1971
	Falco sparverius	1.5	Wiemeyer & Sparling, 1991
	Meleagris gallopavo	2	Hudson et al., 1984
		3.16	Hudson et al., 1984
	Otus asio	1.5	Wiemeyer & Sparling, 1991
	Passer domesticus	1.33	Schafer et al., 1983
		1.61	Tucker & Haegele, 1971
		1.48	Hudson et al., 1984

	<i>Perdix perdix</i>	6.4	Hudson et al., 1984	
		12.8	Hudson et al., 1984	
	<i>Phasianus colchicus</i>	2.83	Tucker & Haegele, 1971	
	<i>Quelea quelea</i>	1.33	Schafer et al., 1983	
		0.8	Gras & Cisse, 1986	
	<i>Quiscalus quiscula</i>	4.22	Schafer et al., 1983	
	<i>Sturnus vulgaris</i>	3.16	Schafer et al., 1983	
		5.62	Schafer et al., 1983	
		3.3	Schafer, 1971	
Paraquat	<i>Anas platyrhynchos</i>	199	Hudson et al., 1984	
		4048	Agro. Handbook, 1994	
	<i>Coturnix coturnix</i>	970	Agro. Handbook, 1994	
	<i>Gallus gallus</i>	262	Agro. Handbook, 1994	
		380	Agro. Handbook, 1994	
	<i>Meleagris gallopavo</i>	250	FAO, 1987	
		280	FAO, 1987	
Parathion	<i>Agelaius phoeniceus</i>	2.37	Schafer et al., 1983	
	<i>Alectoris graeca</i>	24	Tucker & Haegele, 1971	
	<i>Anas platyrhynchos</i>	1.65	Hudson et al., 1972	
		1.44	Hudson et al., 1972	
		1.65	Hudson et al., 1972	
		2.34	Hudson et al., 1972	
		2.40	Hudson et al., 1984	
		1.90	Hudson et al., 1984	
		2.34	Hudson et al., 1984	
		1.44	Hudson et al., 1984	
		0.898	Hudson et al., 1984	
		2.13	Tucker & Haegele., 1971	
		<i>Callipepla californoca</i>	16.9	Hudson et al., 1984
		<i>Carpodaxus mexicanus</i>	2.37	Schafer et al., 1983
		<i>Colinus virginianus</i>	6	Hill & Camardese, 1984
			13	Hill & Camardese, 1984
			6	Hill & Camardese, 1984
		<i>Columba livia</i>	1.33	Schafer et al., 1983
			2.52	Tucker & Haegele, 1971
		<i>Coturnix coturnix</i>	4.22	Schafer et al., 1983
			6	Hill & Camardese, 1984
			4	Hill & Camardese, 1984
			5.95	Tucker & Haegele, 1971
	<i>Dendrocygna bicolor</i>	0.125	Hudson et al., 1984	
		0.250	Hudson et al., 1984	
	<i>Molothrus ater</i>	1.33	Schafer et al., 1983	
	<i>Passer domesticus</i>	1.33	Schafer et al., 1983	
		3.36	Tucker & Haegele, 1971	
	<i>Perdix perdix</i>	16	Hudson et al., 1984	
	<i>Phasianus colchicus</i>	12.4	Hudson et al., 1984	
		>24	Hudson et al., 1984	
	<i>Ploceus cucullatus</i>	1.78	Schafer et al., 1983	
	<i>Quelea quelea</i>	1.78	Schafer et al., 1983	
		4.2	Gras & Cisse, 1986	
	<i>Quiscalus quiscula</i>	5.62	Schafer et al., 1983	

	<i>Streptopelia risoria</i>	12	Hill & Camardese, 1984
	<i>Sturnus vulgaris</i>	5.62	Schafer et al., 1983
		132	Rattner & Grue, 1990
		160	Rattner & Grue, 1990
		136	Rattner & Grue, 1990
		128	Rattner & Grue, 1990
		118	Rattner & Grue, 1990
Phorate	<i>Tym. phasianellus</i>	5.66	Hudson et al., 1984
	<i>Agelaius phoeniceus</i>	1	Schafer et al., 1983
	<i>Alectoris graeca</i>	12.8	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	0.626	Hudson et al., 1984
		2.55	Hudson et al., 1979
	<i>Colinus virginianus</i>	7	Hill & Camardese, 1984
		21	Hill & Camardese, 1984
	<i>Phasianus colchicus</i>	7.12	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	1.33	Schafer et al., 1983
	<i>Streptopelia risoria</i>	17	Hill & Camardese, 1984
Phosphamidon	<i>Sturnus vulgaris</i>	7.5	Schafer et al., 1983
	<i>Agelaius phoeniceus</i>	1.78	Schafer et al., 1983
		3.16	Schafer et al., 1983
	<i>Alectoris graeca</i>	11.8	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	3.81	Hudson et al., 1984
	<i>Columba livia</i>	4.22	Schafer et al., 1983
	<i>Coturnix coturnix</i>	7.5	Schafer et al., 1983
		3.6	Hudson et al., 1984
	<i>Gallus gallus</i>	9.04	Sherman & Ross, 1961
	<i>Passer domesticus</i>	3.16	Schafer et al., 1983
	<i>Phasianus colchicus</i>	4.24	Hudson et al., 1984
	<i>Quiscalus quiscula</i>	5.62	Schafer et al., 1983
<i>Sturnus vulgaris</i>	5.62	Schafer et al., 1983	
<i>Tym. phasianellus</i>	1.5	Hudson et al., 1984	
	2	Hudson et al., 1984	
Pirimicarb	<i>Zenaida asiatica</i>	2.93	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	17.2	RTECS, 1993
	<i>Colinus virginianus</i>	8.2	Agro. Handbook, 1994
	<i>Columba livia</i>	20	RTECS, 1993
	<i>Coturnix coturnix</i>	54	RTECS, 1993
		8.2	Archives RIVM/ACT
	<i>Gallus gallus</i>	25	RTECS, 1993
		50	FAO, 1977
Propoxur	<i>Mel. undulatus</i>	20	Archives RIVM/ACT
	<i>Agelaius phoeniceus</i>	3.83	Schafer et al., 1983
	<i>Alectoris graeca</i>	23.8	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	17.8	Schafer et al., 1983
		11.9	Hudson et al., 1984
		9.44	Hudson et al., 1984
	<i>Branta canadensis</i>	5.95	Hudson et al., 1984
	<i>Callipepla californica</i>	25.9	Hudson et al., 1984
<i>Carpodax mexicanus</i>	4.22	Schafer et al., 1983	
	10	Schafer et al., 1983	
	3.55	Hudson et al., 1984	

	<i>Cassidix major</i>	5.62	Schafer et al., 1983	
	<i>Colinus virginianus</i>	25.9	Agro. Handbook, 1994	
	<i>Columba livia</i>	7.5	Schafer et al., 1983	
		60.4	Hudson et al., 1984	
	<i>Corvus brachyrhynchos</i>	13.3	Schafer et al., 1983	
	<i>Coturnix coturnix</i>	42.2	Schafer et al., 1983	
		28.3	Hudson et al., 1984	
	<i>Gallus gallus</i>	150	FAO, 1973b	
		750	FAO, 1973b	
	<i>Junco hyemalis</i>	4.76	Hudson et al., 1984	
	<i>Mel. undulatus</i>	4.22	Schafer et al., 1983	
	<i>Molothrus ater</i>	10	Schafer et al., 1983	
	<i>Passer domesticus</i>	13.3	Schafer et al., 1983	
		15	Schafer et al., 1983	
		12.8	Hudson et al., 1984	
	<i>Phasianus colchicus</i>	13.3	Schafer et al., 1983	
		15	Schafer et al., 1983	
		20	Hudson et al., 1984	
	<i>Quelea quelea</i>	7.2	Gras & Cisse, 1986	
	<i>Quiscalus quiscula</i>	13.3	Schafer et al., 1983	
	<i>Sturnus vulgaris</i>	13.3	Schafer et al., 1983	
		17	Schafer et al., 1983	
	<i>Tym. phasianellus</i>	120	Hudson et al., 1984	
	<i>Xan. xanthocephalus</i>	7.5	Schafer et al., 1983	
	<i>Zenaida macroura</i>	17.8	Schafer et al., 1983	
Sodium mono- fluoroacetate	<i>Alectoris graeca</i>	3.51	Hudson et al., 1984	
	<i>Anas platyrhynchos</i>	5.97	Hudson et al., 1984	
	<i>Aquila chrysaetos</i>	3.54	Hudson et al., 1984	
	<i>Callipepla californica</i>	4.63	Hudson et al., 1984	
	<i>Columba livia</i>	4.24	Hudson et al., 1984	
	<i>Coturnix coturnix</i>	12.8	Hudson et al., 1984	
	<i>Meleagris gallopavo</i>	4.76	Hudson et al., 1984	
	<i>Passer domesticus</i>	3	Hudson et al., 1984	
	<i>Phasianus colchicus</i>	6.46	Hudson et al., 1984	
	<i>Zenaida macroura</i>	8.55	Hudson et al., 1984	
	Starlicide	<i>Accipiter cooperii</i>	562	Schafer et al., 1983
		<i>Agelaius phoeniceus</i>	2.41	Schafer et al., 1983
		<i>Agelaius tricolor</i>	2.74	Schafer et al., 1983
		<i>Anas acuta</i>	> 31.6	Schafer et al., 1983
<i>Anas discor</i>		31.6	Schafer et al., 1983	
<i>Anas platyrhynchos</i>		17.8	Schafer et al., 1983	
<i>Aph. coerelescens</i>		1.78	Schafer et al., 1983	
<i>Aquila chrysaetos</i>		> 100	Schafer et al., 1983	
<i>Callipepla californica</i>		< 10	Schafer et al., 1983	
<i>Carpodaxus cassinii</i>		> 100	Schafer et al., 1983	
<i>Carpodaxus mexicanus</i>		> 225	Schafer et al., 1983	
<i>Cassidix major</i>		1	Schafer et al., 1983	
<i>Colinus virginianus</i>		4.22	Schafer et al., 1983	
<i>Columba livia</i>		17.8	Schafer et al., 1983	
<i>Columbina passerina</i>	4.22	Schafer et al., 1983		
<i>Corvus brachyrhynchos</i>	1.33	Schafer et al., 1983		

