

**Committee for Risk Assessment**  
**RAC**

Annex 2

**Response to comments document (RCOM)**  
to the Opinion proposing harmonised classification and  
labelling at EU level of

**cyfluthrin (ISO);**  
 **$\alpha$ -cyano-4-fluoro-3-phenoxybenzyl-3-(2,2-**  
**dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate**

**EC Number: 269-855-7**  
**CAS Number: 68359-37-5**

CLH-O-0000006802-74-01/F

**Adopted**  
**4 May 2020**

**ANNEX 2 - COMMENTS AND RESPONSE TO COMMENTS ON CLH PROPOSAL ON CYFLUTHRIN (ISO);  $\alpha$ -CYANO-4-FLUORO-3-PHENOXYBENZYL-3-(2,2-DICHLOROVINYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE**

**COMMENTS AND RESPONSE TO COMMENTS ON CLH: PROPOSAL AND JUSTIFICATION**

Comments provided during public consultation are made available in the table below as submitted through the web form. Any attachments received are referred to in this table and listed underneath, or have been copied directly into the table.

All comments and attachments including confidential information received during the public consultation have been provided in full to the dossier submitter (Member State Competent Authority), the Committees and to the European Commission. Non-confidential attachments that have not been copied into the table directly are published after the public consultation and are also published together with the opinion (after adoption) on ECHA's website. Dossier submitters who are manufacturers, importers or downstream users, will only receive the comments and non-confidential attachments, and not the confidential information received from other parties.

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**Substance name: cyfluthrin (ISO);  $\alpha$ -cyano-4-fluoro-3-phenoxybenzyl-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate**  
**EC number: 269-855-7**  
**CAS number: 68359-37-5**  
**Dossier submitter: Germany**

**GENERAL COMMENTS**

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France		MemberState	1
Comment received				
Page 13: According to the CAR of the active substance the enantiomeric ratio is 1:1 within each diastereoisomer pair.				
Page 17: According to the CAR of the active substance, for explosive properties, the purity of the tested compound is 94,3% w/w (Mixture of 4 Diastereoisomers).				
Dossier Submitter's Response				
Thank you for your support. The purity has been confirmed.				
RAC's response				
Noted.				

**TOXICITY TO REPRODUCTION**

Date	Country	Organisation	Type of Organisation	Comment number
03.05.2019	Sweden		MemberState	2
Comment received				
No effects on reproductive parameters were observed, thus the Swedish Chemicals Agency support the proposal of no classification for effects on fertility and sexual function. The Swedish Chemicals Agency also support the proposal of no classification for effects on development. The increased incidence of microphthalmia outside HCD-range occurred in a rat strain (Wistar Hsd Cpb:WU) with a high background incidence of this malformation and was associated with maternal toxicity. No cases of microphthalmia were observed at higher systemic dose levels following oral exposure in other strains of rat or rabbits following				

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cyfluthrin or beta-cyfluthrin exposure. Thus, the effects can be considered specific to this particular strain of rats, likely due to an increase of a spontaneously occurring malformation in the presence of maternal toxicity and not a specific developmental effect of the substance. It would be valuable with a specification of the specific sub-strains of Wistar rats used in the different studies. A similar case was recently discussed in RAC with regard to the substance Prothioconazole, showing similar effects (microphthalmia) in this particular strain of Wistar Hsd Cpb:WU rats but not in other Wistar strains or in rabbits, leading to the conclusion of no classification for effects on development.

The Swedish Chemicals Agency support the proposal for classification of effects via lactation. Clinical signs of neurotoxicity were observed in the pups during the lactational period, likely attributed by the presence of cyfluthrin in the breast milk (supported by animal data on beta-cyfluthrin and by human data).

**Dossier Submitter's Response**

Thank you for your support.

**RAC's response**

Thank you for your comment. RAC agrees that Lact.; H362 and no classification for sexual function and fertility and development are warranted.

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France	Bayer SAS	Company-Manufacturer	3

