Section A6.15.6
Annex Point IIIAXI.1

Summary and evaluation of data submitted under point 6.15

Official use only

Summary and evaluation of residue data

A summary and an evaluation of residue data for the active substance Aluminium phosphide is not required, since Aluminium phosphide, as a constituent of products for fumigation in underground tunnel systems, is not intended for direct application to growing crops.

Unlike conventional crop protection products, which must be applied over relatively large crop areas, Aluminium phosphide products are predominantly applied to discrete sites in form of pellets for fumigation.

The application of the products in underground tunnel systems excludes the direct contact with the plants. After decomposition, aluminium phosphide leaves a grey powder of aluminium hydroxide:

$$AlP + 3H_2O \rightarrow Al(OH)_3 + PH_3$$

Aluminium hydroxide is not toxic to plants, and will not be taken up if laying in the tunnel system.

The evolved phosphine gas will spread and remain in the burrows with some local emission into soil; the only imaginable way for uptake should therefore be through the roots, which will be minimal.

The phosphine gas is finally transformed with a very short half-life into phosphorous compounds (phosphates), which are not toxic but even fertilizing and no accumulation needs to be considered.

Therefore, Aluminium phosphide is not considered to generate any residues of practical significance.

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	2009-06-11
Materials and Methods	Acceptable.
Results and discussion	Acceptable.
Conclusion	The intended use is restricted to the gas treatment of burrow systems for rabbits and moles in non-agricultural environments. Therefore, the active substance does not come into contact with food, feed or livestock. Residues in food or feed are not expected as a result of the proposed use.
Remarks	
	COMMENTS FROM ... *(specify)*
Date	*Give date of comments submitted*

Materials and Methods	*Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

			Official use only
		1 REFERENCE	
1.1	**Reference**	[redacted] EXAMINATION OF THE BEHAVIOUR OF PHOSPHINE IN WATER, [redacted]	
1.2	**Data protection**	[redacted]	
1.2.1	Data owner	Detia Freyberg GmbH	
1.2.2	Companies with letter of access		
1.2.3	Criteria for data protection	[redacted]	
		2 GUIDELINES AND QUALITY ASSURANCE	
2.1	**Guideline study**	[redacted]	X
2.2	**GLP**	[redacted]	
2.3	**Deviations**	[redacted]	
		3 MATERIALS AND METHODS	
3.1	**Test material**	[redacted]	X
3.1.1	Lot/Batch number	[redacted]	
3.1.2	Specification	[redacted]	
3.1.3	Purity	[redacted]	
3.1.4	Further relevant properties	[redacted]	
3.2	**Reference substance**	[redacted]	
3.2.1	Initial concentration of reference substance		
3.3	**Test solution**	[redacted]	
3.4	**Testing procedure**		
3.4.1	Test system	[redacted]	
3.4.2	Temperature	[redacted]	
3.4.3	pH	[redacted]	
3.4.4	Duration of the test	[redacted]	

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

3.4.5 Number of replicates [redacted]

3.4.6 Sampling [redacted]

3.4.7 Analytical methods [redacted]

3.5 Preliminary test [redacted]

4 RESULTS

4.1 Concentration and hydrolysis values [redacted]

4.2 Hydrolysis rate constant (k_h) [redacted]

4.3 Dissipation time [redacted]

4.4 Concentration – time data [redacted]

[redacted]

4.5 Specification of the transformation products [redacted]

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1 Materials and methods [redacted]

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

5.2 Results and discussion

[redacted]

5.2.1 k_H [redacted]

5.2.2 DT_{50} [redacted]

5.2.3 r^2 [redacted]

5.3 Conclusion

It was not possible to fulfil the validity criteria of a hydrolysis study as explained above but the study a valid degradation pathway of the very toxic phosphine to the oxidation products phosphite and phosphate which are not of toxicological concern.

5.3.1 Reliability [redacted]

5.3.2 Deficiencies [redacted]

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

Evaluation by Competent Authorities

EVALUATION BY RAPPORTEUR MEMBER STATE

Date [redacted]

Materials and Methods [redacted]

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

Results and discussion	[redacted]
Conclusion	[redacted]
Reliability	[redacted]
Acceptability	[redacted]
Remarks	

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.1.1.1.1
Annex Point IIA7.6.2.1

Hydrolysis as a function of pH and identification of breakdown products

[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted]	[redacted]								
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

	[redacted]		[redacted]		[redacted]	
	[redacted]		[redacted]		[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted] [redacted]

[redacted]	[redacted]	[redacted]		
		[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Section A7.1.1.1.2 **Annex Point IIAVII7.6.2.2**	**Phototransformation in water**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA *As outlined in the TNsG on data requirements, the applicant must always be able to justify the suggested exemptions from the data requirements. The justifications are to be included in the respective location (section) of the dossier.* *If one of the following reasons is marked, detailed justification has to be given below. General arguments are not acceptable*	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [X]** **Scientifically unjustified [X]** **Other justification [ ]**	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	*Give date on which the data will be handed in later (Only acceptable if test or study is already being conducted and the responsible CA has agreed on the delayed data submission.)*	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section 7.1.1.1.1 Annex Point IIA7.6.2.1	Hydrolysis as a function of pH and identification of breakdown products of Aluminium phosphide	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [ ] **Scientifically unjustified** [x]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section 7.1.1.2.1 Annex Point IIAVII7.6.1.1	Ready biodegradability	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] Limited exposure [ ]	Technically not feasible [x] Scientifically unjustified [x] Other justification [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	

Section 7.1.1.2.1 Annex Point IIAVII7.6.1.1	Ready biodegradability
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section 7.1.1.2.2 Annex Point IIAVII7.6.1.2	Inherent biodegradability	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [x] **Scientifically unjustified** [x]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	

Evaluation by Competent Authorities

EVALUATION BY RAPPORTEUR MEMBER STATE

Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	

Section 7.1.1.2.2 Annex Point IIAVII7.6.1.2	Inherent biodegradability
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section 7.1.1.2.3 Annex Point IIIAXII2.1	Biodegradation in seawater	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure** [ ]	**Technically not feasible** [x] **Scientifically unjustified** [x] **Other justification** [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	

Section 7.1.1.2.3 Annex Point IIIAXII2.1	Biodegradation in seawater
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section 7.1.2 Annex Point IIIAXII.2.1	Rate and route of degradation in aquatic systems including identification of metabolites and degradation products	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure** [ ]	**Technically not feasible** [x] **Scientifically unjustified** [x] **Other justification** [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	

Section 7.1.2 Annex Point IIIAXII.2.1	Rate and route of degradation in aquatic systems including identification of metabolites and degradation products
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.1.3 Annex Point IIAVII.7.7	Adsorption/desorption screening test	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [X] **Scientifically unjustified** [X]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:		
[redacted]		X
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section A7.1.4.1 Annex Point IIIAXII.2.1	Field study on accumulation in the sediment	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [X] **Scientifically unjustified** [X]	
Limited exposure [X]	**Other justification** [ ]	
Detailed justification:	[redacted]	X
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section A7.1.4 Annex Point IIIAXII.2.2	Further studies on adsorption and desorption in water / sediment systems	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible [X]** **Scientifically unjustified [X]**	
Limited exposure [ ]	**Other justification [ ]**	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section 7.2.1 Annex Point IIIAXII.1.1	Aerobic Degradation in soil, initial study	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [x]	**Technically not feasible** [x] **Scientifically unjustified** [x]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	No data submission intended	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	

Section 7.2.1 Annex Point IIIAXII.1.1	Aerobic Degradation in soil, initial study
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.2.2.4 Other soil degradation studies

Annex Point IIIAXII.1.4

Official use only

1 REFERENCE

1.1	**Reference**	[redacted] EXAMINATION OF THE DECOMPOSITION BEHAVIOUR OF HYDROGEN PHOSPHIDE (PHOSPHINE) IN STANDARD SOILS, [redacted]
1.2	**Data protection**	[redacted]
1.2.1	**Data owner**	Detia Freyberg GmbH
1.2.3	**Criteria for data protection**	[redacted]

2 GUIDELINES AND QUALITY ASSURANCE

2.1	**Guideline study**	[redacted]
2.2	**GLP** *(only where required)*	[redacted]
2.3	**Deviations**	[redacted]

3 MATERIALS AND METHODS

In some fields the values indicated in the EC or OECD test guidelines are given as default values. Adopt, change or delete these default values as appropriate.

3.1	**Test material**	[redacted]
3.1.1	Lot/Batch number	[redacted]
3.1.2	Specification	[redacted]
3.1.3	Description	[redacted]
3.1.4	Purity	[redacted]
3.1.5	Stability	[redacted]
3.3	**Test method**	
3.3.1	Soils	[redacted]
3.3.2	Apparatus and application	[redacted]

Section A7.2.2.4 Other soil degradation studies

Annex Point IIIAXII.1.4

[redacted]

3.3.3 Test conditions

3.3.4 Analytical method

[redacted]

4 RESULTS

4.1 Decomposition in soil SP 213

[redacted]

Headings and subheadings study type-specific

4.2 Decomposition in soil SP 313

[redacted]

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1 Materials and methods

[redacted]

5.2 Results and

At 22°C Phosphine is very rapidly decomposed in soil. After 24 hours only 1.2 % (soil SP 213) and 11 % (soil SP 313) remaining active agent

Section A7.2.2.4 Other soil degradation studies

Annex Point IIIAXII.1.4

discussion was found.