	1.78	Schafer et al., 1983
<i>Corvus corax</i>	5.62	Schafer et al., 1983
<i>Coturnix coturnix</i>	2.24	Schafer et al., 1983
	10	Schafer et al., 1983
<i>Cyanocitta cristata</i>	10	Schafer et al., 1983
<i>Cyanocorax yncas</i>	5.62	Schafer et al., 1983
<i>Euplectes orix</i>	215	Schafer et al., 1983
	237	Schafer et al., 1983
<i>Falco sparverius</i>	> 316	Schafer et al., 1983
<i>Leptotila verreauxi</i>	> 5.62	Schafer et al., 1983
<i>Meleagris gallopova</i>	5.62	Schafer et al., 1983
<i>Melopsit. undulatus</i>	237	Schafer et al., 1983
<i>Ortalis vetula</i>	42.2	Schafer et al., 1983
<i>Passer domesticus</i>	316	Schafer et al., 1983
	448	Schafer et al., 1983
<i>Passer luteus</i>	287	Schafer et al., 1983
	316	Schafer et al., 1983
<i>Phasianus colchicus</i>	10	Schafer et al., 1983
<i>Pica pica</i>	10	Schafer et al., 1983
<i>Ploceus cucullatus</i>	> 316	Schafer et al., 1983
<i>Ploceus taeniopterus</i>	> 316	Schafer et al., 1983
<i>Quelea quelea</i>	31.6	Schafer et al., 1983
<i>Quiscalus quiscula</i>	1	Schafer et al., 1983
<i>Sturnus vulgaris</i>	3.16	Schafer et al., 1983
	4.11	Schafer et al., 1983
<i>Tangavius aeneus</i>	5.62	Schafer et al., 1983
<i>Toxostoma curvirostre</i>	3.16	Schafer et al., 1983
<i>Toxostoma rufum</i>	3.16	Schafer et al., 1983
<i>Turdus migratorius</i>	3.16	Schafer et al., 1983
<i>Tyto alba</i>	4.22	Schafer et al., 1983
<i>Zenaida asiatica</i>	4.22	Schafer et al., 1983
<i>Zenaida macroura</i>	3.16	Schafer et al., 1983
	7.5	Schafer et al., 1983
<i>Zonotrichia leucophrys</i>	> 320	Schafer et al., 1983
Strychnine <i>Alectoris graeca</i>	16	Hudson et al., 1984
<i>Anas platyrhynchos</i>	2	Hudson et al., 1984
	2.3	Hudson et al., 1984
	2.6	Hudson et al., 1984
	2.8	Hudson et al., 1984
	5.9	Hudson et al., 1984
<i>Aquila chrysaetos</i>	4.8	Hudson et al., 1984
	5	Hudson et al., 1984
	8.1	Hudson et al., 1984
	10	Hudson et al., 1984
<i>Callipepla californica</i>	112	Hudson et al., 1984
<i>Columba livia</i>	21.3	Hudson et al., 1984
<i>Coturnix coturnix</i>	22.6	Hudson et al., 1984
<i>Passer domesticus</i>	4	Hudson et al., 1984
	4.2	Hudson et al., 1984
	8	Hudson et al., 1984
<i>Phasianus colchicus</i>	8.4	Hudson et al., 1984

		24.7	Hudson et al., 1984
	<i>Zenaida macroura</i>	> 5.12	Hudson et al., 1984
Temephos	<i>Agelaius phoeniceus</i>	42.2	Schafer et al., 1983
		56	Schafer, 1971
	<i>Alectoris graeca</i>	270	Tucker & Haegele, 1971
		240	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	79.4	Hudson et al., 1984
		200	Archives RIVM/ACT
	<i>Callipepla californica</i>	18.9	Hudson et al., 1984
	<i>Carpodax mexicanus</i>	56.2	Schafer et al., 1983
	<i>Columba livia</i>	50.1	Hudson et al., 1984
	<i>Coturnix coturnix</i>	75	Schafer et al., 1983
		84.1	Hudson et al., 1984
	<i>Gallus gallus</i>	183	Archives RIVM/ACT
		> 1000	Archives RIVM/ACT
	<i>Passer domesticus</i>	31.6	Schafer et al., 1983
		35.4	Hudson et al., 1984
<i>Phasianus colchicus</i>	31.5	Tucker & Haegele, 1971	
	35.4	Hudson et al., 1984	
	<i>Quelea quelea</i>	> 20	Gras & Cisse, 1986
	<i>Sturnus vulgaris</i>	> 100	Schafer et al., 1983
		75	Schafer, 1971
Thallium sulphate	<i>Anas platyrhynchos</i>	36.7	Hudson et al., 1984
	<i>Aquila chrysaetos</i>	60	Hudson et al., 1984
		120	Hudson et al., 1984
	<i>Phasianus colchicus</i>	23.7	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	34.7	Schafer et al., 1983
		56.6	Schafer et al., 1983
Trichlorfon	<i>Agelaius phoeniceus</i>	37	Schafer et al., 1983
		75	Schafer et al., 1983
		40	Schafer, 1972
	<i>Anas platyrhynchos</i>	105	FAO, 1973a
		36.8	Hudson et al., 1984
	<i>Callipepla californica</i>	59.3	Hudson et al., 1984
	<i>Colinus virginianus</i>	22.4	Hudson et al., 1984
	<i>Columba livia</i>	123	Hudson et al., 1984
	<i>Gallus gallus</i>	65	Sherman & Ross, 1959
		75	FAO, 1973a
		110	FAO, 1973a
	<i>Phasianus colchicus</i>	95.9	Hudson et al., 1984
	<i>Streptopelia risoria</i>	32	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	43	Schafer et al., 1983
		47	Schafer, 1972
Trichloronat	<i>Agelaius phoeniceus</i>	1.6	Schafer et al., 1983
		4.22	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	12	Hudson et al., 1984
	<i>Columba livia</i>	13.3	Schafer et al., 1983
	<i>Coturnix coturnix</i>	23.7	Schafer et al., 1983
	<i>Gallus gallus</i>	45	FAO, 1973a
	<i>Passer domesticus</i>	5.62	Schafer et al., 1983
	<i>Quiscalus quiscula</i>	5.62	Schafer et al., 1983

	<i>Sturnus vulgaris</i>	110	Schafer et al., 1983
		1000	Schafer et al., 1983
Trimethacarb	<i>Agelaius phoeniceus</i>	10	Schafer et al., 1983
		31.6	Schafer et al., 1983
	<i>Alectoris graeca</i>	60	Hudson et al., 1984
	<i>Anas platyrhynchos</i>	22.4	Hudson et al., 1984
	<i>Columba livia</i>	168	Hudson et al., 1984
	<i>Coturnix coturnix</i>	70.8	Hudson et al., 1984
	<i>Passer domesticus</i>	46.3	Hudson et al., 1984
	<i>Phasianus colchicus</i>	51.9	Hudson et al., 1984
	<i>Sturnus vulgaris</i>	> 100	Schafer et al., 1983
Zinc phosphide	<i>Agelaius phoeniceus</i>	23.7	Schafer et al., 1983
		237	Schafer et al., 1983
	<i>Agelaius tricolor</i>	75	Schafer et al., 1983
		237	Schafer et al., 1983
	<i>Anas platyrhynchos</i>	35.7	Hudson et al., 1984
		37.5	Agro. Handbook, 1994
	<i>Aquila chryseatos</i>	> 20	Hudson et al., 1984
	<i>Colinus virginianus</i>	13.5	Agro. Handbook, 1994
	<i>Eromophila alpestris</i>	47.2	Hudson et al., 1984
	<i>Phasianus colchicus</i>	16.4	Hudson et al., 1984