**Comment received**

We support the proposal of the Dossier Submitter that the classification Developmental toxicant cat. 2, H361 d (Suspected of damaging the unborn child) is not warranted based on the increase in malformations, including microphthalmia, that were observed in cyfluthrin developmental toxicity studies via the inhalation route (M-041542-02-1, M-038947-01-1). These findings were a consequence of the route of inhalation-triggered maternal toxicity e.g. bradypnea, leading to reduced oxygen supply, hypoxia and hypoxemia and not directly attributable to treatment. In addition it should also be noted that the Wistar Hsd Cpd:WU rat strain used in these studies has a high spontaneous background incidences of microphthalmia. Based on mechanistic investigations, the increase in malformations was shown to be secondary to effects of inhalation exposure on the dams in the form of maternal hypoxia, with the resulting compensatory mechanisms of hypothermia and respiratory alkalosis, resulting in clinical signs of respiratory disturbances and hypoactivity. Hypoxia during development is known to be capable of inducing many types of malformations. In the inhalation study (M-038947-01-1), where an additional high dose group received supplementary oxygen, supplementation resulted in the reduction of maternal toxicity and developmental effects; in particular, the incidence of fetuses with microphthalmia was reduced from 5.4% to 2.9%. These observations support that hypoxia is the primary MOA for development of microphthalmia/other malformations and maternal toxicity for cyfluthrin when administered via the inhalation route. Furthermore in developmental studies via the oral route with cyfluthrin and beta-cyfluthrin, at dose levels up to 30 mg/kg bw/d and 40 mg/kg bw/d, respectively, no treatment-related increased incidences of any malformations, including microphthalmia, were observed, even though these dose levels were in the order of 10 fold higher than at the high dose (11.9 mg/m<sup>3</sup>, equivalent to 3 mg/kg bw/d) in the inhalation study (M-038947-01-1), where a clear increase in malformations, particularly microphthalmia were seen. In addition, a comparison of systemically available cyfluthrin levels (plasma levels) after oral and inhalation indicated

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that the systemic beta-cyfluthrin/cyfluthrin concentrations after oral administration were much higher than after inhalation exposure, further demonstrated that the fetal malformations observed in the inhalation study were the result of maternal hypoxia and not directly related to treatment. More detailed argumentation is presented in the following Expert Statement, which is available for submission:

- Expert Statement entitled "Novel CLP R2 classification proposal by EFSA for beta-cyfluthrin" (M-635090-01-1)

Therefore, it can be concluded that 'the increased incidences of microphthalmia in the rat studies by inhalation were a secondary consequence of effects of the route of exposure, resulting in marked toxicity in the dams (eg hypoxia and bradypnea), which are known to be non-human relevant, hence the CLP Category R criteria are not met and no classification is warranted.

Documents mentioned are either referenced in the CLH Report or enclosed as attachments.

ECHA note – An attachment was submitted with the comment above. Refer to public attachment M-635090-01-2\_Expert statement reprotox\_sanitized.pdf

ECHA note – An attachment was submitted with the comment above. Refer to confidential attachment M-635090-01-1\_Expert statement reprotox.pdf

**Dossier Submitter's Response**

The DS proposal was supported. No response required.

**RAC's response**

Thank you for the detailed analysis. Despite some uncertainties, RAC finds it plausible that the increased incidence of microphthalmia in rat inhalation studies with cyfluthrin was secondary to maternal adaptive mechanisms which are of low human relevance. RAC agrees with no classification for development.

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France	Bayer SAS	Company-Manufacturer	4

**Comment received**

We strongly disagree with the proposed classification for Reproductive toxicity Lact. H362 (May cause harm to breastfed children).

Coarse tremors seen in the neonatal rat in the two generation reproduction study with cyfluthrin (M-032017-01-1), are classic transient signs of acute neurotoxicity associated with a Type II pyrethroid with no adverse long term consequences. This is a high dose phenomenon based on the limited metabolic capacity of the young rat compared to the adult rat and is via a mode of action which is not relevant to humans. Pyrethroids are metabolized primarily by cytochrome P450 enzymes in the rat and by carboxylesterase enzymes in humans. Because carboxylesterase enzymes develop rapidly in humans after birth, pyrethroids are detoxified and cleared rapidly in both children and adults. More detailed argumentation is presented in the Expert Statement (M-512994-01-1). The following two recent publications, which are available for submission, provide further evidence that the sensitivity of young rats to pyrethroids associated with limited metabolic capacity is not relevant to predict the sensitivity of children to pyrethroids (different family of enzymes involved and those enzymes develop at a much earlier age (postnatal) in humans than rats):

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- Publication entitled "Age-Dependent Human Hepatic Carboxylesterase 1 (CES1) and Carboxylesterase 2 (CES 2) Postnatal Ontology" (Hines et. al., Drug Metab Dispos 44: 959-966, 2016; M-625239-01-1)
  - Publication entitled "Determination of Human Hepatic CYP2C8 and CYP1A2 Age-Dependent Expression to Support Human Health Risk Assessment for Early Ages (Song et. al., Drug Metab Dispos 45: 468-475, 2017; M-658739-01-1)
- Furthermore, humans (including lactating females) would never be exposed to the high concentrations of beta cyfluthrin / cyfluthrin required to overwhelm the metabolizing capacity of the sensitive neonate rat.

Documents mentioned are either referenced in the CLH Report or enclosed as attachments.