5.3 Conclusion [redacted]

5.3.1 Reliability [redacted]

Based on the assessment of materials and methods include appropriate reliability indicator 0, 1, 2, 3 or 4

5.3.2 Deficiencies [redacted]

Section A7.2.2.4 Other soil degradation studies

Annex Point IIIAXII.1.4

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Materials and Methods	[redacted]
Results and discussion	[redacted]
Conclusion	[redacted]
Reliability	[redacted]
Acceptability	[redacted]
Remarks	
	COMMENTS FROM ...
Date	*Give date of comments submitted*

Section A7.2.2.4 Other soil degradation studies

Annex Point IIIAXII.1.4

Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.2.2 Annex Point IIIAXII.1.1, IIIAXII.1.4	Aerobic degradation in soil, further studies	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA *As outlined in the TNsG on data requirements, the applicant must always be able to justify the suggested exemptions from the data requirements. The justifications are to be included in the respective location (section) of the dossier.* *If one of the following reasons is marked, detailed justification has to be given below. General arguments are not acceptable*	Official use only
Other existing data [X] **Limited exposure [ ]**	**Technically not feasible [X]** **Scientifically unjustified [X]** **Other justification [ ]**	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	*Give date on which the data will be handed in later (Only acceptable if test or study is already being conducted and the responsible CA has agreed on the delayed data submission.)*	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	

Section A7.2.2 Annex Point IIIAXII.1.1, IIIAXII.1.4	Aerobic degradation in soil, further studies
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.2.3.1 Annex Point IIIAXII.1.2	Adsorption and desorption in accordance with the new test guideline EC C18 or OECD 106	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [X]	**Technically not feasible [X]** **Scientifically unjustified [X]**	
Limited exposure [ ]	**Other justification [ ]**	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section A7.2.3.2 Mobility in at least three soil types and where relevant mobility of metabolites and degradation products

Annex Point IIIAXII.1.3

Official use only

1 REFERENCE

1.1	**Reference**	[redacted] DISTRIBUTION OF PH_3 IN SOIL - HORIZONTAL AND VERTICAL SPREADING, [redacted]
1.2	**Data protection**	[redacted]
1.2.1	Data owner	Detia Freyberg GmbH
1.2.2		
1.2.3	Criteria for data protection	[redacted]

2 GUIDELINES AND QUALITY ASSURANCE

2.1	**Guideline study**	[redacted]
2.2	**GLP**	[redacted]
2.3	**Deviations**	[redacted]

3 MATERIALS AND METHODS

3.1	**Test material**	[redacted]
3.1.1	Lot/Batch number	[redacted]
3.1.2	Specification	[redacted]
3.1.3	Purity	[redacted]

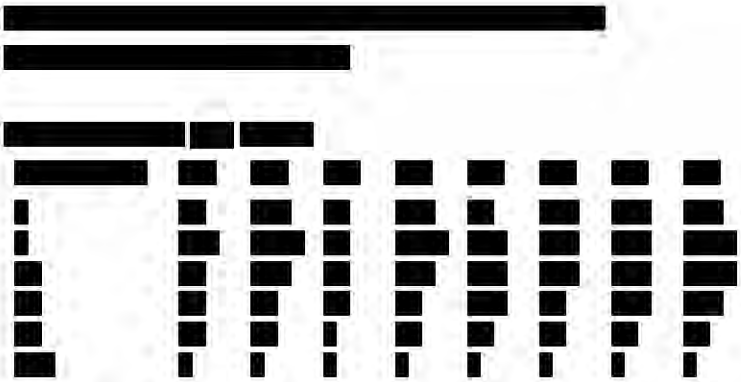
4 RESULTS

4.1	**Horizontal spreading:**	[redacted]

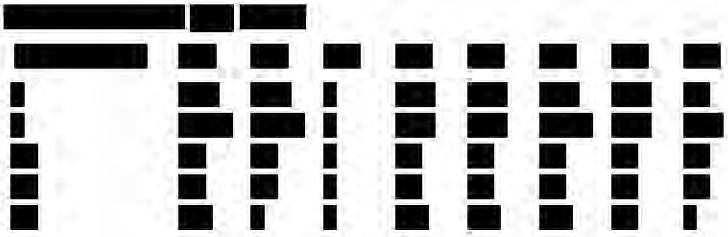
Section A7.2.3.2
Annex Point IIIAXII.1.3

Mobility in at least three soil types and where relevant mobility of metabolites and degradation products

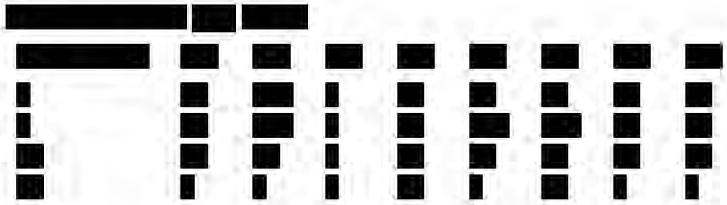
4.1.1 [redacted]



4.1.2 [redacted]



4.1.3 [redacted]



4.1.4 [redacted]

4.2 [redacted]

Section A7.2.3.2
Annex Point IIIAXII.1.3

Mobility in at least three soil types and where relevant mobility of metabolites and degradation products

[redacted]

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1 Materials and methods

[redacted]

5.2 Results and discussion

This experiment shows that the horizontal spreading of PH_3 in soil is relatively fast. In the first experiment the maximum phosphine concentration was determined 4 hours after the start of the experiment at

Section A7.2.3.2 Mobility in at least three soil types and where relevant mobility of metabolites and degradation products

Annex Point IIIAXII.1.3

each measurement point. Phosphine disappeared within 168 hours. Experiment B indicates that half of the application rate in covered soil result in similar phosphine concentration of the uncovered soil.
Experiment C and D show that the horizontal spreading is faster in dry soils.
It has been observed that the vertical spreading rate of PH_3 in soil is very low. During the whole experiment the highest concentration was found near the buried pellet. In a distance of 40 cm to the buried pellet only 3 – 15 % of the values detected at 10 cm to the buried pellet were measured.
After 24 hours phosphine has almost disappeared.

5.3 Conclusion [redacted]

5.3.1 Reliability [redacted]

5.3.2 Deficiencies [redacted]

Evaluation by Competent Authorities

EVALUATION BY RAPPORTEUR MEMBER STATE

Date [redacted]

Materials and Methods [redacted]

Results and discussion [redacted]

Conclusion [redacted]

Reliability [redacted]

Section A7.2.3.2 Mobility in at least three soil types and where relevant mobility of metabolites and degradation products

Annex Point IIIAXII.1.3

Acceptability	[redacted]
Remarks	

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.3.1 Annex Point IIIAVII.5	Phototransformation in air	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [X]	Technically not feasible [ ]	Scientifically unjustified [X]
Limited exposure [ ]	Other justification [ ]	
[redacted]		
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	

Section A7.3.1 Annex Point IIIAVII.5	Phototransformation in air
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.3.2 Annex Point IIIAXII.3	Fate and behaviour in air, further studies	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [X]	**Technically not feasible [ ]** **Scientifically unjustified [ ]**	
Limited exposure [ ]	**Other justification [ ]**	
Detailed justification: [redacted]		X
Undertaking of intended data submission [ ]		
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section A7.4.1.1 Acute toxicity to fish

Annex Point IIA VII.7.1

Official use only

1 REFERENCE

1.1	**Reference**	[redacted] EXAMINATION OF THE ACUTE TOXICITY OF ALUMINIUM PHOSPHIDE ON RAINBOW TROUT, [redacted]
1.2	**Data protection**	[redacted]
1.2.1	Data owner	Detia Freyberg GmbH
1.2.2		
1.2.3	Criteria for data protection	[redacted]

2 GUIDELINES AND QUALITY ASSURANCE

2.1	**Guideline study**	[redacted]
2.2	**GLP**	[redacted]
2.3	**Deviations**	[redacted]

3 MATERIALS AND METHODS

3.1	**Test material**	[redacted]
3.1.1	Lot/Batch number	[redacted]
3.1.2	Specification	[redacted]
3.1.3	Purity	[redacted]
3.1.4	Composition of Product	[redacted]
3.1.5	Further relevant properties	[redacted]
3.1.6	Method of analysis	[redacted]
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	[redacted]
3.3	**Reference**	[redacted]

Section A7.4.1.1 Acute toxicity to fish

Annex Point IIA VII.7.1

	substance	
3.3.1	Method of analysis for reference substance	[redacted]
3.4	**Testing procedure**	
3.4.1	Dilution water	[redacted]
3.4.2	Test organisms	[redacted]
3.4.3	Test system	[redacted]
3.4.4	Test conditions	[redacted]
3.4.5	Duration of the test	[redacted]
3.4.6	Test parameter	[redacted]
3.4.7	Sampling	[redacted]
3.4.8	Monitoring of TS concentration	[redacted]
3.4.9	Statistics	[redacted]
	4 RESULTS	
4.1	**Limit Test**	[redacted]
4.2	**Results test substance**	
4.2.1	Initial concentrations of test substance	[redacted]
4.2.2	Actual concentrations of test substance	[redacted]
4.2.3	Effect data (Mortality)	[redacted]
4.2.4	Concentration / response curve	[redacted]
4.2.5	Other effects	[redacted]
4.3	**Results of controls**	
4.3.1	Number/ percentage of animals showing adverse effects	[redacted]
4.3.2	Nature of adverse effects	[redacted]
4.4	**Test with**	[redacted]

Section A7.4.1.1 Acute toxicity to fish

Annex Point IIA VII.7.1

reference substance

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1 Materials and methods [redacted]

5.2 Results and discussion

Of the surviving fish (after a 96 hour exposure period) those with only slight behaviour anomalies were free from symptoms after 2 hours. At a PH_3 concentration of 5.66 two fish survived the 96 hours exposure time but one of them died 5 hours later. No further deaths occurred during the following observation period of two weeks.