Aph. = *Aphelocoma*
 Mel. = *melopsittacus*
 Tym. = *Tympanuchus*
 Xan. = *Xanthocephalus*

Appendix B LD₅₀ toxicity data for mammals (mg/kg BW)

Compound	Species	LD ₅₀ mg/kg BW	Reference
1,1,1-Trichloroethane	Rat	12300	Hayes & Laws, 1991
	Mouse	11240	Hayes & Laws, 1991
	Rabbit	5660	Hayes & Laws, 1991
	Guinea pig	9470	Hayes & Laws, 1991
1,2-Dibromoethane	Rat	146	Hayes & Laws, 1991
	Rat	117	Hayes & Laws, 1991
	Mouse	420	Hayes & Laws, 1991
	Rabbit	55	Hayes & Laws, 1991
	Guinea pig	110	Hayes & Laws, 1991
2,4-D	Rat	666	Hayes & Laws, 1991
	Rat	375	Hayes & Laws, 1991
	Rat	395	Hayes & Laws, 1991
	Rat	390	Hayes & Laws, 1991
	Rat	855	Hayes & Laws, 1991
	Rat	625	Hayes & Laws, 1991
	Rat	1200	Hayes & Laws, 1991
	Rat	730	Hayes & Laws, 1991
	Rat	1000	Hayes & Laws, 1991
	Mouse	375	Hayes & Laws, 1991
	Mouse	300	Hayes & Laws, 1991
	Mouse	360	Hayes & Laws, 1991
	Rabbit	800	Hayes & Laws, 1991
	Guinea pig	1000	Hayes & Laws, 1991
	Guinea pig	469	Hayes & Laws, 1991
	Dog	541	FAO, 1971
	Dog	100	Hayes & Laws, 1991
Monkey	>428	FAO, 1971	
Acephate	Rat	1100	FAO, 1977
	Rat	1494	FAO, 1977
	Rat	2025	FAO, 1977
	Rat	945	FAO, 1977
	Rat	866	FAO, 1977
	Rat	1230	FAO, 1977
	Mouse	362	FAO, 1977
	Rabbit	707	FAO, 1977
	Dog	215	FAO, 1977
	Aldicarb	Rat	0.46
Rat		1.23	Hayes & Laws, 1991
Rat		0.93	Agro. Handbook, 1994
Rat		0.8	Gaines, 1969
Rat		0.65	Gaines, 1969
Mouse		0.38	Hayes & Laws, 1991
Mouse		1.5	Hayes & Laws, 1991
Mouse		0.3	Fahmi et al., 1970
Mouse		0.5	Fahmi et al., 1970

	Guinea pig	1	Hayes & Laws, 1991
	Rabbit	1.3	Hayes & Laws, 1991
Aldrin	Rat	67	Hayes & Laws, 1991
	Rat	54	Hayes & Laws, 1991
	Rat	56	Hayes & Laws, 1991
	Rat	43	Hayes & Laws, 1991
	Rat	44	Hayes & Laws, 1991
	Rat	14	Hayes & Laws, 1991
	Rat	10	Hayes & Laws, 1991
	Rat	45	Hayes & Laws, 1991
	Rat	50	Hayes & Laws, 1991
	Rat	49	Hayes & Laws, 1991
	Rat	45	Hayes & Laws, 1991
	Rat	74	Hayes & Laws, 1991
	Rat	25	Hayes & Laws, 1991
	Rat	39	Hayes & Laws, 1991
	Rat	60	Hayes & Laws, 1991
	Rat	46	Maier-Bode, 1965
	Mouse	44	Maier-Bode, 1965
	Guinea Pig	33	Maier-Bode, 1965
	Rabbit	50	Maier-Bode, 1965
	Rabbit	80	Maier-Bode, 1965
	Dog	65	Maier-Bode, 1965
	Dog	95	Maier-Bode, 1965
Atrazine	Rat	1900	Hayes & Laws, 1991
	Rat	3080	Agro. Handbook, 1994
	Rat	3000	Hayes & Laws, 1991
	Rat	737	Gaines & Linder, 1986
	Rat	672	Gaines & Linder, 1986
	Rat	2310	Gaines & Linder, 1986
	Rat	4080	Archives RIVM/ACT,
	Mouse	1750	Agro. Handbook, 1994
	Rabbit	750	Agro. Handbook, 1994
	Rabbit	600	Archives RIVM/ACT
	Guinea pig	250	Archives RIVM/ACT
Barban	Rat	600	Maier-Bode, 1971
	Rat	1350	Maier-Bode, 1971
	Rat	1300	Agro. Handbook, 1990
	Rat	1500	Agro. Handbook, 1990
	Mouse	1350	Maier-Bode, 1971
	Guinea pig	240	Maier-Bode, 1971
	Rabbit	600	Maier-Bode, 1971
Bendiocarb	Rat	34	Hayes & Laws, 1991
	Rat	156	Hayes & Laws, 1991
	Rat	40	Agro. Handbook, 1994
	Mouse	28	Hayes & Laws, 1991
	Mouse	45	Hayes & Laws, 1991
	Hamster	141	Hayes & Laws, 1991
	Guinea pig	35	Hayes & Laws, 1991
	Rabbit	35	Hayes & Laws, 1991
	Rabbit	40	Hayes & Laws, 1991

Bentazone	Rat	850	Agro. Handbook, 1990
	Rat	1100	Archives RIVM/ACT
	Mouse	400	Archives RIVM/ACT
	Mouse	1130	Archives RIVM/ACT
	Rabbit	750	Archives RIVM/ACT
	Cat	500	Agro. Handbook, 1994
Brodifacoum	Rat	0.27	Hayes & Laws, 1991
	Mouse	50	Hayes & Laws, 1991
	Guinea pig	0.40	Hayes & Laws, 1991
	Rabbit	0.28	Hayes & Laws, 1991
	Dog	0.25	Hayes & Laws, 1991
	Dog	1	Hayes & Laws, 1991
	Cat	0.25	Hayes & Laws, 1991
Bromophos-ethyl	Rat	170	Agro. Handbook, 1994
	Rat	127	FAO, 1973
	Rat	52	FAO, 1973
	Mouse	210	FAO, 1973
	Mouse	550	FAO, 1973
	Rabbit	28	FAO, 1973
	Dog	335	FAO, 1973
Camphechlor	Rat	90	Hayes & Laws, 1991
	Rat	80	Hayes & Laws, 1991
	Rat	69	Hayes & Laws, 1991
	Rat	240	Hayes & Laws, 1991
	Rat	120	Hayes & Laws, 1991
	Rat	270	Hayes & Laws, 1991
	Rat	40	Agro. Handbook, 1990
	Rat	123	Carpenter et al., 1961
	Rat	125	Maier-Bode, 1965
	Rat	150	Maier-bode, 1965
	Rat	60	Kerr & Brogdon, 1959
	Mouse	45	Hayes & Laws, 1991
	Mouse	112	Hayes & Laws, 1991
	Mouse	80	Agro. Handbook, 1990
	Guinea pig	250	Agro. Handbook, 1990
	Guinea pig	300	Agro. Handbook, 1990
	Guinea pig	69	Maier-Bode, 1965
	Guinea pig	375	Maier-Bode
	Rabbit	75	Agro. Handbook, 1990
	Rabbit	100	Hayes & Laws, 1991
Rabbit	25	Maier-Bode, 1965	
Hamster	200	Hayes & Laws, 1991	
Dog	49	Hayes & Laws, 1991	
Dog	15	Maier-Bode, 1965	
Dog	40	Maier-bode, 1965	
Cat	40	Hayes & Laws, 1991	
Sheep	100	Maier-Bode, 1965	
Cow	50	Maier-Bode, 1965	
Carbaryl	Rat	233	Hayes & Laws, 1991
	Rat	850	Hayes & Laws, 1991
	Rat	500	Gaines, 1960

	Rat	510	Carpenter et al., 1961
	Rat	610	Carpenter et al., 1961
	Rat	561	Carpenter et al., 1961
	Rat	310	Carpenter et al., 1961
	Rat	600	Schafer, 1972
	Rat	540	Maier-Bode, 1965
	Mouse	108	Hayes & Laws, 1991
	Mouse	650	Hayes & Laws, 1991
	Mouse	540	Fahmi et al., 1970
	Guinea pig	280	Hayes & Laws, 1991
	Gerbil	491	Hayes & Laws, 1991
	Rabbit	710	Hayes & Laws, 1991
	Dog	250	Hayes & Laws, 1991
	Dog	795	Hayes & Laws, 1991
	Cat	125	Hayes & Laws, 1991
	Cat	250	Hayes & Laws, 1991
	Monkey	> 1000	Hayes & Laws, 1991
	Swine	1500	Hayes & Laws, 1991
	Swine	2000	Hayes & Laws, 1991
Carbofuran	Rat	5.3	Hayes & Laws, 1991
	Rat	13.2	Hayes & Laws, 1991
	Rat	14	Gras & Cisse, 1986
	Rat	34.5	Rand, 1989
	Rat	11.3	FAO, 1977
	Rat	18	FAO, 1977
	Rat	34.5	FAO, 1977
	Rat	7.8	FAO, 1977
	Rat	11.9	FAO, 1977
	Rat	6	FAO, 1977
	Rat	13.8	FAO, 1977
	Rat	6.4	FAO, 1977
	Rat	7.1	FAO, 1977
	Rat	8.2	FAO, 1977
	Rat	14.1	FAO, 1977
	Rat	3.8	FAO, 1977
	Rat	1.7	FAO, 1977
	Rat	3.4	FAO, 1977
	Mouse	14.4	FAO, 1977
	Mouse	2	Hayes & Laws, 1991
	Dog	18.9	FAO, 1977
	Dog	15	FAO, 1977
	Cat	2.5	FAO, 1977
	Cat	3.5	FAO, 1977
	Guinea pig	9.2	FAO, 1977
	Rabbit	7.5	FAO, 1977
Carbophenothrion	Rat	30	Gaines, 1960
	Rat	10	Gaines, 1960
	Rat	32	Carpenter et al., 1961
	Rat	24	Schafer, 1972
	Rat	37	FAO, 1978
	Rat	12	FAO, 1978