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ECHA note – An attachment was submitted with the comment above. Refer to confidential attachment CLH commenting.zip

**Dossier Submitter's Response**

We remain of the opinion that classification for Lact. H362 is warranted for the following reasons:

- (1) beta-cyfluthrin has lipophilic properties, can be accumulated in the lipid-rich tissue of the breast implying that transfer into human or animal breast will occur
- (2) Sheets and Lake (2003), DNT study with rats: measurements of beta-cyfluthrin concentration in whole brain tissue was performed; beta-cyfluthrin was detected in brain tissue from pups on both days measured (PND4 and PND21) at all dietary levels (dose-related)
- (3) residues of cyfluthrin were detected in human breast milk samples

For these reasons there is clear evidence of exposure of pups during lactation which in turn implies that beta-cyfluthrin can reach pups via dam's milk. The observed adverse effects in the offspring of the 2-generation toxicity study in rats during lactation is considered related to the transfer of cyfluthrin and/or its metabolite(s) in the milk.

The argumentation via metabolic capacity of CES is based on many speculation which cannot be used to exclude a hazard for human health.

The classification for H362 was also supported by SE, FI and ES CA (see above and below).

**RAC's response**

Thank you for the comment and the publications resulting from a research project on metabolism of pyrethroids.

The tremors observed in the neonatal rats exposed to cyfluthrin via milk in the two-generation study 70 in the absence of maternal toxicity, although transient, are considered an adverse effect.

According to Song *et al.* (2017), the major contributors to pyrethroid metabolism in humans are CYP2C8, CYP2C19, CYP3A4, CES1 and CES2. According to Hines *et al.* (2016) human infants younger than 3 weeks of age are expected to exhibit significantly lower CES1- and CES2-dependent metabolic clearance compared with older individuals. Song *et al.* (2017) found a significant increase in human hepatic CYP2C8 expression to occur around postnatal day 35. These data indicate that human infants younger than 3 weeks would exhibit significantly lower pyrethroid clearance, and thereby increased sensitivity to pyrethroid toxicity, compared to adults.

Risk-based arguments cannot be taken into account in hazard assessment.

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Thus, RAC agrees with the DS's proposal of classification with Lact.; H362.

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	Finland		MemberState	5
Comment received				
<p>Cyfluthrin has lipophilic properties and it can accumulate in the lipid-rich tissues of the breast. The studies indicate that cyfluthrin and/or its metabolites transfer into breast milk in humans and animals. Cyfluthrin through the milk is considered to be a main determinant of offspring neurotoxicity in the 2-generation toxicity study in rats. Based on available information and the classification criteria FI CA supports classification of cyfluthrin as a reproductive toxicant via lactation; H362.</p>				
Dossier Submitter's Response				
Thank you for your support.				
RAC's response				
Thank you for your comment. RAC agrees that classification with Lact.; H362 is warranted.				

Date	Country	Organisation	Type of Organisation	Comment number
26.04.2019	Spain		MemberState	6
Comment received				
<p>Toxicity via lactation</p> <p>In a 2-generation toxicity study in rats with cyfluthrin, increased incidence of coarse tremors and decreased pup body weight was observed in F1 and F2 pups at 125 ppm (19 mg/kg bw/d) and 400 ppm (59 mg/kg bw/d). Coarse tremors were observed as early as lactation day 5 and had ceased by lactation day 18 and occurred in the presence of maternal toxicity only at 400 ppm. In F0 and F1 females, a compound-related and statistically significant increased incidence of splayed hind limbs occurred at 400 ppm during the lactation phase. Statistically significantly decreased terminal body weights were observed in F1 males at 125 ppm (6%) and 400 ppm (8%) and in F1 females only at 400 ppm (8%).</p> <p>No measurements of cyfluthrin concentration in the rat milk after exposure have been provided. However, residues of cyfluthrin were detected in human breast milk samples. Additionally, measurements of beta-cyfluthrin concentration in whole-brain tissue were performed in a developmental neurotoxicity study in rats. Beta-cyfluthrin was detected in brain tissue from pups on both days measured (PND 4 and PND 21) at all dietary levels, with the concentration increasing in proportion to the dietary concentration. These findings provide clear evidence of exposure of the pups during lactation and that beta-cyfluthrin can reach the pups via the dam's milk.</p> <p>On overall, it can be concluded that the presence of neurotoxic effects in the offspring at 125 ppm in the 2-generation study in rats was due to transfer of cyfluthrin or of its metabolite(s) in the milk during the lactation period. This conclusion is supported by the absence of adverse treatment effects on prenatal or peri-natal litter parameters. Therefore, the Spanish CA agreed with the proposal of the dossier submitter to classify beta-cyfluthrin as a reproductive toxicant in category for effects on or via lactation as Lact H362: May cause harm to breast-fed children.</p>				



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Dossier Submitter's Response
Thank you for your support.
RAC's response
Thank you for your comment. RAC agrees that classification with Lact.; H362 is warranted.