Effect values for AlP are related to a purity of 80 %. For 100 % purity the effect values are as follows:

$LC_0 = 5.73$ µl/l

$LC_{50} = 7.98$ µl/l

$LC_{100} = 11.5$ µl/l

5.2.1 LC_0 see table A7_4_1_1-7

5.2.2 LC_{50}

PH_3 in 10^{-3} ppm	Aluminium phosphide in 10^{-3} ppm
4.68 (4.24 – 5.16)# $fLD_{50} = 1.103$	9.65 (8.75 – 10.65)# $fLD_{50} = 1.103$

5.2.3 LC_{100} see table A7_4_1_1-7

5.3 Conclusion [redacted]

5.3.1 Other Conclusions

5.3.2 Reliability [redacted]

5.3.3 Deficiencies [redacted]

Evaluation by Competent Authorities

Use separate "evaluation boxes" to provide transparency as to the comments and views submitted

EVALUATION BY RAPPORTEUR MEMBER STATE

Date [redacted]

Materials and Methods [redacted]

Results and discussion [redacted]

Conclusion [redacted]

Reliability [redacted]

Acceptability [redacted]

Remarks

Section A7.4.1.1 Acute toxicity to fish

Annex Point IIA VII.7.1

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

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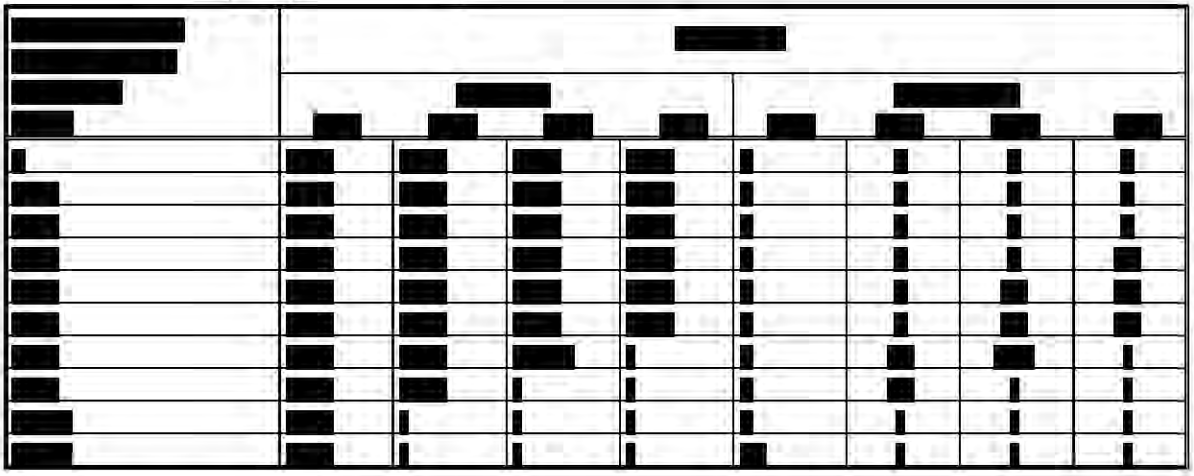

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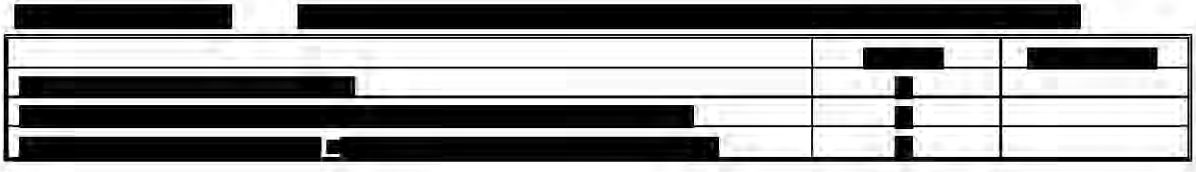

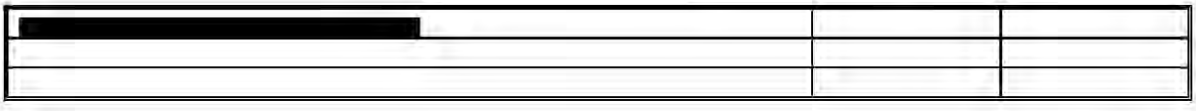

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Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA VII.7.2 *Daphnia magna*

			Official use only
		1 REFERENCE	
1.1	**Reference**	[redacted] Toxicity test on daphnia magna, [redacted]	
1.2	**Data protection**	[redacted]	
1.2.1	Data owner	Detia Freyberg GmbH	
1.2.2			
1.2.3	Criteria for data protection	[redacted]	
		2 GUIDELINES AND QUALITY ASSURANCE	
2.1	**Guideline study**	[redacted]	X
2.2	**GLP**	[redacted]	
2.3	**Deviations**	[redacted]	
		3 MATERIALS AND METHODS	
3.1	**Test material**	[redacted]	
3.1.1	Lot/Batch number	[redacted]	
3.1.2	Specification	[redacted]	
3.1.3	Purity	[redacted]	
3.1.4	Composition of Product	[redacted]	
3.1.5	Further relevant properties	[redacted]	
3.1.6	Method of analysis	[redacted]	
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	[redacted]	

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA VII.7.2 *Daphnia magna*

3.3	**Reference substance**	[redacted]
3.3.1	Method of analysis for reference substance	[redacted]
3.4	**Testing procedure**	
3.4.1	Dilution water	[redacted]
3.4.2	Test organisms	[redacted]
3.4.3	Test system	[redacted]
3.4.4	Test conditions	[redacted]
3.4.5	Duration of the test	[redacted]
3.4.6	Test parameter	[redacted]
3.4.7	Sampling	[redacted]
3.4.8	Monitoring of TS concentration	[redacted]
3.4.9	Statistics	[redacted]
	4 RESULTS	
4.1	**Limit Test**	[redacted]
4.2	**Results test substance**	
4.2.1	Initial concentrations of test substance	[redacted]
4.2.2	Actual concentrations of test substance	[redacted]
4.2.3	Effect data (Immobilisation)	[redacted]
4.2.4	Concentration / response curve	[redacted]
4.2.5	Other effects	[redacted]
4.3	**Results of controls**	[redacted]
4.4	**Test with reference substance**	[redacted]
4.4.1	Concentrations	[redacted]

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA VII.7.2 *Daphnia magna*

4.4.2	Results	[redacted]	
		5 APPLICANT'S SUMMARY AND CONCLUSION	
5.1	**Materials and methods**	[redacted]	
5.2	**Results and discussion**		
5.2.1	EC_0	The EC_0 could not be determined as at the lowest test concentration (0.1 mg/l) 25 % of the test organisms were immobile after 24 h.	
5.2.2	EC_{50}	A graphic determination of the EC_{50} was performed resulting in a 24h-EC_{50} of 0.2mg/l. Using probit analysis a 24h- EC_{50} of 0.18 mg/l can be derived.	
5.2.3	EC_{100}	The EC_{100} = 1.3 mg/l (24h).	X
5.3	**Conclusion**	[redacted]	
5.3.1	Reliability	[redacted]	
5.3.2	Deficiencies	[redacted]	

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Materials and Methods	[redacted]
Results and discussion	[redacted]
Conclusion	[redacted]
Reliability	[redacted]

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA VII.7.2 *Daphnia magna*

Acceptability	[redacted]
Remarks	

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

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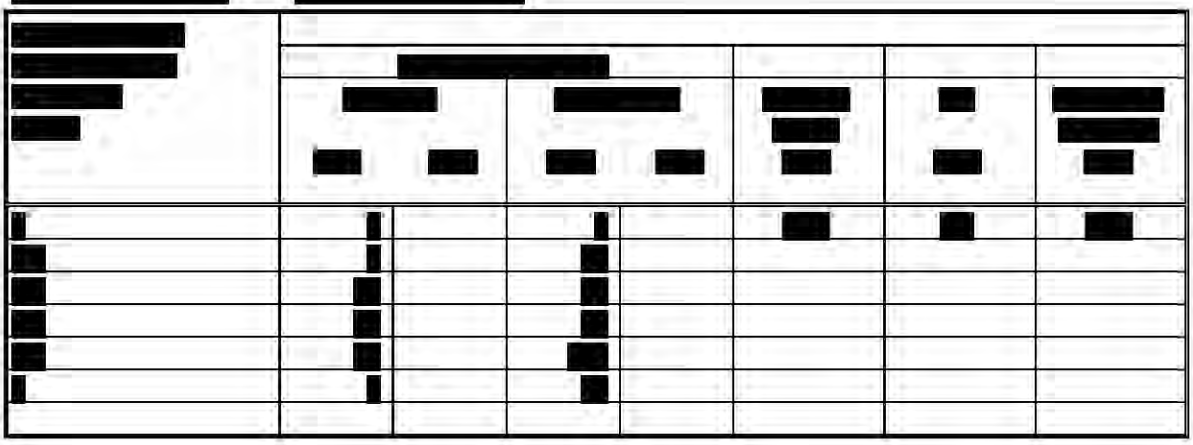