	Rat	17	FAO, 1973
	Rat	91	FAO, 1973
	Rat	7	FAO, 1973
	Mouse	106	Stanley & Bunyan, 1979
	Mouse	218	Stanley & Bunyan, 1979
	Rabbit	1250	Stanley & Bunyan, 1979
	Dog	40	Stanley & Bunyan, 1979
Chloralose	Rat	300	Hayes & Laws, 1991
	Rat	400	Hayes & Laws, 1991
	Mouse	300	Hayes & Laws, 1991
	Mouse	400	Hayes & Laws, 1991
	Cat	100	Hayes & Laws, 1991
	Dog	600	Hayes & Laws, 1991
	Dog	1000	Hayes & Laws, 1991
Chlordane	Rat	400	Hayes & Laws, 1991
	Rat	500	Hayes & Laws, 1991
	Rat	600	Hayes & Laws, 1991
	Rat	700	Hayes & Laws, 1991
	Rat	600	Hayes & Laws, 1991
	Rat	700	Hayes & Laws, 1991
	Rat	335	Hayes & Laws, 1991
	Rat	430	Hayes & Laws, 1991
	Rat	150	Hayes & Laws, 1991
	Rat	225	Hayes & Laws, 1991
	Mouse	430	Hayes & Laws, 1991
	Rabbit	300	Hayes & Laws, 1991
	Rabbit	100	Hayes & Laws, 1991
	Rabbit	200	Hayes & Laws, 1991
	Rabbit	20	Hayes & Laws, 1991
	Rabbit	40	Hayes & Laws, 1991
	Goat	180	Hayes & Laws, 1991
	Sheep	500	Hayes & Laws, 1991
	Sheep	1000	Hayes & Laws, 1991
Chlordimeform	Rat	250	Hayes & Laws, 1991
	Rat	340	Hayes & Laws, 1991
	Rat	170	Hayes & Laws, 1991
	Rat	220	Hayes & Laws, 1991
	Rat	225	Hayes & Laws, 1991
	Rat	330	Hayes & Laws, 1991
	Rat	335	Hayes & Laws, 1991
	Rat	123	Hayes & Laws, 1991
	Rat	178	Hayes & Laws, 1991
	Rat	220	Hayes & Laws, 1991
	Rat	170	Hayes & Laws, 1991
	Rat	460	Hayes & Laws, 1991
	Rat	355	Agro. Handbook, 1994
	Rat	265	FAO, 1973a
	Mouse	290	Hayes & Laws, 1991
	Mouse	267	Hayes & Laws, 1991
	Mouse	160	Hayes & Laws, 1991
	Mouse	220	FAO, 1973a

	Rabbit	625	Hayes & Laws, 1991
	Rabbit	625	Hayes & Laws, 1991
	Dog	150	Hayes & Laws, 1991
	Dog	100	Hayes & Laws, 1991
Chloridazon	Rat	3600	Hayes & Laws, 1991
	Rat	2000	Hayes & Laws, 1991
	Rat	3830	Agro. Handbook, 1994
	Rat	2140	Agro. Handbook, 1994
	Rat	3050	Archives RIVM/ACT
	Rat	2292	Archives RIVM/ACT
	Rat	2200	Archives RIVM/ACT
	Mouse	3000	Archives RIVM/ACT
	Mouse	2500	Hayes & Laws, 1991
	Guinea pig	500	Archives RIVM/ACT
	Guinea pig	640	Archives RIVM/ACT
	Guinea pig	3200	Hayes & Laws, 1991
	Rabbit	1250	Hayes & Laws, 1991
	Rabbit	1000	Archives RIVM/ACT
Chlorpyrifos	Rat	155	Hayes & Laws, 1991
	Rat	82	Hayes & Laws, 1991
	Rat	135	Hayes & Laws, 1991
	Rat	118	Hayes & Laws, 1991
	Rat	155	Hayes & Laws, 1991
	Rat	163	Hayes & Laws, 1991
	Rat	245	Hayes & Laws, 1991
	Rat	135	Hayes & Laws, 1991
	Rat	145	Schafer, 1972
	Rat	151	Hudson et al., 1984
	Mouse	152	Hayes & Laws, 1991
	Guinea pig	504	Hayes & Laws, 1991
	Rabbit	> 1000	Hayes & Laws, 1991
	Rabbit	1000	Agro. Handbook, 1994
	Rabbit	2000	Agro. Handbook, 1994
Chlorpyrifos-methyl	Rat	3733	FAO, 1976
	Rat	3597	FAO, 1976
	Rat	2472	FAO, 1976
	Rat	1828	FAO, 1976
	Rat	1700	FAO, 1976
	Rat	2140	FAO, 1976
	Rat	1090	FAO, 1976
	Rat	2140	FAO, 1976
	Rat	1630	FAO, 1976
	Rat	3600	FAO, 1976
	Mouse	2254	FAO, 1976
	Mouse	2032	FAO, 1976
	Mouse	1122	FAO, 1976
	Mouse	2440	FAO, 1976
	Guinea pig	2250	FAO, 1976
	Rabbit	2000	FAO, 1976
Dazomet	Rat	500	Dalgaard-Mikkelsen & Poulsen 1962

	Rat	640	Hayes & Laws, 1991
	Mouse	180	RTECS, 1993
	Mouse	430	Agro. Handbook, 1994
	Rabbit	120	RTECS, 1993
	Rabbit	320	Agro. Handbook, 1994
	Rabbit	620	Agro. Handbook, 1994
	Guinea pig	160	RTECS, 1993
Diazinon	Rat	235	Hayes & Laws, 1991
	Rat	435	Hayes & Laws, 1991
	Rat	108	Hayes & Laws, 1991
	Rat	76	Hayes & Laws, 1991
	Rat	250	Hayes & Laws, 1991
	Rat	285	Hayes & Laws, 1991
	Rat	300	Agro. Handbook, 1994
	Rat	400	Agro. Handbook, 1994
	Rat	466	Archives RIVM/ACT
	Rat	150	Schafer, 1971
	Rat	220	Schafer, 1971
	Rat	200	Maier-Bode, 1965
	Rat	260	Maier-Bode, 1965
	Rat	194	Maier-Bode, 1965
	Rat	213	Maier-Bode, 1965
	Rat	240	Agro. Handbook, 1990
	Rat	480	Agro. Handbook, 1990
	Rat	354	Carpenter et al., 1961
	Rat	225	Maier-Bode, 1965
	Rat	293	FAO, 1971
	Rat	408	FAO, 1971
	Mouse	80	Agro. Handbook, 1994
	Mouse	135	Agro. Handbook, 1994
	Mouse	107	Maier-Bode, 1965
	Mouse	144	Maier-Bode, 1965
	Mouse	156	Maier-Bode, 1965
	Mouse	82	Hayes & Laws, 1991
	Mouse	96	Hayes & Laws, 1991
	Guinea pig	320	Hayes & Laws, 1991
	Guinea pig	250	Agro. Handbook, 1994
	Guinea pig	355	Agro. Handbook, 1994
	Rabbit	130	Hayes & Laws, 1991
Rabbit	143	Archives RIVM/ACT	
Rabbit	145	Maier-Bode, 1965	
Pig	70	Maier-Bode, 1965	
Pig	100	Maier-Bode, 1965	
Dichlobenil	Rat	3160	Hayes & Laws, 1991
	Rat	2710	RTECS, 1993
	Rat	1500	Maier-Bode, 1971
	Rat	4250	Maier-Bode, 1971
	Rat	4500	Genderen & Esch, 1968
	Mouse	2056	Hayes & Laws, 1991
	Mouse	2162	Hayes & Laws, 1991
	Mouse	2100	Genderen & Esch, 1968

