A Weight of Evidence approach for the assignment of the T-classification to Azoxystrobin

Project Number: 12-003-09

Author: D J Bealing

Prepared for: Lanxess Deutschland GmbH

TSGE Consulting Ltd

25 November 2016

TSGE Consulting Ltd
Concordia House ■ St James Business Park ■ Grimbald Crag Court ■ Knaresborough
North Yorkshire ■ HG5 8QB ■ United Kingdom
T +44 (0) 1423 799 633 F +44 (0) 1423 797 804 E tsge@tsgeconsulting.com W www.tsgeconsulting.com
Registered in England Registration No. 8887436

Table of Contents

1. Executive Summary

Lanxess Deutschland GmbH has submitted a technical dossier supporting the approval of azoxystrobin as a biocide active substance for preservative use under PT7, PT9 and PT10. The purpose of this document is to assign an appropriate toxicity (T) classification in the context of the PBT assessment for azoxystrobin, by applying a weight of evidence approach to the available aquatic ecotoxicology data.

The totality of the aquatic toxicity data available for azoxystrobin has been considered in relation to the trigger values that apply to the T-classification, *viz*. 0.1 mg/L for acute effects and 0.01 mg/L for chronic impacts. Assignment of the appropriate T-classification for azoxystrobin should rely on more than a simplistic comparison of the lowest of all endpoints against the corresponding trigger value.

Furthermore account should be taken of the behaviour of azoxystrobin in the aquatic compartment, specifically that it undergoes degradation, giving rise to three relevant degradates (R401553, R402173 and R234886) that are all substantially less toxic than the parent active substance.

Taking account of the full weight of all the available acute and chronic aquatic toxicity endpoints, as well as higher tier data and the behaviour of azoxystrobin in the environment, it is proposed that azoxystrobin be classified as non-Toxic (not T) in the context of the PBT assessment.

2. Introduction

According to current ECHA guidance (ECHA, 2014[1]), a preliminary assessment of whether a substance qualifies for T classification may be made in the first instance by comparing the available endpoint(s) from acute toxicity tests against trigger values of 0.01 and 0.1 mg/L.

If one or more acute endpoint(s) lie below the lower trigger (0.01 mg/L), the substance is assigned the T classification without any need for further consideration.

If one or more acute endpoint(s) lie below the higher trigger (0.1 mg/L), the substance is considered to be potentially T. In this circumstance, a definitive conclusion can only be drawn by making a similar comparison with the endpoint(s) available from one or more tests of chronic aquatic toxicity. The trigger value that applies to chronic toxicity endpoints is a concentration of 0.01 mg/L.

The T-classification may also be accomplished by a weight-of-evidence approach, however the form that this should take is undefined.

The weight of the evidence available for azoxystrobin is considered below. Please note, in accordance with Article 66 2(d) of Regulation (EU) No 528/2012 concerning confidentiality, the names and addresses of persons involved in testing on vertebrates have been redacted in this document.

3. Acute toxicity of azoxystrobin

The following acute/short-term toxicity endpoints have been established for azoxystrobin technical active substance and are listed in the current dCAR, and/or in the Monograph (1997) and Draft Assessment Report (2009) previously prepared for azoxystrobin in the context of EU approval as an active substance for use in the plant protection sector.

[1] ECHA (2014). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.11: PBT/vPvB assessment. Version 2.0, November 2014. European Chemicals Agency, Helsinki.

Table 1: Acute and short-term toxicity endpoints for aquatic organisms exposed to azoxystrobin technical active substance (previously evaluated in the EU under Council Directive 91/414/EEC)