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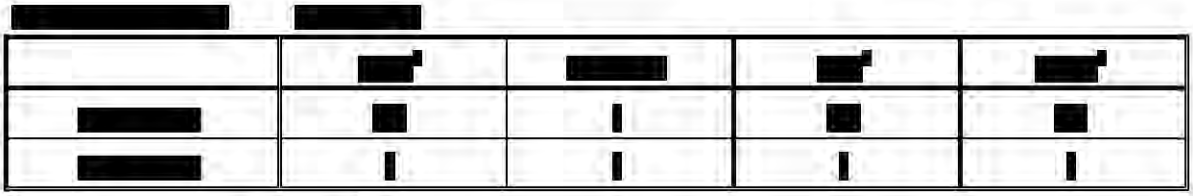

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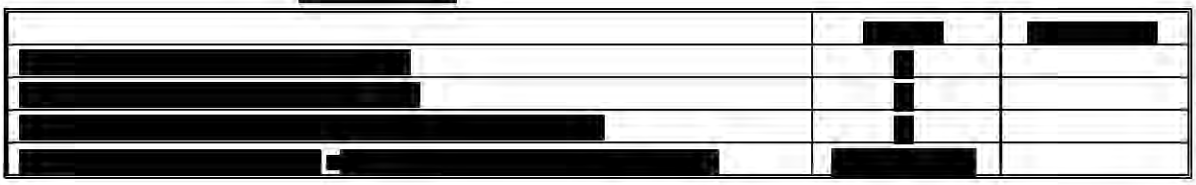

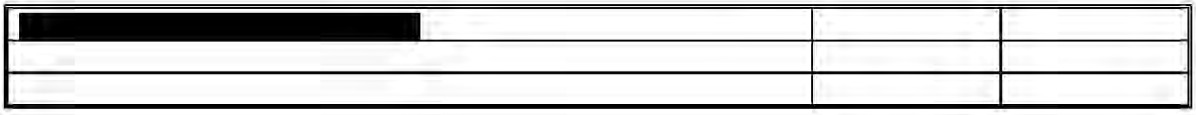

Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

			Official use only
		1 REFERENCE	
1.1	**Reference**	[redacted] ALGA (*Selenastrum capricornutum*), GROWTH INHIBITION TEST WITH ALUMINIUM PHOSPHIDE PELLET, [redacted]	
1.2	**Data protection**	[redacted]	
1.2.1	Data owner	Prosanitas GmbH	
1.2.2	Criteria for data protection	[redacted]	
		2 GUIDELINES AND QUALITY ASSURANCE	
2.1	**Guideline study**	[redacted]	
2.2	**GLP**	[redacted]	
2.3	**Deviations**	[redacted]	
		3 MATERIALS AND METHODS	
3.1	**Test material**	[redacted]	
3.1.1	Lot/Batch number	[redacted]	
3.1.2	Specification	[redacted]	
3.1.3	Purity	[redacted]	
3.1.4	Composition of Product	[redacted]	
3.1.5	Further relevant properties	[redacted]	
3.1.6	Method of analysis	[redacted]	X
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	[redacted]	
3.3	**Reference substance**	[redacted]	
3.3.1	Method of analysis for reference substance	[redacted]	

3.4 Testing procedure

[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]

3.4.2 Test organisms [redacted]

3.4.3 Test system [redacted]

3.4.4 Test conditions [redacted]

3.4.5 Duration of the test [redacted]

3.4.6 Test parameter [redacted]

3.4.7 Sampling [redacted]

3.4.8 Monitoring of TS concentration [redacted]

3.4.9 Statistics [redacted]

4 RESULTS

4.1 Limit Test [redacted]

4.1.1 Concentration [redacted]

4.1.2 Number/ percentage of animals showing adverse effects [redacted]

4.2 Results test substance

4.2.1 Initial concentrations of test substance

[redacted]

4.2.2 Actual concentrations of test substance

[redacted]

4.2.3 Growth curves

[redacted]

4.2.4 Concentration / response curve

[redacted]

4.2.5 Cell concentration data [redacted]

4.2.6 Effect data (cell multiplication inhibition) [redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
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4.2.7 Other observed effects [redacted]

4.3 Results of controls [redacted]

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4.4 Test with reference substance [redacted] X

4.4.1 Concentrations [redacted]

4.4.2 Results [redacted]

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1 Materials and methods [redacted]

5.2 Results and discussion

5.2.1 NOEC 0.25 µg/ml X

5.2.2

5.2.3 EC_{50} (72 h) 0.940 µg/ml X

5.3 Conclusion

5.3.1 Reliability [redacted]

5.3.2 Deficiencies [redacted]

X

Evaluation by Competent Authorities Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Materials and Methods	[redacted]
Results and discussion	[redacted]
Conclusion	[redacted]
Reliability	[redacted]

Acceptability	[redacted]
Remarks	

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

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Section 7.4.1.4 Annex Point IIA7.4	Inhibition to microbial activity (aquatic)	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [ ] **Scientifically unjustified** [x]	
Limited exposure [x]	**Other justification** [ ]	
Detailed justification:	[redacted]	

Section 7.4.1.4 Annex Point IIA7.4	Inhibition to microbial activity (aquatic)
	[redacted]
Undertaking of intended data submission [ ]	No data submission intended
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.4.2 Annex Point IIAVII.7.5	Bioconcentration	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	Technically not feasible [x]	Scientifically unjustified [x]
Limited exposure [x]	Other justification [ ]	
Detailed justification:	[redacted]	

Section A7.4.2 Annex Point IIAVII.7.5	Bioconcentration
	[redacted]
Undertaking of intended data submission [ ]	No data submission intended
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
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Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.4.3.3 Annex Point IIIAXIII.2.3	Bioaccumulation in aquatic organisms	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	**Technically not feasible** [x]	**Scientifically unjustified** [x]
Limited exposure [x]	**Other justification** [ ]	
Detailed justification:	[redacted]nner.	

Section A7.4.3.3 Annex Point IIIAXIII.2.3	Bioaccumulation in aquatic organisms
	[redacted]
Undertaking of intended data submission [ ]	No data submission intended
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.4.3 Annex Point IIIAXIII.2.3.4	Effects on aquatic organisms, further studies	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA *As outlined in the TNsG on data requirements, the applicant must always be able to justify the suggested exemptions from the data requirements. The justifications are to be included in the respective location (section) of the dossier.* *If one of the following reasons is marked, detailed justification has to be given below. General arguments are not acceptable*	Official use only
Other existing data [ ] **Limited exposure [X]**	**Technically not feasible [X]** **Scientifically unjustified [X]** **Other justification [ ]**	
Detailed justification: [redacted]		
Undertaking of intended data submission [ ]	*Give date on which the data will be handed in later (Only acceptable if test or study is already being conducted and the responsible CA has agreed on the delayed data submission.)*	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

Official use only

1 REFERENCE

1.1	**Reference**	[redacted] Studies on the effects of Phostoxin on the activity of the soil microflora (translation), [redacted]
1.2	**Data protection**	[redacted]
1.2.1	Data owner	Detia Freyberg GmbH
1.2.2	Companies with letter of access	
1.2.3	Criteria for data protection	[redacted]

2 GUIDELINES AND QUALITY ASSURANCE

2.1	**Guideline study**	[redacted]
2.2	**GLP**	[redacted]
2.3	**Deviations**	[redacted]

3 MATERIALS AND METHODS

3.1	**Test material**	[redacted]
3.1.1	Lot/Batch number	[redacted]
3.1.2	Specification	[redacted]
3.1.3	Purity	[redacted]
3.1.4	Composition of Product	[redacted]
3.1.5	Further relevant properties	[redacted]
3.1.6	Method of analysis	[redacted]
3.2	**Reference substance**	[redacted]
3.2.1	Method of analysis for reference substance	[redacted]
3.3	**Testing procedure**	[redacted]

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

3.3.1 Soil sample / inoculum / test organism

Soil 1:

[redacted]

3.3.2 Test system

[redacted]

3.3.3 Application of TS

[redacted]

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

3.3.4 Test conditions

[redacted]

3.3.5 Test parameter

[redacted]

3.3.6 Analytical parameter

[redacted]

3.3.7 Duration of the test

[redacted]

3.3.8 Sampling

[redacted]

3.3.9 Monitoring of TS concentration

[redacted]

3.3.10 Controls

[redacted]

3.3.11 Statistics

[redacted]

4 RESULTS

4.1 Range finding test

[redacted]

4.1.1 Concentration

4.1.2 Effect data

4.2 Results test substance

[redacted]

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

4.2.1	Initial concentrations of test substance	[redacted]
4.2.2	Actual concentrations of test substance	[redacted]
4.2.3	Growth curves	[redacted]
4.2.4	Cell concentration data	[redacted]
4.2.5	Concentration/ response curve	[redacted]
4.2.6	Effect data	[redacted]
4.2.7	Other observed effects	[redacted]
4.3	**Results of controls**	[redacted]
4.4	**Test with reference substance**	[redacted]
4.1.1	Concentrations	[redacted]
4.1.2	Results	[redacted]

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1	**Materials and methods**	[redacted]
5.2	**Results and discussion**	The following results were achieved.