	Mouse	866	Maier-Bode, 1971
	Guinea pig	501	Hayes & Laws, 1991
	Guinea pig	681	Hayes & Laws, 1991
	Rabbit	270	Hayes & Laws, 1991
	Rabbit	200	Maier-Bode, 1971
Dichlorophen	Rat	2600	Hayes & Laws, 1991
	Mouse	1000	Hayes & Laws, 1991
	Guinea pig	1250	Hayes & Laws, 1991
	Dog	2000	Hayes & Laws, 1991
Dieldrin	Rat	87	Hayes & Laws, 1991
	Rat	47	Hayes & Laws, 1991
	Rat	38	Hayes & Laws, 1991
	Rat	46	Hayes & Laws, 1991
	Rat	46	Hayes & Laws, 1991
	Rat	167.8	Lu et al., 1965
	Rat	24.9	Lu et al., 1965
	Rat	37	Lu et al., 1965
	Rat	87	Agro. Handbook, 1990
	Rat	142	Carpenter et al., 1961
	Rat	65	Maier-Bode, 1965
	Rat	40	Kerr & Brogdon, 1959
	Rat	50	Kerr & Brogdon, 1959
	Mouse	77	FAO, 1971
	Mouse	38	Stanley & Bunyan, 1979
	Mouse	74	Stanley & Bunyan, 1979
	Guinea pig	24	FAO, 1971
	Guinea pig	25	Maier-Bode, 1965
	Guinea pig	49	Maier-Bode, 1965
	Rabbit	45	Agro. Handbook, 1990
	Rabbit	50	Agro. Handbook, 1990
	Dog	56	Stanley & Bunyan, 1979
	Dog	120	Stanley & Bunyan, 1979
	Dog	65	Maier-Bode, 1965
	Dog	90	FAO, 1971
	Dog	95	Maier-Bode, 1965
	Dog	80	Romijn et al., 1991
	Sheep	50	Maier-Bode, 1965
	Sheep	75	Maier-Bode, 1965
	Pig	50	Maier-Bode, 1965
	Pig	75	Maier-Bode, 1965
	Big brown bat	28	Romijn et al., 1991
	Meadow vole	175	Romijn et al., 1991
	Vole	205	Romijn et al., 1991
	Prairie vole	210	Romijn et al., 1991
	Gray tailed v.	100	Romijn et al., 1991
	Mule deer	75	Romijn et al., 1991
	Mule deer	150	Romijn et al., 1991
	Goat	100	Romijn et al., 1991
	Goat	200	Romijn et al., 1991
Dimethoate	Rat	215	Hayes & Laws, 1991
	Rat	247	Hayes & Laws, 1991

Rat	185	Hayes & Laws, 1991
Rat	245	Hayes & Laws, 1991
Rat	230	Hayes & Laws, 1991
Rat	500	Hayes & Laws, 1991
Rat	600	Hayes & Laws, 1991
Rat	280	Hayes & Laws, 1991
Rat	350	Hayes & Laws, 1991
Rat	180	Hayes & Laws, 1991
Rat	325	Hayes & Laws, 1991
Rat	570	Hayes & Laws, 1991
Rat	680	Hayes & Laws, 1991
Rat	300	Hayes & Laws, 1991
Rat	356	Hayes & Laws, 1991
Rat	240	Hayes & Laws, 1991
Rat	336	Hayes & Laws, 1991
Rat	28	Hayes & Laws, 1991
Rat	30	Hayes & Laws, 1991
Rat	215	Hayes & Laws, 1991
Rat	245	Hayes & Laws, 1991
Rat	360	Hayes & Laws, 1991
Rat	355	Hayes & Laws, 1991
Rat	340	Archives RIVM/ACT
Rat	150	EHC 90, 1989
Rat	400	EHC 90, 1989
Rat	265	Maier-Bode, 1965
Rat	250	Schafer, 1971
Rat	172	EHC 90, 1989
Mouse	135	Hayes & Laws, 1991
Mouse	60	Hayes & Laws, 1991
Mouse	60	Hayes & Laws, 1991
Mouse	165	Hayes & Laws, 1991
Mouse	210	Archives RIVM/ACT
Mouse	125	EHC 90, 1989
Mouse	132	Maier-Bode, 1965
Mouse	205	Maier-Bode, 1965
Mouse	140	EHC 90, 1989
Hamster	220	Archives RIVM/ACT
Hamster	150	Archives RIVM/ACT
Guinea pig	500	Archives RIVM/ACT
Guinea pig	550	Hayes & Laws, 1991
Guinea pig	600	Hayes & Laws, 1991
Guinea pig	350	Hayes & Laws, 1991
Guinea pig	400	Hayes & Laws, 1991
Rabbit	500	Hayes & Laws, 1991
Rabbit	450	Hayes & Laws, 1991
Rabbit	300	Hayes & Laws, 1991
Rabbit	500	Archives RIVM/ACT
Rabbit	400	Archives RIVM/ACT
Cat	100	Hayes & Laws, 1991
Dog	400	Archives RIVM/ACT
Dog	280	Maier-Bode, 1965

	Sheep	80	EHC 90, 1989
	Cattle	70	EHC 90, 1989
Dinocap	Rat	950	Hayes & Laws, 1991
	Rat	1190	Hayes & Laws, 1991
	Mouse	53	Hayes & Laws, 1991
	Rabbit	2000	Hayes & Laws, 1991
	Dog	100	Hayes & Laws, 1991
Diquat	Rat	400	Hayes & Laws, 1991
	Rat	231	Hayes & Laws, 1991
	Rat	440	Daalgaard-Mikkelsen & Poulsen, 1962
	Rat	302	FAO, 1971
	Mouse	170	Hayes & Laws, 1991
	Mouse	125	Hayes & Laws, 1991
	Guinea pig	100	Hayes & Laws, 1991
	Rabbit	190	Hayes & Laws, 1991
	Rabbit	101	Hayes & Laws, 1991
	Rabbit	187	Agro. Handbook, 1994
	Dog	>200	Hayes & Laws, 1991
	Dog	100	Hayes & Laws, 1991
	Dog	200	Hayes & Laws, 1991
	Cow	30	Hayes & Laws, 1991
	Cow	30	Hayes & Laws, 1991
	Cow	37	Agro. Handbook, 1994
DNOC	Rat	34	Hayes & Laws, 1991
	Rat	31	Hayes & Laws, 1991
	Rat	26	Hayes & Laws, 1991
	Rat	25	Agro. Handbook, 1994
	Rat	40	Agro. Handbook, 1994
	Rat	85	Maier-Bode, 1971
	Rat	28	Maier-Bode, 1971
	Rat	40	Maier-Bode, 1971
	Rat	65	Maier-Bode, 1971
	Mouse	24	Agro. Handbook, 1994
	Mouse	16.4	Archives RIVM/ACT
	Mouse	47	Archives RIVM/ACT
	Mouse	100	Maier-Bode, 1971
	Mouse	125	Maier-Bode, 1971
	Guinea pig	23	Maier-Bode, 1971
	Rabbit	20	Maier-Bode, 1971
	Rabbit	30	Maier-Bode, 1971
	Cat	50	Archives RIVM/ACT
	Goat	100	Agro. Handbook, 1994
	Pig	100	Maier-Bode, 1971
	Sheep	200	Maier-Bode, 1971
Edifenphos	Rat	212	Agro. Handbook, 1994
	Rat	340	Agro. Handbook, 1994
	Rat	100	Agro. Handbook, 1994
	Rat	150	Agro. Handbook, 1994
	Rat	119	FAO, 1977
	Rat	340	FAO, 1977

	Rat	63	FAO, 1977
	Mouse	218	Agro. Handbook, 1994
	Mouse	670	Agro. Handbook, 1994
	Mouse	392	FAO, 1977
	Mouse	295	FAO, 1977
	Guinea pig	350	FAO, 1977
	Guinea pig	400	FAO, 1977
	Rabbit	250	FAO, 1977
	Rabbit	400	FAO, 1977
	Cat	>250	FAO, 1977
Endrin	Rat	28.8	Hayes & Laws, 1991
	Rat	16.8	Hayes & Laws, 1991
	Rat	43.4	Hayes & Laws, 1991
	Rat	7.3	Hayes & Laws, 1991
	Rat	40	Hayes & Laws, 1991
	Rat	17.8	Hayes & Laws, 1991
	Rat	7.5	Hayes & Laws, 1991
	Rat	27	Hayes & Laws, 1991
	Rat	5.6	Hayes & Laws, 1991
	Rat	5.3	Hayes & Laws, 1991
	Rat	15	Hayes & Laws, 1991
	Rat	10	Schafer, 1972
	Rat	12	Schafer, 1972
	Guinea pig	36	Hayes & Laws, 1991
	Guinea pig	16	Hayes & Laws, 1991
	Rabbit	7	Hayes & Laws, 1991
	Rabbit	10	Hayes & Laws, 1991
	Monkey	12	FAO, 1971
	Monkey	3	Hayes & Laws, 1991
EPN	Rat	91	Hayes & Laws, 1991
	Rat	14.5	Hayes & Laws, 1991
	Rat	42	Hayes & Laws, 1991
	Rat	14	Hayes & Laws, 1991
	Rat	50	Hayes & Laws, 1991
	Rat	36	Hayes & Laws, 1991
	Rat	7.7	Hayes & Laws, 1991
	Rat	37.5	Hayes & Laws, 1991
	Mouse	38	Hayes & Laws, 1991
	Mouse	42	Hayes & Laws, 1991
	Guinea pig	79	Hayes & Laws, 1991
	Dog	20	Hayes & Laws, 1991
	Dog	30	Hayes & Laws, 1991
	Dog	20	Hayes & Laws, 1991
	Dog	45	Hayes & Laws, 1991
EPTC	Rat	3160	Daalgaard-Mikkelsen & Poulse, 1962
	Rat	916	RTECS, 1993
	Rat	1630	Archives RIVM/ACT
	Mouse	750	RTECS, 1993
	Mouse	3160	Archives RIVM/ACT
	Rabbit	2640	RTECS, 1993