Species	Duration	Effect	Endpoint	Result (mg a.s./ L)	Source
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	0.47	[redacted] (1993)[a]
Cyprinus carpio	96 h	Mortality	LC_{50}	1.6	[redacted] (1993)[a]
Lepomis macrochirus	96 h	Mortality	LC_{50}	1.1	[redacted] (1993)[a]
Cyprinodon variegatus	96 h	Mortality	LC_{50}	0.66	[redacted] (1992)[b]
Oryzias latipes	96 h	Mortality	LC_{50}	1.38	[redacted] (1994a)[b]
Misgumus anguilicaudatus	96 h	Mortality	LC_{50}	1.65	[redacted] (1994b)[b]
Daphnia magna	48 h	Immobility	EC_{50}	0.28	Rapley *et al*. (1994a)[a]
Daphnia magna	48 h	Immobility	EC_{50}	0.23	Farrelly & Hamer (1994)a
Daphnia pulex	48 h	Mortality	LC_{50}	0.20	Rapley *et al*. (1995a)[a]
Macrocyclops fuscus	48 h	Mortality	LC_{50}	0.13	Farrelly *et al*. (1995a)[a]
Brachionus calyciflorus	48 h	Mortality	LC_{50}	> 4.00	Farrelly *et al*. (1995b)[a]
Chaoborus crystallinus	48 h	Mortality	LC_{50}	1.60	Farrelly *et al*. (1995c)[a]
Gammarus pulex	48 h	Mortality	LC_{50}	0.35	Farrelly *et al*. (1995d)[a]
Asellus aquaticus	48 h	Mortality	LC_{50}	> 4.00	Farrelly *et al*. (1995e)[a]
Cloeon dipterum	48 h	Mortality	LC_{50}	3.20	Farrelly *et al*. (1995f)[a]
Chironomus riparius	48 h	Mortality	LC_{50}	0.21	Farrelly *et al*. (1995g)[a c]
Ischnura elegans	48 h	Mortality	LC_{50}	> 4.00	Farrelly *et al*. (1995h)[a]
Notonecta glauca	48 h	Mortality	LC_{50}	> 4.00	Rapley *et al*. (1995b)[a]
Lymnea stagnalis	48 h	Mortality	LC_{50}	> 4.00	Farrelly *et al*. (1995i)[a]
Americamysis bahia	96 h	Mortality	LC_{50}	**0.055**	Kent *et al*. (1993a)[b]
Crassostrea gigas	48 h	Growth	EC_{50}	1.3	Kent *et al*. (1994a)[b]
Pseudokirchneriella subcapitata	72 h	Growth	E_rC_{50}	1.47	Smyth *et al*. (1993a)[a]
Skeletonema costatum	72 h	Growth	E_rC_{50}	0.300	Sankey *et al*. (1994)[b]
Navicula pelliculosa	72 h	Growth	E_rC_{50}	0.146	Smyth *et al*. (1994a)[b]
Anabaena flos-aquae	72 h	Growth	E_rC_{50}	13.9	Smyth *et al*. (1994b)[b]
Lemna gibba	14 d	Growth	EC_{50}	3.2	Smyth *et al*. (1994c)[b]
Pseudomonas putida	6 h	Growth	EC_{50}	> 3.2	Morris *et al*. (1994)[a]

[a] First noted in Volume 3, Annex B.8: Ecotoxicology of the Monograph prepared by RMS DE, 1997.

[b] First noted in Volume 3, Annex B.9: Ecotoxicology of the DAR prepared by RMS UK, May 2009.

[c] Test vessels contained 180 mL aquatic medium and a thin layer of silver sand (3 g) that is unlikely to have provided a matrix for azoxystrobin to adsorb significantly from the overlying water. Exposure is therefore considered to have been predominantly aquatic rather than via sediment.

Comparison of the set of endpoints contained in Table 1 against the acute T-trigger shows that the trigger is breached by just one value: the 96 h LC_{50} for the brackish-water mysid shrimp, *A. bahia*. The relevance and representativeness of *A. bahia* for the populations of aquatic invertebrates in the primarily fresh-water environments where azoxystrobin contamination may occur is discussed in the 2009 DAR. Further general opinion of the relevance of these and other brackish- or sea-water species has been developed subsequently and is given elsewhere, *e.g*. EFSA (2013)[2]. The current consensus opinion is that endpoints provided by these organisms – although typically lower than those provided by their freshwater counterparts – are representative of the invertebrate response as a whole and should therefore be taken into consideration unless there are compelling scientific arguments to the contrary. According to the 2009 DAR there appear to be no compelling grounds to exclude the *A. bahia* response for azoxystrobin.