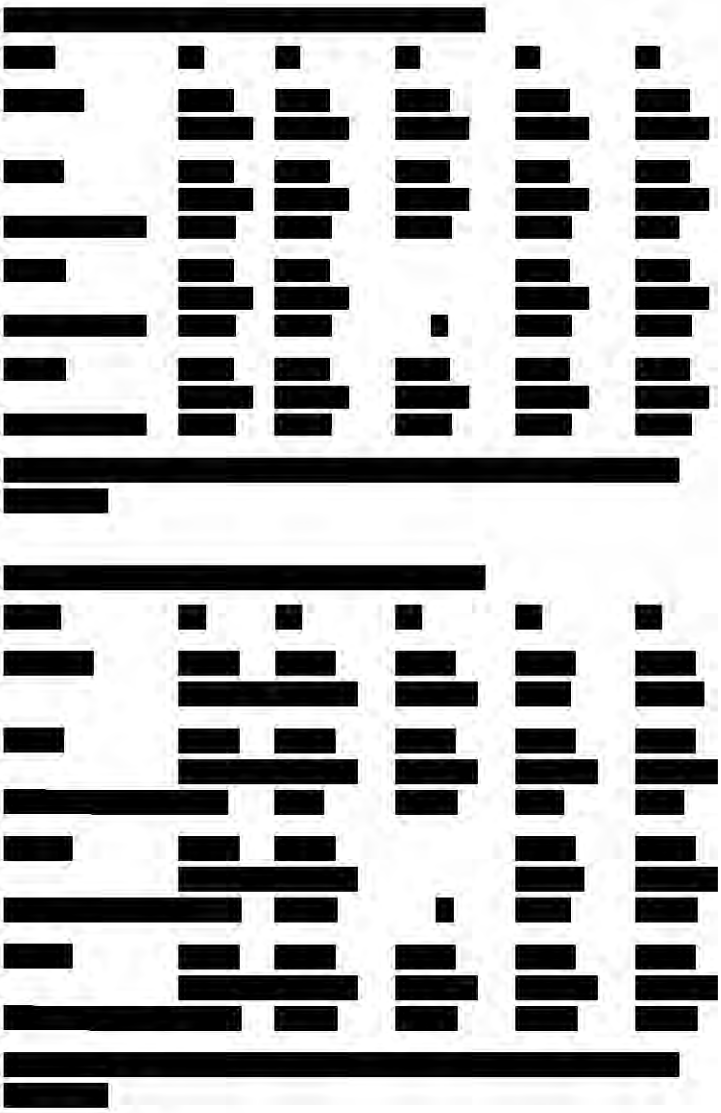
(a) Dehydrogenase activity:

Mean value and dispersion in mg triphenyl formazan (TPF)/100 g dry soil weight as well as deviations in per cent for control purposes

X

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

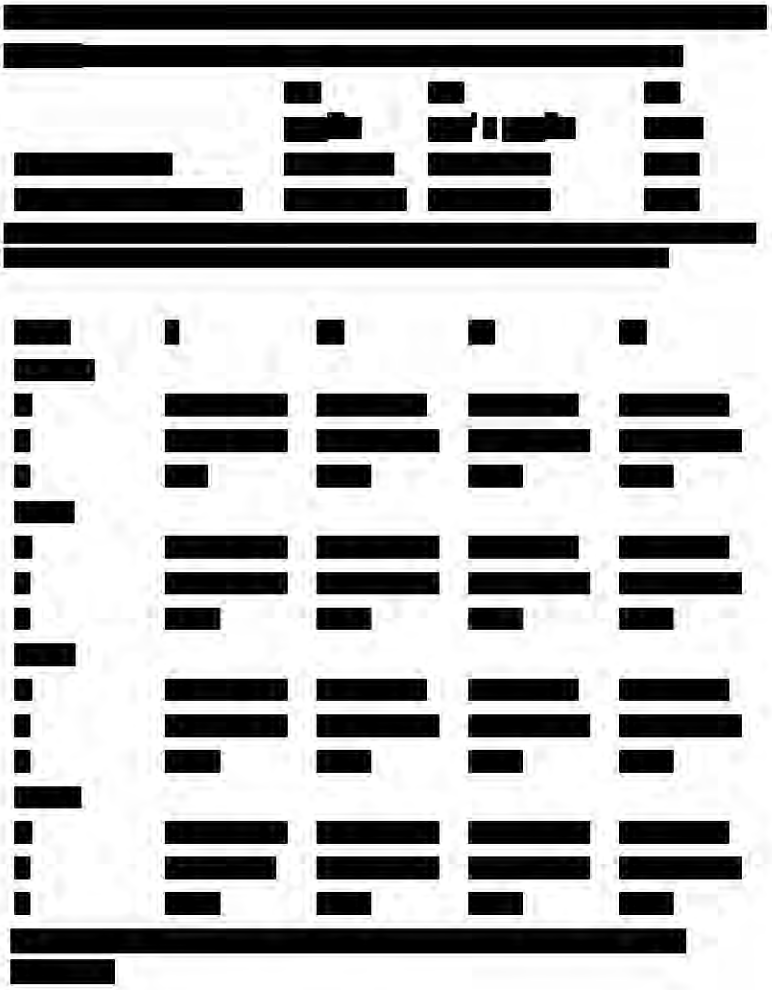


During the first month soil 1 showed an increase in the dehydrogenase activity due to the moistening of the soil that had been received in relatively dry condition.

The formazan solvent-extraction after 56 days partly yielded 3 solvent layers. This was due to the unsatisfactory blending of the solvents. The sampling was, therefore, repeated on day 63; the 56-day values were not integrated. The activity of the microflora in soil 1 was reduced by approx. 29% by the treatment with Phostoxin but recovered steadily during the course of the test and was completely regenerated on day 83. The deviations from untreated soil were always within range II of the diagram of MALKOMES (1985). There was practically no deviation found in soil 2 from the untreated control soil.

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4



Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

[redacted]

The nitrification activity of the microflora in soil 1 was inhibited for a fortnight under the influence of the test substance. Thereafter a fast recovery was noted which could be considered completely after 28 days by comparing it with the control soil. Soil 2 showed no inhibition of nitrification.

5.2.1	NOEC	15.9 mg/kg dry soil after a period of 83 days
5.2.2	EC_{10}	Not observed
5.2.3	EC_{50}	Not observed

5.3 Conclusion

[redacted]

5.3.1 Reliability

[redacted]

5.3.2 Deficiencies

[redacted]

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Materials and Methods	[redacted]
Results and discussion	[redacted]
Conclusion	[redacted]
Reliability	[redacted]
Acceptability	[redacted]
Remarks	
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.5.1.1 Inhibition to microbial activity (terrestrial)

Annex Point IIA7.4

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
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[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Section A7.5.1.2
Annex Point IIIAXIII.3.2

Earthworm, acute toxicity test

JUSTIFICATION FOR NON-SUBMISSION OF DATA

Official use only

Other existing data [X] **Technically not feasible** [ ] **Scientifically unjustified** [X]

Limited exposure [X] **Other justification** [ ]

Detailed justification:

[redacted]

Undertaking of intended data submission [ ]

Evaluation by Competent Authorities

EVALUATION BY RAPPORTEUR MEMBER STATE

Date [redacted]

Evaluation of applicant's justification [redacted]

Conclusion [redacted]

Remarks

COMMENTS FROM OTHER MEMBER STATE

Date

Evaluation of applicant's justification

Section A7.5.1.2 Earthworm, acute toxicity test Annex Point IIIAXIII.3.2
Conclusion
Remarks

Section A7.5.3.1 **Annex Point IIIAXIII.1**	**Toxicity to birds**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA *As outlined in the TNsG on data requirements, the applicant must always be able to justify the suggested exemptions from the data requirements. The justifications are to be included in the respective location (section) of the dossier.* *If one of the following reasons is marked, detailed justification has to be given below. General arguments are not acceptable*	Official use only
Other existing data [X] **Limited exposure [X]**	**Technically not feasible [ ]** **Scientifically unjustified [X]** **Other justification [ ]**	
Detailed justification:	[redacted]	
Undertaking of intended data submission [ ]	*Give date on which the data will be handed in later (Only acceptable if test or study is already being conducted and the responsible CA has agreed on the delayed data submission.)*	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	[redacted]	
Evaluation of applicant's justification	[redacted]	
Conclusion	[redacted]	
Remarks		
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Section 7.5.4.1 Annex Point IIIAXIII.3.1	Toxicity to honeybees and other non-target arthropods	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [X]	**Technically not feasible** [ ]	**Scientifically unjustified** [X]
Limited exposure [X]	**Other justification** [ ]	

Detailed justification:

[redacted]

Undertaking of intended data submission [x]	Information on effects on the pest organisms *Ephestia elutella*, *Plodia interpunctella*, *Prostephanus truncates* and *Trogoderma granarium* are submitted with this document.