	Cat	112	RTECS, 1993
Ethiofencarb	Rat	308	Hayes & Laws, 1991
	Rat	500	Hayes & Laws, 1991
	Rat	200	RTECS, 1993
	Mouse	71	Hayes & Laws, 1991
	Mouse	256	Hayes & Laws, 1991
	Guinea pig	113	Hayes & Laws, 1991
	Gerbil	113	Hayes & Laws, 1991
	Rabbit	118	Hayes & Laws, 1991
	Rabbit	225	Hayes & Laws, 1991
	Dog	>50	Hayes & Laws, 1991
Fenamiphos	Rat	2.4	FAO, 1975
	Rat	15.6	FAO, 1975
	Rat	2.3	FAO, 1975
	Rat	19.4	FAO, 1975
	Mouse	22.7	FAO, 1975
	Guinea pig	56	FAO, 1975
	Guinea pig	100	FAO, 1975
	Rabbit	10	FAO, 1975
	Rabbit	17.5	FAO, 1975
	Dog	10	FAO, 1975
Cat	10	FAO, 1975	
Fenthion	Rat	250	Hayes & Laws, 1991
	Rat	615	Hayes & Laws, 1991
	Rat	190	Hayes & Laws, 1991
	Rat	310	Hayes & Laws, 1991
	Rat	215	Hayes & Laws, 1991
	Rat	245	Hayes & Laws, 1991
	Rat	250	Hayes & Laws, 1991
	Rat	175	FAO, 1973a
	Rat	470	FAO, 1973a
	Rat	375	Agro. Handbook, 1990
	Rat	290	Agro. Handbook, 1990
	Rat	220	FAO, 1973a
	Mouse	150	Hayes & Laws, 1991
	Mouse	190	Hayes & Laws, 1991
	Mouse	225	FAO, 1973a
	Mouse	227	FAO, 1973a
	Guinea pig	>1000	Hayes & Laws, 1991
	Guinea pig	1000	FAO, 1973a
Guinea pig	260	FAO, 1973a	
Guinea pig	310	FAO, 1973a	
Rabbit	150	Hayes & Laws, 1991	
Rabbit	175	Hayes & Laws, 1991	
Calf	40	FAO, 1973a	
Fentin-acetate	Rat	136	Hayes & Laws, 1991
	Rat	491	Hayes & Laws, 1991
	Rat	140	Agro. Handbook, 1994
	Rat	298	Agro. Handbook, 1994
	Mouse	81.3	Hayes & Laws, 1991
	Mouse	93	FAO/WHO, 1992

	Guinea pig	10	Hayes & Laws, 1991
	Guinea pig	21	Hayes & Laws, 1991
	Guinea pig	25	FAO/WHO, 1992
	Guinea pig	20	Schafer et al., 1983
	Rabbit	30	Hayes & Laws, 1991
	Rabbit	50	Hayes & Laws, 1991
	Rabbit	80	FAO/WHO, 1992
Ferrous sulfate	Rat	810	Archives RIVM/ACT
	Rat	5000	Archives RIVM/ACT
	Rat	319	Archives RIVM/ACT
	Rat	1480	Archives RIVM/ACT
	Mouse	680	RTECS, 1993
	Mouse	1520	HSDB, 1993
	Mouse	505	Archives RIVM/ACT
	Mouse	1330	Archives RIVM/ACT
	Guinea pig	1200	Archives RIVM/ACT
	Rabbit	984	Archives RIVM/ACT
	Rabbit	2778	Archives RIVM/ACT
	Dog	300	Archives RIVM/ACT
	Pig	450	Archives RIVM/ACT
	Pig	600	Archives RIVM/ACT
Formothion	Rat	330	Hayes & Laws, 1991
	Rat	375	Hayes & Laws, 1991
	Rat	350	Hayes & Laws, 1991
	Rat	370	Hayes & Laws, 1991
	Rat	400	Hayes & Laws, 1991
	Rat	500	Hayes & Laws, 1991
	Rat	540	Hayes & Laws, 1991
	Rat	218	Hayes & Laws, 1991
	Rat	332	Hayes & Laws, 1991
	Mouse	190	Hayes & Laws, 1991
	Mouse	195	Hayes & Laws, 1991
	Mouse	83.3	Hayes & Laws, 1991
	Cat	310	Hayes & Laws, 1991
	Sheep	180	Hayes & Laws, 1991
Heptachlor	Rat	100	Hayes & Laws, 1991
	Rat	163	Hayes & Laws, 1991
	Rat	90	Hayes & Laws, 1991
	Rat	55	Hayes & Laws, 1991
	Rat	68	EHC 38, 1984
	Rat	100	EHC 38, 1984
	Rat	162	EHC 38, 1984
	Rat	80	EHC 38, 1984
	Rat	147	Agro. Handbook, 1994
	Rat	220	Agro. Handbook, 1994
	Rat	130	Kerr & Brogdon, 1959
	Rat	132	Kerr & Brogdon, 1959
	Rat	105	Kerr & Brogdon, 1959
	Mouse	68	EHC 38, 1984
Hamster	100	EHC 38, 1984	
Guinea pig	116	EHC 38, 1984	

	Rabbit	80	EHC 38, 1984
	Rabbit	90	EHC 38, 1984
Hexachlorobenzene	Rat	3500	Hayes & Laws, 1991
	Mouse	4000	Hayes & Laws, 1991
	Rabbit	2600	Hayes & Laws, 1991
	Cat	1700	Hayes & Laws, 1991
Isobenzan	Rat	11.1	Hayes & Laws, 1991
	Rat	8.9	Hayes & Laws, 1991
	Rat	6.6	Hayes & Laws, 1991
	Rat	6.2	Hayes & Laws, 1991
	Mouse	10	Hayes & Laws, 1991
	Guinea pig	2.8	Hayes & Laws, 1991
	Guinea pig	2.3	Hayes & Laws, 1991
	Hamster	20	Hayes & Laws, 1991
	Hamster	8	Hayes & Laws, 1991
	Hamster	7.5	Hayes & Laws, 1991
	Rabbit	4	Hayes & Laws, 1991
	Dog	1.6	Hayes & Laws, 1991
	Cat	5.0	Hayes & Laws, 1991
Lindane	Rat	190	Hayes & Laws, 1991
	Rat	90	EHC 124, 1991
	Rat	270	EHC 124, 1991
	Rat	200	Hayes & Laws, 1991
	Rat	125	Hayes & Laws, 1991
	Rat	88	Hayes & Laws, 1991
	Rat	91	Hayes & Laws, 1991
	Rat	107	Carpenter et al., 1961
	Rat	170	Schafer, 1972
	Rat	130	Maier-Bode, 1965
	Rat	250	Maier-Bode, 1965
	Mouse	86	Hayes & Laws, 1991
	Mouse	340	Hayes & Laws, 1991
	Mouse	562	Hayes & Laws, 1991
	Mouse	55	EHC 124, 1991
	Mouse	250	EHC 124, 1991
	Mouse	59	Agro. Handbook, 1994
	Mouse	246	Agro. Handbook, 1994
	Guinea pig	100	Hayes & Laws, 1991
	Guinea pig	127	Hayes & Laws, 1991
	Guinea pig	90	EHC 124, 1991
	Guinea pig	200	EHC 124, 1991
	Guinea pig	100	Hayes & Laws, 1991
	Rabbit	200	Hayes & Laws, 1991
	Rabbit	40	Archives RIVM/ACT
	Rabbit	100	EHC 124, 1991
	Rabbit	170	Maier-Bode, 1965
	Dog	30	Archives RIVM/ACT
	Dog	200	Archives RIVM/ACT
	Cat	25	Archives RIVM/ACT
Malathion	Rat	5843	Hayes & Laws, 1991
	Rat	1400	Hayes & Laws, 1991