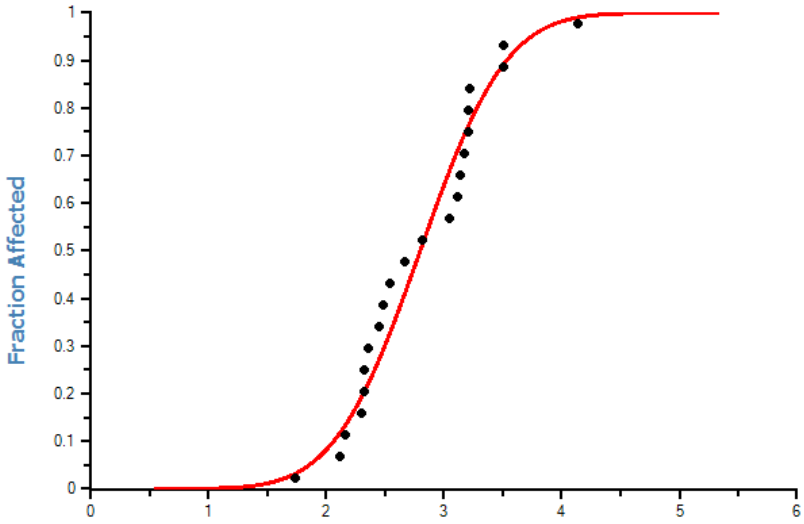
According to ECHA (2014), assignment of the T-classification may be done on a weight-of-evidence basis. No prescriptive guidance is provided to indicate what this should entail. It does, however, strongly suggest that the assignment should take account of the totality of the available response data and consider them as a whole. In the case of azoxystrobin, which is supported by an extensive array of endpoints for diverse species, this permits a greater degree of confidence in the assignment of the T-classification than that which may be accomplished for some other substance where the available data are limited to the standard base-set of just three L/EC_{50} endpoints for fish, *Daphnia* and algae.

4. Species sensitivity distribution (SSD) based on acute toxicity

The acute data set for all aquatic organisms has been used to construct a species sensitivity distribution relationship with ETX 2.1 (RIVM (2015)[3]). The endpoints used for this purpose were drawn from Table 1 and were limited to finite values (*i.e*. all L/EC_{50}s reported as 'greater than' (> x mg/L) were excluded). Note that this restriction has deleted 5 endpoints that all exceed the acute T-trigger by a considerable margin (all > 3.2 mg/L) and that there were no such endpoints close to or lower than the T-trigger. The resulting curve is shown below and the corresponding normality analysis is provided in the Appendix.

[2] EFSA PPR Panel (EFSA Panel on Plant Protection Products and their Residues), 2013. Guidance on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters. EFSA Journal 2013;11(7):3290, 268 pp.
[3] http://www.rivm.nl/rvs/Risicobeoordeling/Modellen_voor_risicobeoordeling/ETX

Figure 1: Acute Species Sensitivity Distribution plot (ETX 2.1) for aquatic organisms exposed to azoxystrobin technical active substance



Only one observed endpoint (*A. bahia* 96 h LC_{50}: 55 µg/L) lies in the tail of the SSD curve below 100 µg/L, corresponding to the T-trigger for acute aquatic toxicity endpoints.

The SSD program provides a facility for using the SSD to estimate the fraction of affected species (FA) at a given concentration. At a concentration of 0.1 mg/L, corresponding to the acute T-trigger, ETX 2.1 estimates that the median percentage of species that will be acutely affected by this azoxystrobin concentration is 8.55%. The variation in the dataset allows 90% confidence that the percentage of aquatic species acutely affected by 0.1 mg azoxystrobin/L lies between 3.05% and 18.90%.

The further acute/short-term toxicity endpoints presented in Table 2 below are provided by studies performed with a suspension concentrate (SC) formulated product containing 250 g azoxystrobin/L intended for outdoor use by spraying on agricultural crops.

Table 2: Acute and short-term toxicity endpoints for aquatic organisms exposed to a 250 g azoxystrobin/L suspension concentrate (SC) plant protection product (previously evaluated in the EU under Council Directive 91/414/EEC) and regulation 1107/2009

Species	Duration	Effect	Endpoint	Result (mg a.s./L)	Source
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	0.56	[redacted] (1994b)[a]
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	0.28	[redacted] (1994c)[a]
Cyprinus carpio	96 h	Mortality	LC_{50}	0.64	[redacted] (1994d)[a]
Daphnia magna	48 h	Immobility	EC_{50}	0.19	Farrelly *et al*. (1994)[a]
Daphnia magna	48 h	Immobility	EC_{50}	0.11	Rapley *et al* (1994b)[a]
Pseudokirchneriella subcapitata	72 h	Growth		0.16	Smyth *et al*. (1994d)[a]
Pseudokirchneriella subcapitata	120 h	Growth	E_rC_{50}	0.054	Smyth *et al*. (1994e)[a]

[a] First noted in Volume 3, Annex B.8: Ecotoxicology of the Monograph prepared by RMS DE, 1997.