**OTHER HAZARDS AND ENDPOINTS – Acute Toxicity**

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France	Bayer SAS	Company-Manufacturer	7

<p>Comment received</p> <p>We disagree with the proposal to use the acute oral LD50 value derived using Cremophor/water as vehicle, for classification and labelling. The LD50 value of 14.3 mg/kg bw is particularly low due to the fact that Cremophor being a non-ionic solubilizer and emulsifier, enhances absorption and was primarily developed for the pharmaceutical industry to aid in the GI absorption of drugs. Furthermore, OECD guidance for the choice of vehicle indicates the vehicle should neither reduce nor enhance the toxicity of the test substance. Therefore, the exaggerated toxic potency expressed in studies that used Cremophor/water as vehicle indicates that the resulting LD50 values are not appropriate for classification or labelling. Likewise, the relatively high LD50 values reported for cyfluthrin and beta-cyfluthrin administered in an aqueous or organic suspension may underestimate acute toxicity for classification or labelling. For pyrethroids, data generated using an oil based vehicle are best suited for references purposes and is in line with the approach taken by the US EPA for cyfluthrin. This is further detailed in the attached expert statement (M-494996-01-1) Therefore, the LD50 value of 77 mg/kg bw in fasted female rats (Report No.: 16181) - the lowest value generated using acetone/peanut oil as vehicle for either cyfluthrin or beta-cyfluthrin in acceptable studies - is the most appropriate scientifically for classification and labelling purposes. This data support a classification of Acute Tox. 3, H301 (Toxic if swallowed)</p> <p>Documents mentioned are either referenced in the CLH Report or enclosed as attachments.</p> <p>ECHA note – An attachment was submitted with the comment above. Refer to public attachment CLH commenting_sanitized.zip</p> <p>ECHA note – An attachment was submitted with the comment above. Refer to confidential attachment CLH commenting.zip</p>
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Dossier Submitter's Response
<p>We remain of the opinion that classification for Acute Tox. 2 (H300) is warranted. The lowest LD50 value determined in acceptable studies with cyfluthrin was 14.3 mg/kg bw (cremophor/water) in rats. As laid down in the Guidance on the application of CLP criteria (version 5.0, July 2017), [...] "if there are different LD50 values from tests using different vehicles [...] generally the lowest valid value would be the basis for classification [...]" (page 241). For this reason, the classification for acute oral toxicity for cyfluthrin was based on the study using chemophor/water as vehicle. This classification proposal is supported by FI and ES CA (see below).</p>
RAC's response
<p>Thank you for your comment.</p> <p>RAC acknowledges that according to the relevant OECD TGs water and oil are generally</p>

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preferred to other vehicles and that vegetable oils have been widely used for acute oral toxicity testing of pyrethroids. On the other hand, Cremophor is a surfactant and surfactants are found in plant protection products containing pyrethroids. Thus, Cremophor cannot be dismissed as a vehicle for human hazard assessment. Therefore RAC agrees with the DS to base the classification on studies where the substance was dissolved in aqueous Cremophor.

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	Finland		MemberState	8
Comment received				
<p>Hazard class - Acute Toxicity: oral            Several studies indicate that the experimental oral LD50 values of cyfluthrin (ISO) have a broad range. DE CA's conclusion that this may be due to different polarity leading to modified absorption in the gastrointestinal track is reasonable. FI CA considers that classification according to the lowest value (study 5) is justified based on CLP regulation as generally the lowest valid value would be the basis for classification. The FI CA supports the classification proposal Acute Tox. 2; H300.</p> <p>Hazard class – Acute Toxicity: inhalation            The lowest LC50 values for cyfluthrin determined in inhalation studies after 4h exposure to dust were 0.141 mg/L air (cyfluthrin in ethanol/PEG 400, 4h-exposure, head-nose only; study 33). The FI CA supports the classification proposal Acute Tox. 2; H330.</p>				
Dossier Submitter's Response				
Thank you for your support.				
RAC's response				
Thank you for your comment. RAC agrees with Acute Tox. 2 via the oral and inhalation routes.				

Date	Country	Organisation	Type of Organisation	Comment number
26.04.2019	Spain		MemberState	9
Comment received				
<p>Oral            The lowest LD50 value determined in acceptable studies with cyfluthrin was 14.3 mg/kg bw (solvent: Cremophor/water) in rats. Therefore, a classification as Acute Tox 2, H300 – Fatal if swallowed is warranted.</p> <p>Inhalation            The LC50 values of cyfluthrin and beta-cyfluthrin were determined in rodents after exposure to dust. The lowest LC50 value for cyfluthrin was 0.141 mg/L air (cyfluthrin in ethanol/PEG 400, 4h-exposure, head-nose only) and 0.047 mg/L air (cyfluthrin in ethanol/PEG 400, 5x6 h-exposure, nose only). Based on the worst-case LC50 value determined in an acceptable inhalation study, the LC50 value in rats used for classification was 0.081 mg/L air beta-cyfluthrin in ethanol/PEG 400 as mist (4h-exposure, head-nose only). The lowest rat LC50 value after dust exposure was 0.532 mg/L air beta-cyfluthrin (4h-exposure, head-nose only). Therefore, a classification as Acute Tox 2, H330 - Fatal if inhaled is warranted</p>				



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Dossier Submitter's Response
Thank you for your support.
RAC's response
Thank you for your comment. RAC agrees with Acute Tox. 2 via the oral and inhalation routes.