Section 7.5.4.1 Annex Point IIIAXIII.3.1	Toxicity to honeybees and other non-target arthropods
	Evaluation by Competent Authorities
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE
Date	
Evaluation of applicant's justification	
Conclusion	
Remarks	

Section A7.5.5 Annex Point IIAVII.7.5	Bioconcentration, terrestrial	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ]	Technically not feasible [ ] Scientifically unjustified [x]	
Limited exposure [x]	Other justification [ ]	
Detailed justification:	[redacted]	

Section A7.5.5 Annex Point IIAVII.7.5	Bioconcentration, terrestrial
	[redacted]
Undertaking of intended data submission [ ]	No data submission intended
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*

Section A7.5.5 Annex Point IIAVII.7.5	Bioconcentration, terrestrial
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A7.5.6 Annex Point IIIAXII.3	Effects on other terrestrial non-target organisms	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA *As outlined in the TNsG on data requirements, the applicant must always be able to justify the suggested exemptions from the data requirements. The justifications are to be included in the respective location (section) of the dossier.* *If one of the following reasons is marked, detailed justification has to be given below. General arguments are not acceptable*	Official use only
Other existing data [X]	**Technically not feasible [ ]** **Scientifically unjustified [X]**	
Limited exposure [X]	**Other justification [ ]**	

Detailed justification:

[redacted]

Section A7.5.6 Annex Point IIIAXII.3	Effects on other terrestrial non-target organisms
[redacted]	
Undertaking of intended data submission [ ]	*Give date on which the data will be handed in later (Only acceptable if test or study is already being conducted and the responsible CA has agreed on the delayed data submission.)*
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Evaluation of applicant's justification	[redacted]
Conclusion	[redacted]
Remarks	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Section A8 Measures necessary to protect man, animals and the environment

Subsection (Annex Point)			Official use only
		The information supplied in Annex A/8 should at least meet the requirements of the Safety Data Sheets Directive. The Safety Data Sheets should reflect the contents of Annex B where applicable. *If different measures are necessary for the active substance and its formulations this should be stated in different dossiers.* *Specifications in the TNsG on data requirements (chapt.2 A 8) should be taken into account* *For more detailed information about the expected contents of this form see TNsG Dossier Preparation Doc. III-A Section A8*	
8.1		**Recommended methods and precautions concerning handling, use, storage, transport or fire (IIA8.1)**	
8.1.0	**Methods and precautions concerning placing on the market**	The production of the active substance does not differ from that for PT 14, please refer to the dossier for this PT. Product: The packaging of the product is gastight and the material is not affected by the product. According to European legislation, the product has to be sold, bought and handled only by trained and certified personnel / users: In Germany the conditions to get a permission for the use of the product are regulated in the TRGS 512 ("Begasungen") and the administrative procedures concerning selling and buying of dangerous goods are regulated in a special directive ("Gefahrstoffverordnung"). In other European Countries the regulations are equal.	*1
8.1.1	**Methods and precautions concerning production, handling and use of the active substance and its formulations**	**For handling and use of the product see: B8.1.1** **For the production of the active ingredient:** The active ingredient is not produced in an EU country, see A2.10.1.1 **For the formulation of the product:** **Engineering controls:** **Dust and gases are continuously sucked of. MAK value is continuously monitored.** **Administrative procedures:** **Specific training of workers (yearly)** **Monitoring of the production process by the quality assurance unit**	

Section A8 Measures necessary to protect man, animals and the environment

			Official use only
		PPE:	
		protective gloves	*2
8.1.2	**Methods and precautions concerning storage of the active substance and its formulations**	For the active substance and for the formulation:	
		Follow local regulations for the storage of dangerous goods (for Germany "TRGS 514").	*3
		Administrative procedures:	
		Instruction of the workers, yearly	
		Regular emergency exercices	
		Alarm system	
		Do not store together with flammable substances, substances which need other extinguishing media, fertilizers with ammonium nitrate, organic peroxides, gases in pressure vessels (excluding fire extinguishers)	
		Type and material of containers: Aluminium bottles	
		Temperature regime: store in a cool, dry and well ventilated place.	
		Obviate contact with water, acids and ambient humidity.	
		Do not store in buildings where human beings or domestic animals reside.	
		Do not store together with food or feed.	
8.1.3	**Methods and precautions concerning transport of the active substance and its formulations**	Road-/rail transport acc. to ADR/RID:	
		class: 4.3, UN 1397, PG: I	
		Description of goods: Aluminium phosphide	
		Labels: Dangerous when wet 4 = main risk	
		Toxic = subsidiary risk	
		Red (warning) board: starting 20 kgs net weight	
		Remarks: limited quantities acc. to chapter 3.4 not possible	
		Sea transport acc. to IMDG-Code	
		class: 4.3 UN-No.: 1397 Packing Group I	
		Proper shipping name: ALUMINIUM PHOSPHIDE	
		Labels: Dangerous when wet 4 = main risk	
		Toxic = subsidiary risk	
		Marine pollutant: no	
		EmS-Code: F-G, S-N	
		Air transport acc. to IATA-DGR/ICAO-TI	
		See sea transport and packaging instructions: 412	

Section A8 Measures necessary to protect man, animals and the environment

Official use only

Proper shipping name: Aluminium phosphide

See sea transport

Remarks: max. weight 1 kg/inner packaging, 15 kg/outer packaging cargo aircraft only

Transport by barge acc. to ADN/ADNR see road transport

8.1.4 Methods and precautions concerning fire of the active substance and its formulations

Suitable extinguishing media: the product itself does not burn; extinguish fires in the vicinity with dry sand or powder and than with CO_2

Extinguishing media that must not be used for safety reasons: water, extinguishers containing water

Special protective equipment for firefighting: no special firefighting equipment is nescessary, the usual equipment in case of fire, including respiratory equipment, is sufficient.

8.2 In case of fire, nature of reaction products, combustion gases, etc. (IIA8.2)

In case of fire hazardous combustion gases are formed: caustic phosphoric acid aerosols (phosphoric pentoxide).

8.3 Emergency measures in case of an accident (IIA8.3)

8.3.1 Specific treatment in case of an accident, e.g. first-aid measures, antidotes, medical treatment if available

Inhalation: in case of headache, dizziness, fealing of constriction, difficult breathing and nausea immediately leave the danger zone and seek fresh air; consult a physician; inhale products for acute treatment following exposition of smoke gas (eg a beclometasone (Ventolair®) spray, a dexamethasone (Auxiloson®) spray).

Eye contact: remove rests of preparation with fluff-free cloth; rinse with plenty of water and apply eye drops only after no more powdery residues are visible.

Skin contact: remove any rests by brushing; only then use water for cleansing

Ingestion: Induce vomiting (but NOT if the person is unconscious), consult a physician

Special aids required for First Aid measures: have methyl prednisolon (application by physician) and products for acute treatment following exposition of smoke gas (eg a beclometasone (Ventolair®) spray, a dexamethasone (Auxiloson®) spray) available

8.3.2 Emergency measures to protect the environment

Aluminium phosphide and phosphine are very rapidly decomposed in the environment (see 8.4.1-8.4.3)

8.4		**Possibility of destruction or decontamination following release in or on the following: (a) Air; (b) Water, including drinking water; (c) Soil (IIA8.4)**
8.4.1	**Possibility of destruction or decontamination following release in the air**	Phosphine decomposes in the atmosphere within 5-28 hours. No risk for the atmosphere can be expected. (see also Doc III-A.2.10 PT 18)
8.4.2	**Possibility of destruction or decontamination following release in water, including drinking water**	On contact with water aluminium phosphide develops gaseous phosphine, which decomposes in water with a half-life of approx. 4 - 5 days. Phosphine has a low potential to bioaccumutate in aquatic organisms.
8.4.3	**Possibility of destruction or decontamination following release in or on soil**	On contact with soil humidity aluminium phosphide develops gaseous phosphine, which decomposes in soil with a half-life of approx. 6 hours. The distribution and mobility behaviour there is no risk for a contamination of groundwater.
8.5		**Procedures for waste management of the active substance for industry or professional users e.g. possibility of re-use or recycling, neutralisation, conditions for controlled discharge, and incineration (IIA8.5)**
8.5.1	**Possibility of re-use or recycling**	not possible
8.5.2	**Possibility of neutralisation of effects**	n. a.
8.5.3	**Conditions for controlled discharge including leachate qualities on disposal**	For substance / preparation / residues: waste code #: 061301 (according to Guideline 2001/118/EC) Recommendation: only degassed material should be disposed of under observation of the prevailing regulations (waste code #: 060316) Under normal circumstances practical no residues for disposal will occur during intended use.
8.5.4	**Conditions for controlled incineration**	n. a.
8.6		**Observations on undesirable or unintended side-effects, e.g. on beneficial and other non-target organisms (IIA8.6)** Aluminium phosphide is very toxic to non-target organisms, but the special conditions of use exclude contact (see Section B8).
8.7		**Identification of any substances falling within the scope of List I or List II of the Annex to Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (IIA8.7)**

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	[redacted]
Materials and methods	[redacted]
Results and discussion	
Conclusion	[redacted]
Reliability	[redacted]
Acceptability	[redacted]
Remarks	
8.1.0 Methods and precautions concerning placing on the market	[redacted]
8.1.1 Methods and precautions concerning production, handling and use of the active substance and its formulations	[redacted]
8.1.2 Methods and precautions concerning storage of the active substance and its formulations	[redacted]
Date	[redacted]
Materials and methods	[redacted]
Results and discussion	[redacted]

Conclusion	[redacted]
Reliability	[redacted]
Acceptability	[redacted]
Remarks	

	COMMENTS FROM ...
Date	*Give date of the comments submitted*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Justified proposals for the classification and labelling of:

AlP-Premix

according to Directive 67/548/EEC and 1999/45/EEC

The product contains the following dangerous substances in the concentrations stated:

85 % Aluminiumphosphide: F, T+, N, R 15/29-28-32-50
CAS No.: 20859-73-8

The preparation is classified as follows:

- as per Annex VI, No. 2.2.4 as well as No. 3.2.8 of Directive 67/548/EEC:
  F, R 15/29

- as per Annex VI, No. 3.2.3 of Directive 67/548/EEC:
  R21

- as per article 3 (1) as well as Annex II of Directive 1999/45/EEC and Annex VI, No. 3.2.1 of Directive 67/548/EEC:
  T+, R 28

- as per Annex VI, No. 3.2.8 of Directive 67/548/EEC:
  R 32

- as per Annex III, part B, table 2 of Directive 1999/45/EEC:
  N, R 50

Explanation:

T+, R 28: Classification of the preparation as per Annex I No. 1.1 of Directive 1999/45/EEC based on the classification of Aluminium phosphide as set down in Directive 67/548/ECC results in T+, R 28, as the concentration of Aluminium phosphide is ≥ 7 %.