	Rat	1375	Hayes & Laws, 1991
	Rat	1000	Hayes & Laws, 1991
	Rat	2830	Hayes & Laws, 1991
	Rat	1401	Hayes & Laws, 1991
	Rat	8000	Hayes & Laws, 1991
	Rat	12500	Hayes & Laws, 1991
	Rat	10700	Hayes & Laws, 1991
	Rat	2800	Agro. Handbook, 1990
	Rat	2590	Carpenter et al., 1961
	Rat	1500	Klimmer & Pfaff, 1955
	Rat	1600	Maier-Bode, 1965
	Rat	1845	Maier-Bode, 1965
	Rat	925	Lu et al., 1965
	Rat	3697	Lu et al., 1965
	Rat	1224	Lu et al., 1965
	Rat	1211	Lu et al., 1965
	Rat	1221	Lu et al., 1965
	Rat	1172	Lu et al., 1965
	Rat	1378	Lu et al., 1965
	Rat	1177	Lu et al., 1965
	Rat	1217	Lu et al., 1965
	Rat	1288	Lu et al., 1965
	Rat	1026	Lu et al., 1965
	Rat	1149	Lu et al., 1965
	Rat	1216	Lu et al., 1965
	Rat	124.1	Lu et al., 1965
	Rat	386.8	Lu et al., 1965
	Rat	925.4	Lu et al., 1965
	Rat	134.4	Lu et al., 1965
	Rat	925.5	Lu et al., 1965
	Rat	3697	Lu et al., 1965
	Mouse	4059	Hayes & Laws, 1991
	Mouse	400	Hayes & Laws, 1991
	Mouse	500	Hayes & Laws, 1991
	Mouse	775	Klimmer & Pfaff, 1955
	Mouse	930	Klimmer & Pfaff, 1955
	Mouse	1120	Klimmer & Pfaff, 1955
	Mouse	3321	Maier-Bode, 1965
	Guinea pig	570	Klimmer & Pfaff, 1955
	Cow	560	Maier-Bode, 1965
	Cow	80	Maier-Bode, 1965
Mecarbam	Rat	25	Hayes & Laws, 1991
	Rat	53	Hayes & Laws, 1991
	Mouse	106	Hayes & Laws, 1991
	Guinea pig	65	Hayes & Laws, 1991
	Rabbit	60	Hayes & Laws, 1991
	Cat	<50	Hayes & Laws, 1991
	Sheep	20	Hayes & Laws, 1991
	Sheep	25	Hayes & Laws, 1991
Metaldehyde	Rat	227	Hayes & Laws, 1991
	Rat	690	Hayes & Laws, 1991

	Mouse	200	Hayes & Laws, 1991
	Guinea pig	175	Hayes & Laws, 1991
	Guinea pig	700	Hayes & Laws, 1991
	Rabbit	290	Hayes & Laws, 1991
	Rabbit	1250	Hayes & Laws, 1991
	Dog	100	Hayes & Laws, 1991
	Dog	1000	Hayes & Laws, 1991
Methamidophos	Rat	15.6	FAO, 1977
	Rat	32.2	FAO, 1977
	Rat	13	FAO, 1977
	Rat	29.6	FAO, 1977
	Rat	31	Hayes & Laws, 1991
	Rat	32	Hayes & Laws, 1991
	Rat	21	Hayes & Laws, 1991
	Mouse	16.2	FAO, 1977
	Guinea pig	30	FAO, 1977
	Guinea pig	30	FAO, 1977
	Rabbit	10	FAO, 1977
	Rabbit	30	FAO, 1977
	Dog	10	FAO, 1977
	Dog	30	FAO, 1977
	Cat	10	FAO, 1977
	Cat	30	FAO, 1977
Methidathion	Rat	31	Hayes & Laws, 1991
	Rat	32	Hayes & Laws, 1991
	Rat	21	Hayes & Laws, 1991
	Rat	20	FAO, 1973
	Rat	81	FAO, 1973
	Rat	26	FAO, 1973
	Rat	65	FAO, 1973
	Rat	25	Agro. Handbook, 1994
	Rat	54	Agro. Handbook, 1994
	Mouse	17	FAO, 1973
	Mouse	25	Agro. Handbook, 1994
	Mouse	70	Agro. Handbook, 1994
	Mouse	18	Hayes & Laws, 1991
	Guinea pig	25	Hayes & Laws, 1991
	Rabbit	80	Hayes & Laws, 1991
	Rabbit	63	Agro. Handbook, 1994
	Hamster	30	FAO, 1973
	Dog	200	Hayes & Laws, 1991
Methiocarb	Rat	100	Agro. Handbook, 1990
	Rat	130	Agro. Handbook, 1990
	Rat	135	Gras & Cisse, 1986
	Rat	132	Schafer, 1972
	Rat	70	Gaines, 1969
	Rat	60	Gaines, 1969
	Rat	13	Hayes & Laws, 1991
	Mouse	52	Agro. Handbook, 1994
	Mouse	58	Agro. Handbook, 1994
	Guinea pig	40	Agro. Handbook, 1994

	Guinea pig	14	Hayes & Laws, 1991
	Guinea pig	100	Hayes & Laws, 1991
	Dog	10	Hayes & Laws, 1991
	Dog	25	Hayes & Laws, 1991
Methomyl	Rat	12	Hayes & Laws, 1991
	Rat	48	Hayes & Laws, 1991
	Rat	17	Agro. Handbook, 1994
	Rat	24	Agro. Handbook, 1994
	Rat	20	Schafer, 1972
	Mouse	10	RTECS, 1993
	Guinea pig	10	RTECS, 1993
	Dog	20	Archives RIVM/ACT
Omethoate	Rat	28	FAO, 1973a
	Rat	65	FAO, 1973a
	Rat	50	Agro. Handbook, 1994
	Rat	25.6	FAO, 1979
	Rat	27.3	FAO, 1979
	Rat	23	FAO, 1973a
	Mouse	36	FAO, 1973a
	Mouse	27	FAO, 1973a
	Guinea pig	50	Archives RIVM/ACT
	Guinea pig	100	FAO, 1973a
	Rabbit	50	Agro. Handbook, 1994
	Cat	50	Agro. Handbook, 1994
Oxydemeton-methyl	Rat	65	Hayes & Laws, 1991
	Rat	65	Hayes & Laws, 1991
	Rat	75	Hayes & Laws, 1991
	Rat	30	Hayes & Laws, 1991
	Rat	75	Hayes & Laws, 1991
	Rat	47	Hayes & Laws, 1991
	Rat	52	Hayes & Laws, 1991
	Mouse	30	Hayes & Laws, 1991
	Guinea pig	120	Hayes & Laws, 1991
	Rabbit	104	Hayes & Laws, 1991
Paraquat	Rat	112	Hayes & Laws, 1991
	Rat	150	Hayes & Laws, 1991
	Rat	100	Hayes & Laws, 1991
	Rat	110	Hayes & Laws, 1991
	Rat	126	Hayes & Laws, 1991
	Rat	120	FAO, 1971
	Rat	157	FAO, 1971
	Rat	127	FAO, 1971
	Rat	141	FAO, 1971
	Mouse	98	Hayes & Laws, 1991
	Mouse	104	Agro. Handbook, 1994
	Mouse	210	FAO, 1987
	Mouse	260	FAO, 1987
	Guinea pig	30	Hayes & Laws, 1991
	Guinea pig	22	Hayes & Laws, 1991
	Guinea pig	42	Agro. Handbook, 1994
	Rabbit	126	FAO, 1977

	Hare	35	FAO, 1977
	Cat	40	Agro. Handbook, 1994
	Cat	50	Agro. Handbook, 1994
	Cat	35	Hayes & Laws, 1991
	Dog	25	Agro. Handbook, 1994
	Dog	50	Agro. Handbook, 1994
	Monkey	75	FAO, 1987
	Monkey	50	Hayes & Laws, 1991
	Sheep	50	Agro. Handbook, 1994
	Sheep	75	Agro. Handbook, 1994
	Cow	50	Agro. Handbook, 1994
	Cow	75	Agro. Handbook, 1994
	Cow	35	FAO, 1977
	Cow	60	FAO, 1977
Parathion	Rat	15	Hayes & Laws, 1991
	Rat	3	Hayes & Laws, 1991
	Rat	30	Hayes & Laws, 1991
	Rat	3	Hayes & Laws, 1991
	Rat	15	Hayes & Laws, 1991
	Rat	13	Hayes & Laws, 1991
	Rat	3.6	Hayes & Laws, 1991
	Rat	16	Hayes & Laws, 1991
	Rat	6	Hayes & Laws, 1991
	Rat	5	FAO, 1964
	Rat	1.75	FAO, 1964
	Rat	5	FAO, 1964
	Rat	6.4	Maier-Bode, 1965
	Rat	11	Maier-Bode, 1965
	Rat	6.2	Gras & Cisse, 1986
	Rat	8.1	Carpenter et al., 1961
	Mouse	25	Hayes & Laws, 1991
	Mouse	12.8	Hayes & Laws, 1991
	Mouse	12	Agro. Handbook, 1990
	Mouse	6	Klimmer & Pfaff, 1955
	Mouse	7.5	Klimmer & Pfaff, 1955
	Guinea pig	32	Hayes & Laws, 1991
	Guinea pig	16	Agro. Handbook, 1994
	Guinea pig	9.3	FAO, 1964
	Guinea pig	8	Klimmer & Pfaff, 1955
	Guinea pig	10	Klimmer & Pfaff, 1955
	Rabbit	10	FAO, 1964
	Dog	3	FAO, 1964
	Dog	5	FAO, 1964
	Goat	28	Hudson et al., 1984
	Goat	56	Hudson et al., 1984
	Mule deer	22	Hudson et al., 1984
	Mule deer	44	Hudson et al., 1984
	Horse	5	Maier-Bode, 1965
PCP	Rat	211	Hayes & Laws, 1991
	Rat	27	Hayes & Laws, 1991
	Rat	211	Hayes & Laws, 1991