It should be noted that these studies were performed at around the same time by the same groups of workers in the same test facilities ([redacted] and [redacted]) and with the same in-house stocks of test organisms, as the majority of those listed for the technical grade active substance in Table 1 above. Inter laboratory variation may therefore be considered to have made minimal contribution to variation in results and - in particular – to the observation that the 250 g/L SC formulation generally exhibited somewhat higher toxicity (lower endpoint) than in the corresponding test with the same test species exposed to the unformulated active substance. This increased toxicity – specifically that apparent in *D. magna* as the standard representative invertebrate- may have been due to the composition and/or other characteristics of the formulation. It is therefore feasible that the responses observed in outdoor microcosms treated with the 250 g azoxystrobin/L SC formulation reflect a somewhat higher initial impact than would have occurred had the microcosms instead been treated with unformulated azoxystrobin active substance. The microcosm study is given further consideration below.

5. Chronic toxicity of azoxystrobin

The following chronic/long-term toxicity endpoints have been established for azoxystrobin technical active substance and are listed in the current dCAR, and/or in the Monograph (1997) and Draft Assessment Report (2009) previously prepared for azoxystrobin in the context of EU approval as an active substance for use in the plant protection sector.

Table 3: Chronic and long-term toxicity endpoints for azoxystrobin technical active substance (previously evaluated in the EU under Council Directive 91/414/EEC)

Species	Duration	Effect	Endpoint	Result (mg/L)	Source
Pimephales promelas	33 d	Growth	NOEC	0.147	[redacted] (1994e)
Daphnia magna	21 d	Repro.	NOEC	0.044	Rapley et al. (1994c)
Americamysis bahia	28 d	Mortality & repro.	NOEC	**0.00954**	Boeri *et al*. (1997)[b]
Navicula pelliculosa	120 h	Growth	NOEC	0.020	Smyth *et al*. (1994a)[b]

[a] First noted in Volume 3, Annex B.8: Ecotoxicology of the Monograph prepared by RMS DE, 1997.

[b] First noted in Volume 3, Annex B.9: Ecotoxicology of the DAR prepared by RMS UK, May 2009.

Comparison of the set of endpoints contained in Table 3 against the chronic T-trigger (0.01 mg/L) shows that the trigger is marginally breached by just one value: the 28 d NOEC of 0.00954 mg a.s./L for the brackish-water mysid shrimp, *A. bahia*.

There are insufficient chronic toxicity endpoints to construct a species-sensitivity distribution curve in the same way as for the acute toxicity data considered above. However, it should be noted that the response of *A. bahia* – the most acutely sensitive invertebrate species is covered in the chronic dataset. There is in principle no reason to expect that *A. bahia* would not mark the tail of an SSD curve of chronic responses in the same way that it represents the lowest observed value of the acute data set depicted in Figure 1.

6. Higher-tier pond-microcosm data (Cole *et al*. (1998))

The dCAR makes reference to an outdoor pond microcosm study that was evaluated for inclusion in the 2009 DAR. The study design entailed the single treatment of replicate enclosed experimental ponds with a 250 g azoxystrobin/L SC formulated product applied at nominal a.s.-equivalent concentrations of 0 (control), 10, 30, 100, 300 and 1000 µg/L. The DAR evaluation concluded as follows:

"The mesocosm study is considered to be a well-conducted mesocosm with an appropriate diversity and abundance of species. It should be noted that azoxystrobin was only applied once and concentrations were only measured 21 hours after application and not throughout the study. Species/groups were generally present in sufficient numbers to allow appropriate statistical analysis.

The Notifier proposed that the no observed ecologically adverse effects concentration (NOEAEC) is 10 µg/L. No uncertainty or assessment factor was proposed.