N, R 50: Classification of the preparation as per Annex III part B, table 2 of Directive 1999/45/EEC based on the classification of Aluminium phosphide as set down in Directive 67/548/ECC results in N, R 50, as the concentration of Aluminium phosphide is ≥ 25 %.

Labelling of the preparation:

Danger symbols:	F, T+, N
Indications of danger:	flammable, very toxic, dangerous for the environment
Risk phrases:	R 15/29-21-28-32-50
Safety phrases:	S 1/2-3/9/14/49-30-36/37- 45-60-61

Laudenbach, 11.06.2008

A. Dashti-Mommertz

Dr. Anahita Dashti-Mommertz

Justified proposals for the classification and labelling of:

Phosphine

according to Directive 67/548/EEC and 1999/45/EEC

The product contains the following dangerous substances in the concentrations stated:

phosphine	F, T+, N, R-12-17-26-34-50 CAS No.: 7803-51-2

Labelling of the preparation:

Danger symbols:	F, T+, N
Indications of danger:	flammable, very toxic, dangerous for the environment
Risk phrases:	R 12-17-26-34-50
Safety phrases:	S 1/2-28-36/37-45-61-63

Laudenbach, 12.06.2008

A. Dashti - Mommertz

Dr. Anahita Dashti-Mommertz

Author(s)	Section No / Reference No	Year	Title. Source (where different from company) Company, Report No. GLP (where relevant) / (Un)Published	Data Protection Claimed (Yes/No)	Owner
	A 3.4.02	1965	Gmelins Handbuch Phosphor Verlag Chemie GmbH	No	Public
	A 6.3.1		please refer to Sec. IIIA 6.3.3		
	A 6.3.2		please refer to Sec. IIIA 6.3.3		
	A 6.4.1		please refer to Sec. IIIA 5.4		
	A 6.4.2		please refer to Sec. IIIA 6.4.3		
	A 6.4.3		please refer to Sec. IIIA 5.4, 6.8.1		
	A 6.5		please refer to Sec. IIIA 6.12.3, 6.7, 6.4.1, 6.4.3		
	A 6.7		please refer to Sec. IIIA 6.12.3, 6.7, 6.4.1, 6.4.3		
	A 6.8.1	1997	IPCS International Programme on Chemical Safety. Poisons Information Monograph 865. Phosphine.	No	Public
	A 6.8.2		please refer to Sec. IIIA 6.8.1		
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	A 6.15.4		see 6.15.1 / 6.15.2		
Andreev, SB et al.	A 6.2.02*	1959	Use of Tracer Techniques in the Study of Plant Protection, 2nd Int. Conf. Peaceful Uses Atomic Energy, non-GLP, published	No	Public
Barbosa, A; Bonin, AM	A 6.12.3	1994	Evaluation of phosphine genotoxicity, Occupational and Environmental Medicine, non-GLP, published	No	Public
Becker, K.H. et al.	A 7.3.1	1984	Phosphine. In: Methods of the Ecotoxicological Evaluation of Chemicals: Photochemical Degradation in the Gas Phase, Vol. 6, 109	No	Public
Benzing, L	A 6.12.7	1992	Erste Hilfe und Therapiemaßnahmen, Verlag Alfred Strothe, non-GLP, published	No	Verlag Alfred Strothe
Chan LTF et al.	A 4.2d	1983	Phosphine Analysis in Post Mortem Specimens,Journal of Analytical Toxicology , Journal of Analytical Toxicology, ,not GLP, , published	No	

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Chaudry, M.Q. and Price, N.R.	A 5.4*	1990	A spectral study of the biochemical reactions of phosphine with various haemproteins, Pesticide Biochemistry and Physiology 36, 14-21	No	Public
Chin, K.L. et al.	A 5.4*	1992	The interaction of phosphine with haemoglobin and erythrocytes, Xenobiotica, Vol. 22, No. 5, 599-607	No	Public
Chugh, SN et al.	A 6.12.5	1991	Incidence & outcome of AlP poisoning in a hospital study, Indian J Med Res, non-GLP, published	No	Public
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Curry, AS et al.	A 6.2.01*	1959	Absorption of Zinc phosphide particles, Nature, non-GLP, published	No	Public
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Drägerwerk AG	A 3.2.01	1993	Dräger-Röhrchen Handbuch	No	Public
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Fluck, E	A 3.4.03	1973	Chemistry of Phosphine Springer Verlag	No	Public

Author(s)	Section No / Reference No	Year	Title. Source (where different from company) Company, Report No. GLP (where relevant) / (Un)Published	Data Protection Claimed (Yes/No)	Owner
Fluck, E	A 3.5.01	1973	Chemistry of Phosphine Springer Verlag	No	Springer Verlag
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Fritz,B. et al.	A 7.3.1	1982	Laboratory kinetic investigations of the tropospheric oxidation of selected industrial emissions; In: Versino, B.; Ott, H. (Eds.): Physico-Chemical Behaviour of Atmospheric Pollutants, 192-202	No	D. Reidel Publi-shing Company
Garry, V. F. et al.	A 6.12.3	1989	Human genotoxicity: pesticide applicators and phosphine. Science, 246, pp. 251-255	No	Public
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Hsu, C.-H., et al.	A 5.4*	1998	Phosphine-induced stress in hepa 1c1c7 cells, Toxicological Sciences 46, 204-210	No	Public
Hsu, C.-H., et al.	A 6.10*	1998	Phosphine-induced stress in hepa 1c1c7 cells, Toxicological Sciences 46, 204-210	No	Public
Jakote CH	A 6.8.1	1904	Experimentelle Studien über den Einfluß technisch und hygienisch wichtiger Gase und Dämpfe auf den Organismus. Teil XI. Studien über Phosphorwasserstoff. Arch. für Hyg. 49/50: 275-306.	No	Public
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Kligerman, AD et al	A 6.6.4.02*	1994	Cytogenetic and Germ Cell Effects of Phosphine Inhalation by Rodents, Environ.Mol.Mutagen., GLP status uncertain, published	No	Public
Kligerman, AD et al.	A 6.6.4.01*	1994	Cytogenetic Effect of Phosphine Inhalation by Rodents, Environ. Mol.Mutagen., GLP status uncertain, published	No	Public
Klimmer, OR	A 6.8.1	1969	Beirat zur Wirkung des Phosphorwasserstoffes,published, Archiv für Toxikologie, Pharmaklogisches Institut der Universität Bonn	No	Public
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Lide, David R.	A 3.2.02	1991	Vapour pressure of fluids at temperature below 300 K Handbook of Chemistry and Physics. 82nd Edition 1991-1992, page 6-91	No	Public
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Müller, W	A 6.8.1	1940	Über Phosphorwasserstoffvergiftung, published, Archiv für experimentelle Pathologie und Pharmakologie	No	Public
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Okolie NP, Aligbe JU, Osakue EE.	A 6.8.1	2004	Phostoxin-induced biochemical and pathomorphological changes in rabbits. Indian J Exp Biol. 42(11):1096-9.	No	Public
Omae, K et al.	A 6.3.3	1996	Acute and subacute inhalation toxicity, J. Occup Health, non-GLP, published	No	Public
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Potter WT, Rong S, Griffith J, White J, Garry VF.	A 6.8.1	1991	Phosphine-mediated Heinz body formation and hemoglobin oxidation in human erythrocytes. Toxicol Lett. 57(1):37-45.	No	Public
Price, N. R.	A 5.4*	1980	A review of the mode of action of phosphine, Pesticide Science	No	Public
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Rajendran, S.	A 5.7.1/01	2001	Insect resistance to phosphine - challenges and strategies.,International Pest Control International Pest Control, ,not GLP, published	No	
Reichmuth Ch	A 5.7.1/02	1992	Schnelltest zur Resistenzbestimmung gegenüber Phosphorwasserstoff bei vorratsschädlichen Insekten.,Mitt. Dtsch. Ges. Allg. Angew. Ent., Bd. 8, S. 245-247 Mitt. Dtsch. Ges. Allg. Angew. Ent., Bd. 8, S. 245-247, ,not GLP, published	No	
Römpp	A 3.1.1.02	2006	Phosphine Römpp online. Version 2.10. 2006	No	Georg Thieme Verlag
Römpp	A 3.1.2.02	2006	Phosphine Römpp online. Version 2.10. 2006	No	Georg Thieme Verlag
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Schaefer, G.J. et al.	A 6.9*	1998	Acute and subchronic inhalation neurotoxicity of phosphine in the rat. Inhalation toxicology, 10, pp. 293-320.	No	Public
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Steinleitner, Hans-Dieter	A 3.14	1979	Anorganische Stoffe. Stoffzusammenstellung und sicherheitstechnische Kennwerte; Tabellenbuch brennbarer und gefährlicher Stoffe. Staatsverlag der Deutschen Demokratischen Republik, Berlin 1979, page 113	No	Public
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Telle, C et al.	A 6.5.02	1985	Nutritional / toxicological effects of long-term ingestion in the rat, Ed. Chem. Toxic., non-GLP, published	No	Pulbic
Tyler, P. S.; Taylor, W.R.; Rees, D.P.	A 5.7.1/03	1983	Insect resistance to phosphine fumigation in food warehouses in Bangladesh,International Pest Control, 25: 10-13 International Pest Control, 25: 10-13, ,not GLP, published	No	