	Rat	78	Hayes & Laws, 1991
	Rat	184	Hayes & Laws, 1991
	Rat	146	Hayes & Laws, 1991
	Rat	175	Hayes & Laws, 1991
	Mouse	130	Hayes & Laws, 1991
	Mouse	74	Hayes & Laws, 1991
	Mouse	177	Hayes & Laws, 1991
	Mouse	117	Hayes & Laws, 1991
	Rabbit	70	Hayes & Laws, 1991
	Rabbit	300	Hayes & Laws, 1991
	Hamster	170	Janus et al., 1991
	Guinea pig	100	Janus et al., 1991
	Dog	100	Janus et al., 1991
Phenthoate	Rat	77.7	Hayes & Laws, 1991
	Rat	118	Hayes & Laws, 1991
	Rat	242.5	Hayes & Laws, 1991
	Rat	4728	Hayes & Laws, 1991
	Rat	246	Hayes & Laws, 1991
	Rat	300	Agro. Handbook, 1994
	Rat	400	Agro. Handbook, 1994
	Mouse	350	Hayes & Laws, 1991
	Mouse	400	Hayes & Laws, 1991
	Guinea pig	377	Hayes & Laws, 1991
	Guinea pig	400	Agro. Handbook, 1994
	Rabbit	210	Hayes & Laws, 1991
	Hare	72	Hayes & Laws, 1991
	Dog	500	Hayes & Laws, 1991
Pirimiphos-methyl	Rat	1840	Hayes & Laws, 1991
	Rat	2260	Hayes & Laws, 1991
	Rat	1450	Hayes & Laws, 1991
	Rat	2050	FAO, 1975
	Mouse	1180	FAO, 1975
	Mouse	1030	Hayes & Laws, 1991
	Mouse	1360	Hayes & Laws, 1991
	Guinea pig	1000	Hayes & Laws, 1991
	Guinea pig	2000	Hayes & Laws, 1991
	Rabbit	1154	Hayes & Laws, 1991
	Rabbit	2300	Hayes & Laws, 1991
	Dog	1500	Hayes & Laws, 1991
	Cat	575	Hayes & Laws, 1991
	Cat	1150	Hayes & Laws, 1991
Pyriminil	Rat	12.3	Hayes & Laws, 1991
	Norway rat	4.75	Hayes & Laws, 1991
	Roof rat	18	Hayes & Laws, 1991
	Cotton rat	10	Hayes & Laws, 1991
	Cotton rat	60	Hayes & Laws, 1991
	Mouse	84	Hayes & Laws, 1991
	House mouse	98	Hayes & Laws, 1991
	Deer mouse	10	Hayes & Laws, 1991
	Deer mouse	20	Hayes & Laws, 1991
	Guinea pig	30	Hayes & Laws, 1991

	Guinea pig	100	Hayes & Laws, 1991
	Rabbit	300	Hayes & Laws, 1991
	Dog	500	Hayes & Laws, 1991
	Cat	62	Hayes & Laws, 1991
	Rhesus mon.	2000	Hayes & Laws, 1991
	Rhesus mon.	4000	Hayes & Laws, 1991
	Pig	500	Hayes & Laws, 1991
	Vole	205	Hayes & Laws, 1991
Silvex	Rat	650	Hayes & Laws, 1991
	Rat	600	Hayes & Laws, 1991
	Rat	621	Hayes & Laws, 1991
	Mouse	1410	Hayes & Laws, 1991
	Guinea pig	1250	Hayes & Laws, 1991
	Rabbit	752	Hayes & Laws, 1991
	Rabbit	819	Hayes & Laws, 1991
Sodium Fluoroacetate	Rat	0.22	Hayes & Laws, 1991
	Rat	2.5	Hayes & Laws, 1991
	Rat	1	Hayes & Laws, 1991
	Rat	2	Hayes & Laws, 1991
	Guinea pig	0.4	Hayes & Laws, 1991
	Dog	0.06	Hayes & Laws, 1991
	Cow	0.39	Hayes & Laws, 1991
	Calf	0.22	Hayes & Laws, 1991
	Opossum	0.79	Hayes & Laws, 1991
TCA	Rat	3320	Hayes & Laws, 1991
	Rat	4000	Maier-Bode, 1971
	Rat	5000	Agro. Handbook, 1994
	Rat	3200	Agro. Handbook, 1994
	Mouse	5600	Agro. Handbook, 1994
	Mouse	4970	Hayes & Laws, 1991
	Mouse	3600	RTECS, 1993
	Guinea pig	6000	RTECS, 1993
	Rabbit	4000	Hayes & Laws, 1991
	Cat	4000	RTECS, 1993
Thiodicarb	Rat	39	Hayes & Laws, 1991
	Rat	136	Hayes & Laws, 1991
	Mouse	226	Hayes & Laws, 1991
	Guinea pig	160	Hayes & Laws, 1991
	Rabbit	556	Hayes & Laws, 1991
	Monkey	467.2	Hayes & Laws, 1991
Thiometon	Rat	100	FAO, 1973b
	Rat	120	FAO, 1973b
	Rat	120	FAO, 1973b
	Rat	125	FAO, 1973b
	Rat	225	FAO, 1973b
	Rat	85	Agro. Handbook, 1990
	Mouse	62	FAO, 1973b
	Guinea pig	261	FAO, 1973b
	Rabbit	95	FAO, 1973b
Thiophanate-methyl	Rat	7500	Hayes & Laws, 1991
	Rat	6640	Hayes & Laws, 1991

	Mouse	3510	Hayes & Laws, 1991
	Mouse	3400	Hayes & Laws, 1991
	Guinea pig	3640	Hayes & Laws, 1991
	Guinea pig	6700	Hayes & Laws, 1991
	Rabbit	2270	Hayes & Laws, 1991
	Rabbit	2250	Hayes & Laws, 1991
	Dog	4000	Hayes & Laws, 1991
	Dog	4000	Hayes & Laws, 1991
Thiram	Rat	865	Hayes & Laws, 1991
	Rat	640	Hayes & Laws, 1991
	Rat	620	Hayes & Laws, 1991
	Rat	4000	Hayes & Laws, 1991
	Rat	1900	Hayes & Laws, 1991
	Rat	780	Agro. Handbook, 1994
	Rat	1300	EHC 78, 1988
	Rat	450	Fishbein, 1976
	Mouse	1500	Hayes & Laws, 1991
	Mouse	2000	Hayes & Laws, 1991
	Mouse	4000	Hayes & Laws, 1991
	Mouse	2050	Dalvi, 1988
	Mouse	2500	Dalvi, 1988
	Mouse	3800	Hayes & Laws, 1991
	Rabbit	350	Dalvi, 1988
	Rabbit	210	EHC 78, 1988
	Cat	230	EHC 78, 1988
	Sheep	225	Hayes & Laws, 1991
Trichlorfon	Rat	450	Hayes & Laws, 1991
	Rat	432	Hayes & Laws, 1991
	Rat	649	Hayes & Laws, 1991
	Rat	630	Hayes & Laws, 1991
	Rat	560	Hayes & Laws, 1991
	Rat	438	Hayes & Laws, 1991
	Rat	630	Hayes & Laws, 1991
	Rat	400	Schafer, 1972
	Rat	950	Maier-Bode, 1965
	Rat	1100	Maier-Bode, 1965
	Rat	625	Maier-Bode, 1965
	Rat	316	FAO, 1973a
	Rat	650	FAO, 1973a
	Mouse	660	Hayes & Laws, 1991
	Mouse	579	Hayes & Laws, 1991
	Mouse	650	Hayes & Laws, 1991
	Mouse	1370	Hayes & Laws, 1991
	Mouse	727	Hayes & Laws, 1991
	Mouse	866	Hayes & Laws, 1991
	Mouse	950	FAO, 1973a
	Rabbit	160	FAO, 1973a
	Dog	420	FAO, 1973a
	Horse	100	FAO, 1973a
	Calf	600	Hayes & Laws, 1991

Trichloronat	Rat	16	FAO, 1973a
	Rat	55	FAO, 1973a
	Rat	16	FAO, 1973a
	Rat	37.5	FAO, 1973a
	Mouse	40	Agro. Handbook, 1990
	Guinea pig	40	FAO, 1973a
	Guinea pig	100	FAO, 1973a
	Rabbit	25	FAO, 1973a
	Rabbit	50	FAO, 1973a
	Cat	10	FAO, 1973a
	Cat	25	FAO, 1973a

Legend v. = vole

Appendix C References

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