European Commission

TRANSFLUTHRIN

CAS number 118712-89-3

Document III-A
Section 5 Efficacy
Study Summaries
Active Substance

Rapporteur Member State: The Netherlands
August 2013

CA-report and Proposed Decision of The Netherlands in the context of the
Possible inclusion of Transfluthrin in Annex I of Council Directive 98/8/EC

CONTENTS

1 SECTION A5 Effectiveness against target organisms and intended uses

Subsection (Annex Point)			Official use only
5.1	**Function (IIA5.1)**	Insecticide (PT 18)	
5.2	**Organism(s) to be controlled and products, organisms or objects to be protected (IIA5.2)**		
5.2.1	**Organism(s) to be controlled (IIA5.2)**	• Mosquitoes (e.g. *Aedes aegypti; Culex quinquefasciatus; Anopholes stephensi*) • House flies • Cockroaches (e.g. *Blatella germanica*) • Moths (e.g. *Tineola bisselliella; Anthrenus fasciatus; Attagenus piceus*)	x
5.2.2	**Products, organisms or objects to be protected (IIA5.2)**	Household use only.	

Pest	Object protected	Application aim
Mosquitoes	Home	Prevent and control
House flies	Home	Prevent and control
Cockroaches	Home	Prevent and control
Moths	Clothes Carpet Fur	Prevent and control

5.3	**Effects on target organisms, and likely concentration at which the active substance will be used (IIA5.3)**	
5.3.1	**Effects on target organisms (IIA5.3)**	**See table below – page 6**
5.3.2	**Likely concentrations at which the A.S. will be used (IIA5.3)**	
	- PT18	• Mosquito coil – 1 mg a.s./m^3 • Vaporiser – 1 mg a.s./m^3 • Moth paper – 0.4 mg a.s./m^2 paper
5.4	**Mode of action (including time delay) (IIA5.4)**	
5.4.1	**Mode of action**	Sodium channel modulator Transfluthrin is a synthetic pyrethroid which acts on harmful organisms by contact and ingestion. It expresses a strong knock-down effect. Pyrethroids impair ion transport through the membrane of nerve axons, causing muscular paralysis in the insect; death seems to follow a nervous system impairment that occurs a few minutes after pesticide absorption (Reigart & Roberts, 1999). The primary site of activity of transfluthrin is the voltage sensitive sodium channel in nerve membrane. Transfluthrin prolongs the opening of the sodium channels (i.e. the channels direclty responsible for generating nerve action potentials) leading to neuronal hyperexcitability.
5.4.2	**Time delay**	Knock-down effect (i.e. immediate).

5.5	**Field of use envisaged (IIA5.5)**	
	MG03: Pest control	Product type PT18 only
5.6	**User (IIA5.6)**	
	Industrial	The active substance is now manufactured in [redacted]. The highest standards of worker protection are implemented in the factory to international Bayer safety standards. Wherever possible, human exposure is eliminated by provision of engineering controls – e.g. closed systems with negative pressure, automatic filling and packing, Local Extraction Ventilation (LEV), etc
	Professional	Not applicable – not approved for Professional uses
	General public	The labels clearly provide easy to follow instructions for users.
5.7	**Information on the occurrence or possible occurrence of the development of resistance and appropriate management strategies (IIA5.7)**	
5.7.1	**Development of resistance**	No known resistance in the target species has been observed to-date for this chemistry
5.7.2	**Management strategies**	Bayer is an active participant in the Insecticides Resistance Action Committee (IRAC). IRAC monitor scientific journals and other publications for reports of resistance and pro-actively recommend resistance measures to protect the efficacy of the pyrethroid group. In addition SC Johnson monitors the scientific literature and consumer reports. It will respond in the appropriate way to evidence of resistance to the target species.
5.8	**Likely tonnage to be placed on the market per year (IIA5.8)**	Please refer to IIIA Confidential data, section A5.8

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*14 February 2008*
Materials and methods	*5.2.1. Organisms to be controlled: Moths:* *Tineolea bisselliella is a moth, Anthrenus fasciatus and Attagenus piceus are beetles.*
Conclusion	*The a.s. transfluthrin at the proposed concentration of 1 mg/m^3 (mosquito coil and vaporiser) and at 0,4 mg a.s./m^2 paper (mothpaper) has been shown to give an immediate knockdown effect for the target organisms. In these tests the following species have been used: Mosquitoes(Aedes aegypti, Culex quinquefasciatus), house flies (Musca domestica), cockroaches (Blattela germanica) and moth (Tineola bisselliella).*
Reliability	*Reliability is 1.*
Acceptability	acceptable
Remarks	*No comments*
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Results and discussion	*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*
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 5.3: Summary table of experimental data on the effectiveness of the active substance against target organisms at different fields of use envisaged, where applicable

<table>
<tr><th>Function</th><th>Field of use envisaged</th><th>Test substance</th><th>Test organism(s)</th><th>Test method</th><th>Test conditions</th><th>Test results: effects, mode of action, resistance</th><th>Reference*)</th></tr>
<tr><td>Insecticide</td><td>PT 18</td><td>No deviation from specification</td><td>Yellow fever mosquitoes
Aedes aegypti
Male and female</td><td>Aerosol studies on Aedes aegypti in 1 m³ chambers</td><td>Active ingredient was dissolved in 2 ml acetone and sprayed under air pressure through a glass nozzle.The exposure time was 60 minutes.</td><td><u>50 % and 95 % knock-down times in minutes (or % knock-down after one hour %) and mortality after 24 h</u>
<table>
<tr><th>mg ai/m³</th><th>50</th><th>95</th><th>24h</th></tr>
<tr><td>0.05</td><td>1’</td><td>1.5’</td><td>100</td></tr>
<tr><td>0.01</td><td>1.5’</td><td>3’</td><td>93</td></tr>
<tr><td>0.005</td><td>12’</td><td>28’</td><td>90</td></tr>
<tr><td>0.001</td><td>>60’</td><td>15%</td><td>20</td></tr>
</table></td><td>Pflanzenschutz Nachrichten Bayer, special edition Bayothrin
Transfluthrin
Chapter 4.1.2</td></tr>
</table>