**OTHER HAZARDS AND ENDPOINTS – Skin Hazard**

Date	Country	Organisation	Type of Organisation	Comment number
26.04.2019	Spain		MemberState	10

Comment received
<p>Skin symptoms (paraesthesia) have been observed in people handling the active ingredient Beta-cyfluthrin or cyfluthrin. We agreed with the dossier submitter that the dermal sensations are direct and transitory effects on sensory nerve endings and not the result of a primary skin irritation. This conclusion is supported by the results of the skin irritation study in rabbits with beta-cyfluthrin (all mean scores for erythema, eschar formation as well as for oedema formation were 0). Therefore, beta-cyfluthrin does not meet the criteria for skin irritation classification.</p>

Dossier Submitter's Response
Thank you for your support.
RAC's response
Thank you for your comment, RAC agrees that no classification for skin irritation is warranted.

Date	Country	Organisation	Type of Organisation	Comment number
03.05.2019	Sweden		MemberState	11

Comment received
<p>Although clear symptoms of irritation of skin are observed after contact with cyfluthrin, and it appears acknowledged that personal protective equipment is needed when handling the substance, the Swedish Chemicals Agency agree that these symptoms has a neurological basis and not caused by tissue damage to skin. Thus, no classification is warranted based on the CLP criteria.</p>

Dossier Submitter's Response
Thank you for your support.
RAC's response
Thank you for your comment, RAC agrees that no classification for skin irritation is warranted.

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**OTHER HAZARDS AND ENDPOINTS – Eye Hazard**

Date	Country	Organisation	Type of Organisation	Comment number
03.05.2019	Sweden		MemberState	12
Comment received				
Although clear symptoms of irritation of eyes are observed after contact with cyfluthrin, and it appears acknowledged that personal protective equipment is needed when handling the substance, the Swedish Chemicals Agency agree that these symptoms has a neurological basis and not caused by tissue damage to eyes. Thus, no classification is warranted based on the CLP criteria.				
Dossier Submitter's Response				
Thank you for your support.				
RAC's response				
Thank you for your comment, RAC agrees that no classification for eye irritation is warranted.				

**OTHER HAZARDS AND ENDPOINTS – Specific Target Organ Toxicity Single Exposure**

Date	Country	Organisation	Type of Organisation	Comment number
03.05.2019	Sweden		MemberState	13
Comment received				
The Swedish Chemicals Agency support the proposal for STOT SE 3, H335 ("May cause respiratory irritation") based on the human and animal data provided. In addition, cyfluthrin causes as other pyrethroids neurotoxicity, which is observed in many studies. In the repeated dose studies, clinical signs such as tremors, ataxia, high-stepping gait, are commonly observed. The clinical effects observed in the acute toxicity studies are not described in the CLH-proposal. If similar neurological effects occur after single dosing, STOT SE 3, H336 ("May cause drowsiness or dizziness") may be warranted.				
Dossier Submitter's Response				
Thank you for your support. STOT SE 3, H335 was also supported by ES CA (see below).				
RAC's response				
Thank you for your comment.				
According to the Guidance on the application of the CLP criteria (version 5.0), classification in STOT SE Category 3 for respiratory tract irritation is generally limited to local cytotoxic effects.				
Clear evidence of respiratory tract irritation (bradypnoea) has been found in rats at non-lethal concentrations. However, given the lack of histopathological findings in the respiratory tract up to 24 mg/m <sup>3</sup> (28-d study 67), the effects are considered to represent sensory, not cytotoxic irritation.				
Respiratory irritation was observed at 0.1-0.2 mg/m <sup>3</sup> in the human volunteer study 44. However, taking into account the lack of histopathological evidence of cytotoxicity in animals at concentrations two orders of magnitude higher, these effects are also considered to represent sensory irritation.				
The human reports from occupationally exposed subjects referred to in the CLH report either do not mention respiratory irritation (studies 52, 53, 54) or are not described at a level of detail allowing independent assessment (study 45). Additional information, not specifically on cyfluthrin but on pyrethrins and pyrethroids in general, has been found in the				

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ATSDR report (ATSDR: Toxicological profile for pyrethrins and pyrethroids, 2003). Some of the reported symptoms are indicative of irritation while severe asthmatic reactions from dermal and inhalation exposure to pyrethrins suggest a potential role of allergy. In summary, there is sufficient evidence that the (beta-)cyfluthrin-induced respiratory irritation is a sensory, not cytotoxic irritation. Therefore, classification for respiratory tract irritation is not warranted.