From the summary and tables and graphs presented above it can be concluded that there were effects at all concentrations, hence it is not possible to establish a NOEC. The treatment related effects at 10 µg/L were considered to be relatively short-lived and restricted to decreases in the following parameters:

Daphnia spp. – effects at 10 µg/L were noted at 3,7 and 14 days;

Total cladocera – effects at 10 µg/L were noted at 3, 7 and 14 days;

Copepoda nauplii – effects at day 35;

Copepepoda Cyclopoid copepodites – effects at 10 µg/L were noted at days 7 and 10;

Copepoda Cyclopoid adults – effects were noted on day 3 only;

Sphaeriidae – significantly fewer on days 72 and 93 for samples collected via nets, there were significantly fewer on days 22, 30, 44 and 72;

Total mollusc – in samples collected via nets were lower on days 22 and 72;

Total macroinvertebrates – in sample collected via nets were lower on day 30.

It is considered that the above effects are potentially treatment related, i.e. they tend to fit a concentration response, and the effect is statistically significant from the control.

The following groups increased and were probably the result of indirect effects:

Chydorus – significant greater numbers on study day 10 and 28;

Pompholyx sp – significantly greater numbers than the control on day 14 only;

Testudinella sp – there were significantly greater numbers than the control on days 42 and 35;

Total rotifer – there were significantly greater numbers than the control on days 3, 35, 42 and 56".

The test substance applied in this study was the 250 g azoxystrobin/L suspension concentrate (SC) formulated product that gave the acute endpoints that are compiled in Table 2 and have been compared with the corresponding responses observed for the unformulated active substance. The study showed that some effects occurred in some members of the invertebrate population following exposure to 10 µg a.s./L – coinciding with the chronic T-trigger, but that recovery occurred in a relatively short time thereafter. Based on the comparison of aquatic toxicity between the active substance and the 250 g a.s./L SC formulated product, the microcosm results may be considered to be conservative (*i.e*. over-predictive) for the effects of azoxystrobin a.s.

7. Azoxystrobin degradation and toxicity of its degradation products

A further consideration to be taken into account is the behaviour of azoxystrobin in the aquatic compartment and the toxicity characteristics of its degradation products. Azoxystrobin is prone to relatively fast photolysis and undergoes gradual hydrolysis. The relevant metabolites formed by these processes are R230310 (the Z-isomer of azoxystrobin), photolysis product and intermediate in the formation of further degradates, R401553, photolysis product, R402173, photolysis product and R234886, hydrolysis product.

R401553, R402173 and R234886 all exhibit substantially reduced acute aquatic toxicity compared to the intact parent active substance, as may be seen from the endpoints presented in table 4 below.

Table 4: Acute and short-term toxicity endpoints for aquatic organisms exposed to the relevant metabolites of azoxystrobin

Species	Duration	Effect	Endpoint	Result (mg a.s./ L)	Source
Photolysis metabolite R401553					
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	> 120	[redacted] (2002a)[b]
Daphnia magna	48 h	Immobility	EC_{50}	> 120	Bowles & Wallace (2002b)[b]
Pseudokirchneriella subcapitata	96 h	Growth	E_rC_{50}	> 120	Bowles & Wallace (2002c)[b]
Photolysis metabolite R402173					
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	62	[redacted] (2002a)[b]
Daphnia magna	48 h	Immobility	EC_{50}	>100	Wallace (2002b)[b]
Pseudokirchneriella subcapitata	96 h	Growth	E_rC_{50}	67	Wallace & Woodyer (2002)[b]
Hydrolysis metabolite R234886					
Oncorhynchus mykiss	96 h	Mortality	LC_{50}	> 150	[redacted] (1993b)[b]
Daphnia magna	48 h	Immobility	EC_{50}	> 180	Kent *et al*. (1993c)[b]
Pseudokirchneriella subcapitata	96 h	Growth	E_rC_{50}	80	Smyth *et al*. (1993b)[a]

[a] First noted in Volume 3, Annex B.8: Ecotoxicology of the Monograph prepared by RMS DE, 1997.

[b] First noted in Volume 3, Annex B.9: Ecotoxicology of the DAR prepared by RMS UK, May 2009.