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Waritz, RS; Brown, RM	A 6.1.3*	1975	Acute and Subacute Inhalation Toxicities of Phosphine..., published, American Industrial Hygiene Association Journal, Haskell Laboratory, 1975-06	No	Public
Weller, D	A 6.12.7	1982	Toxicology of Hydrogen Phosphide, Degesch GmbH Frankfurt, non-GLP, published	No	Degesch GmbH Frankfurt

WHO	A 3.5.02	1988	Phosphine and Selected Metal Phosphides Phosphine and Selected Metal Phosphides. Geneva, 1988, p. 17 - 19	No	Public
WHO	A 6.2.03*	1988	Environmental Health Criteria 73, pp. 48-51, WHO, non-GLP, unpublished	No	Public
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World Health Organisation	A 3.1.1.02	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.1.2.02	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.1.3.02	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.3.1	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.3.2	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.3.3	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.4.01	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.7.01	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.11.03	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 3.15.02	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
World Health Organisation	A 6.8.1	1988	Phosphine and Selected Metal Phosphides, World Health Organisation, non-GLP, published	No	World Health Organisa-tion
Zipf, KE et al	A 6.12.2	1967	Clinical Observation of a Case of Phostoxin Poisoning, 1st Medical University Clinic, Frankfurt/Main, Springer Verlag, non-GLP, published	No	Springer Verlag

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A 3.1.1.02	Römpp	2006	Phosphine Römpp online. Version 2.10. 2006	No	Georg Thieme Verlag
A 3.1.1.02	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
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A 3.1.2.02	Römpp	2006	Phosphine Römpp online. Version 2.10. 2006	No	Georg Thieme Verlag
A 3.1.2.02	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
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A 3.1.3.02	Römpp	2006	Phosphine Römpp online. Version 2.10. 2006	No	Georg Thieme Verlag

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A 3.1.3.02	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
A 3.2.01	Drägerwerk AG	1993	Dräger-Röhrchen Handbuch	No	Public
A 3.2.02	Lide, David R.	1991	Vapour pressure of fluids at temperature below 300 K Handbook of Chemistry and Physics. 82nd Edition 1991-1992, page 6-91	No	Public
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A 3.3.1	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
A 3.3.2	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
A 3.3.3	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
A 3.4.01	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
A 3.4.02		1965	Gmelins Handbuch Phosphor Verlag Chemie GmbH	No	Public
A 3.4.03	Fluck, E	1973	Chemistry of Phosphine Springer Verlag	No	Public
A 3.4.1	Voigt, M; Schmitt, S	2002	Statement	No	Detia Freyberg GmbH
A 3.4.2	Voigt, M; Schmitt, S	2002	Statement	No	Detia Freyberg GmbH

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A 3.4.3	Voigt, M; Schmitt, S	2002	Statement	No	Detia Freyberg GmbH
A 3.4.4	Voigt, M; Schmitt, S	2002	Statement	No	Detia Freyberg GmbH
A 3.5.01	Fluck, E	1973	Chemistry of Phosphine Springer Verlag	No	Springer Verlag
A 3.5.02	WHO	1988	Phosphine and Selected Metal Phosphides Phosphine and Selected Metal Phosphides. Geneva, 1988, p. 17 - 19	No	Public
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A 3.7.01	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
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A 3.11.03	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
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A 3.14	Steinleitner, Hans-Dieter	1979	Anorganische Stoffe. Stoffzusammenstellung und sicherheitstechnische Kennwerte; Tabellenbuch brennbarer und gefährlicher Stoffe. Staatsverlag der Deutschen Demokratischen Republik, Berlin 1979, page 113	No	Public
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A 3.15.02	World Health Organisation	1988	Phosphine and Selected Metal Phosphides	No	World Health Organisa-tion
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A 4.2 b	Kettrup, A, Angerer, J	1994	Luftanalysen, Sonderdruck aus DFG – Deutsche Forschungsgemeinschaft. Band 1, Ed. Greim, H., published	No	public
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A 4.2d	Chan LTF et al.	1983	Phosphine Analysis in Post Mortem Specimens,Journal of Analytical Toxicology , Journal of Analytical Toxicology, ,not GLP, , published	No	

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A 5.4*	Price, N. R.	1980	A review of the mode of action of phosphine, Pesticide Science	No	Public
A 5.4*	Chin, K.L. et al.	1992	The interaction of phosphine with haemoglobin and erythrocytes, Xenobiotica, Vol. 22, No. 5, 599-607	No	Public
A 5.4*	Chaudry, M.Q. and Price, N.R.	1990	A spectral study of the biochemical reactions of phosphine with various haemproteins, Pesticide Biochemistry and Physiology 36, 14-21	No	Public
A 5.4*	Hsu, C.-H., et al.	1998	Phosphine-induced stress in hepa 1c1c7 cells, Toxicological Sciences 46, 204-210	No	Public
A 5.7.1/01	Rajendran, S.	2001	Insect resistance to phosphine - challenges and strategies.,International Pest Control International Pest Control, ,not GLP, published	No	
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A 5.7.1/03	Tyler, P. S.; Taylor, W.R.; Rees, D.P.	1983	Insect resistance to phosphine fumigation in food warehouses in Bangladesh,International Pest Control, 25: 10-13 International Pest Control, 25: 10-13, ,not GLP, published	No	

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A 6.1.3*	Waritz, RS; Brown, RM	1975	Acute and Subacute Inhalation Toxicities of Phosphine..., published, American Industrial Hygiene Association Journal, Haskell Laboratory, 1975-06	No	Public
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A 6.2.01*	Curry, AS et al.	1959	Absorption of Zinc phosphide particles, Nature, non-GLP, published	No	Public
A 6.2.02*	Andreev, SB et al.	1959	Use of Tracer Techniques in the Study of Plant Protection, 2nd Int. Conf. Peaceful Uses Atomic Energy, non-GLP, published	No	Public
A 6.2.03*	WHO	1988	Environmental Health Criteria 73, pp. 48-51, WHO, non-GLP, unpublished	No	Public
A 6.3.1			please refer to Sec. IIIA 6.3.3		
A 6.3.2			please refer to Sec. IIIA 6.3.3		
A 6.3.3	Omae, K et al.	1996	Acute and subacute inhalation toxicity, J. Occup Health, non-GLP, published	No	Public
A 6.4.1	Schnellhardt, M	1985	Study on the subchronical toxicity of AlP, Forschungszentrum für Tierproduktion, Dummerstorf-Rostock, Delicia Freyberg GmbH, non-GLP, unpublished	No	Detia Freyberg GmbH

A 6.4.1			please refer to Sec. IIIA 5.4		
A 6.4.2			please refer to Sec. IIIA 6.4.3		
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A 6.4.3			please refer to Sec. IIIA 5.4, 6.8.1		
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A 6.5.02	Telle, C et al.	1985	Nutritional / toxicological effects of long-term ingestion in the rat, Ed. Chem. Toxic., non-GLP, published	No	Pulbic
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A 6.5			please refer to Sec. IIIA 6.12.3, 6.7, 6.4.1, 6.4.3		
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A 6.6.4.01*	Kligerman, AD et al.	1994	Cytogenetic Effect of Phosphine Inhalation by Rodents, Environ. Mol.Mutagen., GLP status uncertain, published	No	Public
A 6.6.4.02*	Kligerman, AD et al	1994	Cytogenetic and Germ Cell Effects of Phosphine Inhalation by Rodents, Environ.Mol.Mutagen., GLP status uncertain, published	No	Public
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A 6.7			please refer to Sec. IIIA 6.12.3, 6.7, 6.4.1, 6.4.3		
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A 6.8.1	Klimmer, OR	1969	Beirat zur Wirkung des Phosphorwasserstoffes,published, Archiv für Toxikologie, Pharmaklogisches Institut der Universität Bonn	No	Public
A 6.8.1	Müller, W	1940	Über Phosphorwasserstoffvergiftung, published, Archiv für experimentelle Pathologie und Pharmakologie	No	Public
A 6.8.1	World Health Organisation	1988	Phosphine and Selected Metal Phosphides, World Health Organisation, non-GLP, published	No	World Health Organisa-tion
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A 6.8.2			please refer to Sec. IIIA 6.8.1		
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A 6.15.4			see 6.15.1 / 6.15.2		
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* key study