The information on clinical signs of neurotoxicity in acute toxicity studies available to RAC is limited. However, it seems that in oral gavage and in inhalation studies the clinical signs of neurotoxicity occurred close to doses associated with mortality, thus being covered by the acute toxicity classification. On the other hand, the acute dermal studies 40 and 41 showed clinical signs significantly below lethal doses and no acute toxicity classification is proposed for the dermal route.

As to human data on pyrethroids, there appears to be a dose interval between mild poisoning (dizziness, headache, nausea) and severe poisoning (convulsive attacks and coma) sufficient to warrant a STOT SE classification, although the available exposure information is limited.

The nature and severity of the acute neurotoxic effects is considered to correspond to a STOT SE 1/2 rather than a STOT SE 3 classification. As the clinical signs in animals occurred at or below 300 and 1000 mg/kg bw after oral and dermal exposure respectively, and neurotoxic symptoms were reported also in humans exposed to pyrethroids, RAC proposes classification with STOT SE 1; H370 (nervous system).

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France	Bayer SAS	Company-Manufacturer	14

**Comment received**

We disagree with the proposed classification of STOT-SE Cat 3, H335 (May cause respiratory irritation) as the available data do not meet the relevant CLP criteria (v.4.1) for the following 3 key reasons:

- 1) STOT-SE Cat 3 for respiratory tract irritation should reflect the primary cause of effect and not secondary toxicological events such as the symptoms observed in human volunteers
- 2) those symptoms are rapidly reversible and
- 3) no evidence of 'cytotoxic irritation'.

The following Expert Statement and recent publication, which support the above reasoning against the proposed classification, are available for submission:

- Expert Statement entitled "Cyfluthrin-Induced Sensory Irritation in Rats and Humans" (Pauluhn, 2017, M-546404-01-1)
- Publication entitled "Upper respiratory tract nociceptor stimulation and stress response following acute and repeated Cyfluthrin inhalation in normal and pregnant rats: Physiological rat-specific adaptations can easily be misunderstood as adversities" (Pauluhn, Tox Letters 282 (2018) 8-24; M-658738-01-1).

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attachment CLH commenting.zip
<b>Dossier Submitter's Response</b>
<p>It is referred to the comments by SE and ES CA supporting classification for STOT SE 3 as proposed by dossier submitter.</p> <p>STOT SE 3 classification is based on the following observations:            (1) Category 3 is primarily based on human data.            (2) Evidence for respiratory irritation in humans (asthma-like reactions, mild hyperaemia of nasal mucosa, moderate nasal irritation, mild irritation of throat, coughing, sneezing, watering eyes) can indicate cytotoxic/inflammatory reaction.</p> <p>However, it may be also possible that these effects are related to the intrinsic sensory irritation of synthetic pyrethroids and would be out of scope of STOT SE classification. No mechanistic data and/or sufficient data details is available to differentiate the local cytotoxic irritant from the sensory central reflex symptoms in the respiratory tract (e.g. no appropriate histopathologic investigation of respiratory tract reported). Therefore, in order to make the user aware of the need for protection, STOT SE 3 is proposed by the dossier submitter.</p>
<b>RAC's response</b>
<p>Thank you for the detailed analysis. RAC agrees that there is sufficient evidence that (beta-)cyfluthrin causes sensory but not cytotoxic irritation and that classification with STOT SE 3; H335 is not warranted.</p> <p>See also response to comment 13.</p>

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	Finland		MemberState	15
<b>Comment received</b>				
<p>Both animal studies and human data showed respiratory disturbances. FI CA considers that the severity of the human effects is a borderline case and cyfluthrin could even be classified as STOT-SE category 2 as the weight of human evidence indicates cytotoxic reactions as asthma-like reactions, moderate nasal irritation, irritation of the throat, coughing, sneezing and watering eyes. Based on the results FI CA considers that the effects do not have a short duration after exposure and the symptoms can cause prolonged alteration. Consequently, based on the reported data and classification criteria, FI CA considers that the substance should be classified STOT SE category 2; H335</p>				
<b>Dossier Submitter's Response</b>				
<p>Thank you for your comment. For the dossier submitter it remains unclear whether FI supports classification for STOT SE 3 or rather tends to favour STOT SE 2 classification as the hazard statement is related to category 3 (H335) whereas the hazard statement H371 is foreseen for STOT SE 2 classification.</p>				
<b>RAC's response</b>				
<p>Thank you for your comment. Please see response to comment 13.</p>				

**ANNEX 2 - COMMENTS AND RESPONSE TO COMMENTS ON CLH PROPOSAL ON CYFLUTHRIN (ISO); A-CYANO-4-FLUORO-3-PHENOXYBENZYL-3-(2,2-DICHLOROVINYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE**