8. Conclusions

The totality of the aquatic toxicity data available for azoxystrobin has been considered in relation to the trigger values that apply to the T-classification, viz. 0.1 mg/L for acute effects and 0.01 mg/L for chronic impacts.

An extensive data set is available to define the acute toxicity of azoxystrobin. The acute endpoint for a single species (*A. bahia*, mysid shrimp) breaches the acute T-trigger, however the overwhelming majority of endpoints are higher than 0.1 mg/L and the weight of those responses should be taken into account in determining the appropriate T-classification for azoxystrobin. A species-sensitivity distribution (SSD) approach has been applied to the eligible endpoints from the data set, and this suggests that – of aquatic organisms as a whole – only a small fraction (8.9%) are potentially susceptible at the acute T-trigger concentration.

Similar consideration has been given to the chronic data set, though fewer endpoints are available and they are insufficient to perform an analogous SSD analysis. However, the data set does include the most acutely sensitive species. The 28-d NOEC for *A. bahia* is 0.00954 mg a.s./L, which only fractionally undershoots the chronic T-trigger. Given the position of this species in the acute SSD, it is unlikely that a chronic SSD would be heavily populated by other species of higher sensitivity.

Acute toxicity data are available for both unformulated azoxystrobin and a 250 g azoxystrobin/L suspension concentrate formulation intended for use in the plant protection sector. Where like-for-like comparisons are possible, the 250 g/L SC formulation appears generally to be more acutely toxic than azoxystrobin a.s. and the 250 g/L SC formulation may therefore be considered to over-represent the hazard presented by azoxystrobin.

A higher-tier pond microcosm study, performed with a single application of 250 g a.s./L SC, showed some effects on some members of the invertebrate population at the lowest tested concentration of 10 µg/L, corresponding to the chronic T-trigger. Recovery followed in a relatively short time and 10 µg a.s./L was considered to be the no observed ecologically adverse effects concentration (NOEAEC).

Furthermore account should be taken of the behaviour of azoxystrobin in the aquatic compartment, specifically that it undergoes degradation, giving rise to three relevant degradates (R401553, R402173 and R234886) that are all substantially less toxic than the parent active substance. None of them breaches the acute T-trigger.

In conclusion, assignment of the appropriate T-classification for azoxystrobin should rely on more than a simplistic comparison of the lowest of all endpoints against the corresponding trigger value. Taking account of the full weight of all the available acute and chronic aquatic toxicity endpoints, as well as higher tier data and the behaviour of azoxystrobin in the environment, it is proposed that azoxystrobin be classified as non-Toxic (not T) in the context of the PBT assessment.

9. Appendix: ETX 2.1 input and output data

Input data set

Input toxicity data

Data no.	Toxicity data	Label
1	55	A. bahia
2	130	M. fuscus
3	146	N. pelliculosa
4	200	D. pulex
5	210	C. riparius
6	210	C. riparius
7	230	D. magna
8	280	D. magna
9	300	S. costatum
10	350	G. pulex
11	470	O. mykiss
12	660	C. variegatus
13	1100	L. macrochirus
14	1300	C. gigas
15	1380	O. latipes
16	1470	P. subcapitata
17	1600	C. carpio
18	1600	C. crystallinus
19	1650	M. anguillicaudatus
20	3200	C. dipterum
21	3200	L. gibba
22	13900	A. flos-aquae
23		

ETX 2.1 Goodness-of-fit analysis of the acute toxicity dataset used for SSD

Toxicity data

Anderson-Darling test for normality

Sign. level	Critical	Normal?
0.1	0.631	Accepted
0.05	0.752	Accepted
0.025	0.873	Accepted
0.01	1.035	Accepted

AD Statistic: 4.52E-1
n: 22

Note: below n=8, this test may not perform well.

Kolmogorov-Smirnov test for normality

Sign. level	Critical	Normal?
0.1	0.819	Accepted
0.05	0.895	Accepted
0.025	0.995	Accepted
0.01	1.035	Accepted

KS Statistic: 6.06E-1
n: 22

Note: below n=20, this test may not perform well.

Cramer von Mises test for normality

Sign. level	Critical	Normal?
0.1	0.104	Accepted
0.05	0.126	Accepted
0.025	0.148	Accepted
0.01	0.179	Accepted

CM Statistic: 7.46E-2
n: 22

Note: below n=20, this test may not perform well.