<table>
<tr><th>Function</th><th>Field of use envisaged</th><th>Test substance</th><th>Test organism(s)</th><th>Test method</th><th>Test conditions</th><th>Test results: effects, mode of action, resistance</th><th>Reference*)</th></tr>
<tr><td>Insecticide</td><td>PT 18</td><td>No deviation from specification</td><td>Housefly

Musca domestica

Males,

Strain WHO N</td><td>Aerosol studies on Musca domestica WHO N, in 1 m³ chambers</td><td>Active ingredient was dissolved in 2ml acetone and sprayed under air pressure through a glass nozzle.The exposure time was 60 minutes.</td><td><u>50 % and 95 % knock-down times in minutes (or % knock-down after one hour %) and mortality after 24 h</u>
<table><tr><th>mg ai/m³</th><th>50</th><th>95</th><th>24h</th></tr><tr><td>5</td><td>3’</td><td>4’</td><td>100</td></tr><tr><td>1</td><td>5’</td><td>7’</td><td>100</td></tr><tr><td>0.5</td><td>7’</td><td>11’</td><td>99</td></tr><tr><td>0.1</td><td>17’</td><td>89%</td><td>43</td></tr></table></td><td>Pflanzenschutz Nachrichten Bayer, special edition Bayothrin

Transfluthrin

Chapter 4.1.2</td></tr>
<tr><td>Insecticide</td><td>PT 18</td><td>No deviation from specification</td><td>Cloth moths

Tineola bisselliella</td><td>Aerosol studies on TineolabB in 1 m³ chambers</td><td>Active ingredient was dissolved in 2 ml acetone and sprayed under air pressure through a glass nozzle.The exposure time was 60 minutes.</td><td><u>50 % and 95 % knock-down times in minutes (or % knock-down after one hour %) and mortality after 24 h</u>
<table><tr><th>mg ai/m³</th><th>50</th><th>95</th><th>24h</th></tr><tr><td>0.5</td><td>2’</td><td>6’</td><td>100</td></tr><tr><td>0.1</td><td>7’</td><td>17’</td><td>90</td></tr><tr><td>0.05</td><td>11’</td><td>25’</td><td>90</td></tr><tr><td>0.01</td><td>>60’</td><td>39%</td><td>26</td></tr></table></td><td>Pflanzenschutz Nachrichten Bayer, special edition Bayothrin

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Chapter 4.1.2</td></tr>
</table>

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<tr><th>Function</th><th>Field of use envisaged</th><th>Test substance</th><th>Test organism(s)</th><th>Test method</th><th>Test conditions</th><th>Test results: effects, mode of action, resistance</th><th>Reference*)</th></tr>
<tr><td>Insecticide</td><td>PT 18</td><td>No deviation from specification</td><td>German cockroach nymphs
Blattella germanica</td><td>Direct spraying of Blattella germanica L., 5th nymphal Stage</td><td>Active substance was dissolved in 2.5 ml
acetone and sprayed at 0.05 bar air pressure through a glass nozzle onto a round metal box containing 5 cockroaches.</td><td><u>Knock-down times in minutes ‘and seconds’’ and mortality in % after 2h and 24 h</u>
<table><tr><th>% soln</th><th>KT 20%</th><th>KT 100%</th><th>% KD 2h</th><th>% mortality 24 h</th></tr><tr><td>0,1</td><td>22’’</td><td>2’45’’</td><td>60</td><td>100</td></tr></table></td><td>Pflanzenschutz Nachrichten Bayer, special edition Bayothrin
Transfluthrin
Table 5
page 15</td></tr>
<tr><td>Insecticide</td><td>PT 18</td><td>No deviation from specification</td><td>Oriental cockroach nymphs
Blatta orientalis</td><td>Direct spraying of Blatta orientalis L., 5th nymphal Stage</td><td>Active substance was dissolved in 2.5 ml
acetone and sprayed at 0.05 bar air pressure through a glass nozzle onto a round metal box containing 5 cock roaches.</td><td><u>Knock-down times in minutes ‘and seconds’’ and mortality in % after 2h and 24 h</u>
<table><tr><th>% soln.</th><th>KT 20%</th><th>KT 100%</th><th>% KD 2h</th><th>% mortality 24 h</th></tr><tr><td>0,1</td><td>39’’</td><td>1’59’’</td><td>100</td><td>100</td></tr></table></td><td>Pflanzenschutz Nachrichten Bayer, special edition Bayothrin
Transfluthrin
Table 6
page 15</td></tr>
</table>

*) References:

List the references cited in alphabethical order with full bibliographic data (Author(s) (year) Title. Source)

Author	Year	Title, Origin, Report No, Date
IRAC	2006	Web publication only: http://www.irac-online.org/
Mrusek, Naumann and Sonneck	1995	Pflanzenschutz Nachrichten Bayer, special edition Bayothrin (Transfluthrin)
Reigart & Roberts	1999	Reigart and Roberts. 1999. Recognition and management of pesticide poisonings. Washington, DC: US Environmental Protection Agency, Office of Prevention, Pesticides, and Toxic Substances (March). Fifth Edition.