Date	Country	Organisation	Type of Organisation	Comment number
26.04.2019	Spain		MemberState	16
Comment received				
<p>Medical data indicate the skin, eye, and the upper respiratory tract as main target organs towards cyfluthrin. Symptoms like paresthesia of the skin, eye irritation, watering eyes, hyperaemia of the nasal mucosa, nasal irritation, mild irritation of the throat, coughing, sneezing and asthma-like reactions may occur after dermal/inhalation exposure of cyfluthrin. Animal data also showed respiratory disturbances and bradypnoea due to irritative aerosol concentrations of cyfluthrin.</p> <p>It is also possible that these effects were related to the intrinsic sensory irritation of synthetic pyrethroids and would be out of the scope of STOT SE classification. However, we are in line with the German CA that there are no mechanistic and/or sufficient data details available to differentiate the local cytotoxic irritant from the sensory central reflex symptoms in the respiratory system. Therefore, the Spanish CA agreed with the dossier submitter that classification of beta-cyfluthrin for respiratory irritation STOT-SE 3, H335 (May cause respiratory irritation) based on data from cyfluthrin studies is required.</p>				
Dossier Submitter's Response				
Thank you for your support.				
RAC's response				
Thank you for your comment. Please see response to comment 13.				

**OTHER HAZARDS AND ENDPOINTS – Specific Target Organ Toxicity Repeated Exposure**

Date	Country	Organisation	Type of Organisation	Comment number
03.05.2019	Sweden		MemberState	17
Comment received				
<p>The Swedish Chemicals Agency is of the opinion that classification of cyfluthrin as STOT RE 2, H373 (nervous system) should be considered, based mainly on effects in oral toxicity studies in rats and dogs after exposure to cyfluthrin and beta-cyfluthrin. Clinical signs of neurotoxicity (motor disturbances) were observed at levels in the range for STOT RE2 classification. Also, mortality occurred (study 61, not explained in detail in the dossier) at doses significantly below the LD50 value for the substance. The justification for no STOT RE-classification by the dossier submitter is that the effects observed in the repeated dose studies are sequential acute toxicity effects, since the substances are extensively and rapidly metabolised. However, effects (including mortality) occur at doses, sometimes significantly, below the LD50-values. The effects are also stated to be reversible, however, in study 59 not all cases of sciatic nerve degeneration were reversed following the recovery period. In study 62, necrosis in head/neck region were observed within the level of STOT RE 2-classification. Since necrosis is normally not a reversible effect, additional details as to why this effect should not be considered would be useful.</p>				
Dossier Submitter's Response				
We agree with Swedish CA that there are some findings observed in rats and dogs at dose levels below the respective guidance values. Some of these findings were severe (such as clinical signs, motor disturbances and/or gait abnormalities). However, these findings are				

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considered to represent acute toxic/neurotoxic effects. Due to intensive metabolism and rapid excretion of (beta)-cyfluthrin, daily administrations are considered to represent a sequence of acute intoxications. Thus, no proposal for STOT RE was made. However, acute effects were addressed by making the proposal for STOT SE 3.

**RAC's response**

Thank you for your comment.

In study 61 (28-d rat gavage study with beta-cyfluthrin, vehicle aqueous Cremophor) mortality (23 out of 60 animals) occurred at the top dose of 16 mg/kg bw/d; the proposed ATE for acute oral toxicity is 14 mg/kg bw. No mortality occurred at the next lower dose of 4 mg/kg bw/d according to the RAR.

In study 59 (90-d rat dietary study with cyfluthrin) slight sciatic nerve degeneration was observed in 8 out of 40 animals at 61/68 mg/kg bw/d (m/f). However, minimal single fibre degeneration in the sciatic nerve was observed in 6 out of 8 rats already after a single gavage dose of 80 mg/kg bw cyfluthrin in PEG 400 in another study (Anonymous, 1983). Thus, the histopathological findings in study 59 need not necessarily represent a repeat dose effect.

The necrosis and sores in the head and neck region observed in study 62 (90-d rat dietary study with beta-cyfluthrin) were attributed to increased preening movements which led to skin injuries.

Based on the information available to RAC, the neurotoxicity in repeat dose studies with (beta-)cyfluthrin seems to represent a series of acute intoxications. RAC proposes to classify the substance as Acute Tox. 2 via oral and inhalation routes and STOT SE 1 (nervous system). See also response to comment 13.

**Reference:**

Anonymous (1983) FCR 1272 – Special toxicological study (morphological effects on the nervous system of rats). Bayer, report no. R 3362

**OTHER HAZARDS AND ENDPOINTS – Hazardous to the Aquatic Environment**

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	Belgium		MemberState	18

**Comment received**

BE CA supports the proposed environmental classification with Aquatic acute 1, H400 and Aquatic Chronic 1, H410.

Based on the available data for the most sensitive species (Invertebrates : *Hyalella Azteca*; 96hLC50= 0.55ng/L *Americamysis bahia* 28dNOEC=0.41ng/L) a M-factor for acute toxicity of 1 000 000 and for chronic toxicity of 100 000 is warranted.