ETX 2.1 output for the acute aquatic SSD for azoxystrobin:

Parameters of the normal distribution

Name	Value	Description
mean	2.80E0	mean of the log toxicity values
s.d.	5.74E-1	sample standard deviation
n	2.20E1	sample size

HC5 results

Name	Value	log10(Value)	Description
LL HC5	2.812E1	1.449E0	lower estimate of the HC5
HC5	6.908E1	1.839E0	median estimate of the HC5
UL HC5	1.294E2	2.112E0	upper estimate of the HC5
sprHC5	4.603E0	6.630E-1	spread of the HC5 estimate

FA At HC5 results

Name	Value	Description
FA lower	1.36	5% confidence limit of the FA at standardised median logHC5
FA median	5.00	50% confidence limit of the FA at standardised median logHC5
FA upper	13.54	95% confidence limit of the FA at standardised median logHC5

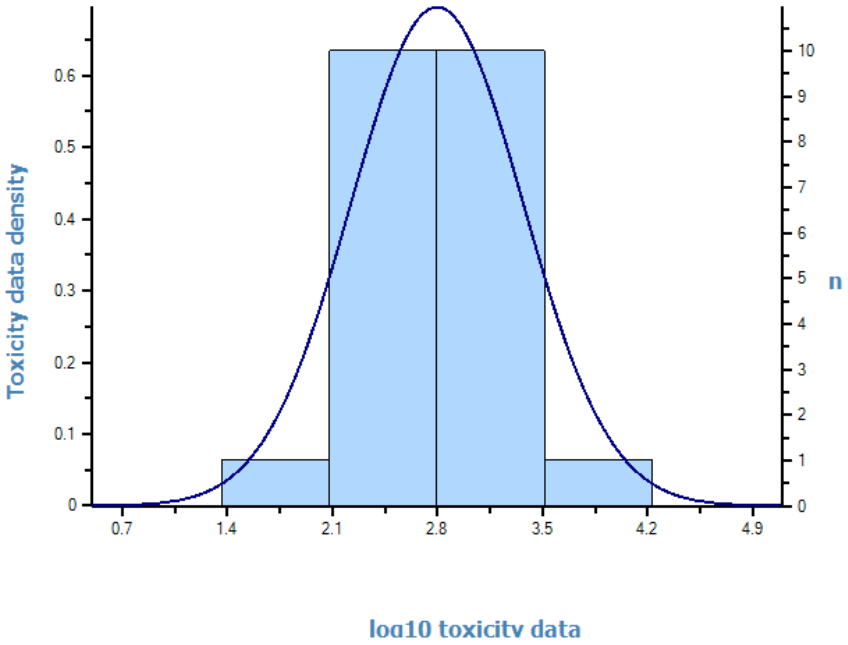
HC50 results

Name	Value	log10(Value)	Description
LL HC50	3.857E2	2.586E0	lower estimate of the HC50
HC50	6.262E2	2.797E0	median estimate of the HC50
UL HC50	1.017E3	3.007E0	upper estimate of the HC50
sprHC50	2.636E0	4.210E-1	spread of the HC50 estimate

FA At HC50 results

Name	Value	Description
FA lower	36.29	5% confidence limit of the FA at standardised median logHC50
FA median	50.00	50% confidence limit of the FA at standardised median logHC50
FA upper	63.71	95% confidence limit of the FA at standardised median logHC50

ETX 2.1 SSD Histogram :



ETX 2.1 output for the fraction of species affected (FA) interpolated from the acute aquatic SSD for azoxystrobin at a concentration equal to the acute T-trigger (0.1 mg/L):

FA results

FA results	Percent	Description
LL FA	3.05	Lower estimate (5% confidence) of the fraction affected
Median FA	8.55	Median estimate (50% confidence) of the fraction affected
UL FA	18.90	Upper estimate (95% confidence) of the fraction affected

The standardized logarithmic concentration calculated from your PEC value is: **-1.389E0**

These calculations are based on repeated linear interpolation and are approximate values.
The procedure is explained in Section 8.2.3 of Aldenberg & Jaworska 2000.
A precise answer can be obtained using the functions described in Section 8.2.1