**Dossier Submitter's Response**

Thank you very much for your support.

**RAC's response**

Thank you for your comment.

RAC agrees with the DS that based on the available data Cyfluthrin (ISO) warrants classification of Aquatic Acute 1; H400 with M-factor 1000000 based on the lowest acute value for *H. azteca* of LC<sub>50</sub> = 0.00000055 mg/L.

RAC disagrees with the DS and proposes to classify Cyfluthrin (ISO) as Aquatic Chronic 1; H410 with M-factor 1000000 based on surrogate approach relying on the lowest acute value



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for Cyfluthrin (ISO) for *H. azteca* LC<sub>50</sub> = 0.00000055 mg/L as the most protective approach and taking into account that based on the available aquatic invertebrate data for Cyfluthrin (ISO) and beta-Cyfluthrin the possible chronic effects effects on the most sensitive specie can not be excluded.

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	France		MemberState	19
Comment received				
FR agrees with the Aquatic Acute 1 (H400 ; M-factor=1.000.000) and Aquatic Chronic 1 (H410; M-factor=100.000) classification proposal.				
Dossier Submitter's Response				
Thank you very much for your support.				
RAC's response				
Thank you for your comment. Please see response to comment No 18.				

Date	Country	Organisation	Type of Organisation	Comment number
17.05.2019	United Kingdom		MemberState	20
Comment received				
<p>Cyfluthrin (EC: 269-855-7; CAS: 68359-37-5)            Acute and chronic aquatic Hazard classification:            The lowest and therefore key acute endpoint, is a 96-h LC50 of 0.00000055 mg/l (mm) for <i>Hyalella Azteca</i> using cyfluthrin. The study is considered valid and reliable for hazard classification. We agree this should form the basis of the acute hazard classification.</p> <p>The lowest available chronic endpoint is a 28-d NOEC of 0.00000041 mg/l (mm) for <i>Americamysis bahia</i> using beta-cyfluthrin. The use of this endpoint results in Aquatic Chronic 1 with a chronic M-factor of 100,000. While we note beta-cyfluthrin is anticipated to be more ecotoxic than cyfluthrin, the surrogate approach using the <i>H. Azteca</i> acute endpoint for cyfluthrin results in a chronic M-factor of 1,000,000 for a NRD substance. We think this is preferable as <i>H. Azteca</i> appears to be more sensitive to the active isomers in cyfluthrin and beta-cyfluthrin on the basis of a less sensitive 96-h LC50 of 0.0000022 mg/l (mm) for <i>A. bahia</i> using beta-cyfluthrin.</p> <p>Acute toxicity to algae (<i>P. subcapitata</i>):            We agree that algae are likely to not be the most sensitive species for hazard assessment. We do not agree that the presented study is suitable for definitive hazard classification as the study controls were not valid indicating the study is not reliable.</p>				
Dossier Submitter's Response				
<p>Thank you for your support for the acute hazard classification. As far as the chronic classification is concerned, we understand your proposal to use the surrogate approach to derive the chronic classification based on the acute data for the most sensitive species <i>Hyalella azteca</i>. We can support it in view of the fact that it is more protective. Nevertheless we have presented another approach for chronic classification in the CLH dossier: Chronic data for cyfluthrin is only available for the least sensitive species <i>Daphnia magna</i>. In order to cover differences in species sensitivity observed in the acute data set, we have proposed to use data for beta-cyfluthrin available for the marine mysid</p>				

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Americamysis bahia. As described in detail in the CLH dossier we are of the opinion that equivalent effect levels can be assumed for cyfluthrin and beta-cyfluthrin. Therefore we think it is justified to use data for beta-cyfluthrin for chronic classification of cyfluthrin. However, in the end the approach to be followed depends on expert judgement. Concerning the trophic level algae we share the view that algae are not the critical species for the aquatic hazard assessment and therefore the study is, according to our understanding, not used for definitive hazard classification. This is why we have evaluated the study as acceptable to be used for the assessment of the uncritical trophic level algae, despite its shortcomings.

**RAC's response**

Thank you for your comment. Please see response to comment No 18. RAC agrees with the DS that algae can not be considered critical species for the aquatic hazard assessment but proposes in contrary to not take into consideration the presented study on alga with cyfluthrin (ISO) and presents a valid alga study on beta-cyfluthrin for consideration.

**PUBLIC ATTACHMENTS**

1. M-635090-01-2\_Expert statement reprotox\_sanitized.pdf [Please refer to comment No. 3]
2. CLH commenting\_sanitized.zip [Please refer to comment No. 4, 7, 14]

**CONFIDENTIAL ATTACHMENTS**

1. M-635090-01-1\_Expert statement reprotox.pdf [Please refer to comment No. 3]
2. CLH commenting.zip [Please refer to comment No. 4, 7, 14]