

Research and data analysis initiated by ECPA in order to provide workable options to review and refine the EFSA guidance document on the Risk Assessment of Plant Protection Products on bees (*Apis mellifera*, *Bombus spp.* and solitary bees)

Task	Description	Status/current progress	
Over-arching document	This document aims at facilitating the discussion of recent research and progress into context of EFSA 2013	The ECPA document (ECPA n°28028, 2017) is already available and has been shared with all MS, the EC and EFSA which outlines several proposals. This new document will link concrete propositions to sections of EFSA 2013.	link link
Prioritization of exposure routes			
Relevance of Flowering weeds for bee risk assessment	The contribution of flowering weeds to pollinator exposure in fields is quantified using efficacy data from untreated control plots (herbicide trials)	Several publications (e.g. Maynard et al 2015) are already available on this topic. Data collection by a consultant has been completed and a detailed report containing all trial and geographical information to relate data to the various growing conditions within the EU is being finalised and is expected to be published in August 2019 and will be made freely available to all stakeholders.	link
Relevance of guttation for bee risk assessment	A literature review on the occurrence of guttation is performed, which will add to a meta-analysis of field studies on guttation conducted so far	An up to date literature review has been finalised and a meta-analysis of >20 field studies on the effects of guttation to bees has been completed which will seek to better quantify the level of exposure. These findings have been presented as a platform presentation at IUPAC Gent 2019 and as a poster corner at SETAC Europe Helsinki 2019. A detailed report is now available.	link link link
Relevance of exposure from succeeding crops	Definition of triggers based on persistence, systemic properties and toxicity of an active substance or degradation products, to more accurately identify substances of concern	Ongoing. The findings of this project will be presented at ICPPR Bern, October 2019	
Sugar content in flower liquids	A literature review of the current sugar content of crops is performed so that to discuss the current default value of 15% and propose a revision based on literature data	Modelling of honey bee populations has shown that sugar content of only 15% is not able to sustain colony health (Couvillion et al 2014, Thorbek et al 2017). A literature review has recently been published in a peer review journal indicating that crop plant nectar usually contains a higher level of sugar content: Pamminger et al. 2019. The nectar report: quantitative review of nectar sugar concentrations offered by bee visited flowers in agricultural and non-agricultural landscapes. PeerJ 7:e6329 A pre-print is also available on pollen quality:	link

		Pamminger et al. 2019. Pollen report: Quantitative review of pollen crude protein concentrations offered by bee pollinated flowers in agricultural and non-agricultural landscapes. PeerJ Preprints 7:e27567v1	link
Larval exposure refinement	A literature review on larvae food consumption is performed and completes an analysis of data from semi-field and field residue studies	Ongoing Observations of residue levels in plants compared to honey bee colonies in semi-field and field tests indicate that levels found in larval food are approx. an order magnitude lower. Data are being collated to provide revised estimates for larval exposure.	
Prioritization of toxicity testing based on sensitivity of development stages and bee species			
Sensitivity of the bumble bee compared to the honeybee	Comparative analysis of the results of acute tests on bumble bees and honeybees so that to discuss the value of systemic testing on bumble bees and to discuss the safety factors currently proposed.	A review of the available toxicity data for bumblebees conducted to OECD test guidelines 246 (contact) and 247 (oral) and the predecessor draft guideline have been compared to honey bee endpoints (OCED TG 213/214). The finding were presented as a poster at SETAC Europe Helsinki 2019. A manuscript is <i>in prep</i> for submission to a peer review journal for publication by the end of 2019.	link
Risk assessment: trigger values to be used to trigger the need for high tier studies			
Chronic oral toxicity and risk assessment	Analysis of the outcome of screening and tier 1 risk assessment using the results of chronic adult toxicity studies so that to discuss the value of chronic testing and the outcome of the risk assessment based on the current trigger value of 0.03	Ongoing An updated analysis of the chronic tier I risk assessment has been presented at SETAC Europe Helsinki 2019 indicating that for many non-toxic substances higher tier refinement will be necessary. An analysis of the rationale behind the EFSA trigger of 0.03 has revealed that many substances which meet the SPG cannot meet the trigger. An independent analysis of the level of protection achieved by the EFSA (2013) chronic trigger has been conducted (Roessink 2019) and presented at SETAC 2019. The aim of the analysis was to address some of the questions raised in Appendix M of EFSA (2013) and indicated the chronic dose-responses typically fit a sigmoidal model and that the use of a trigger of 0.03 is generally over protective. We understand that a manuscript is <i>in prep</i> for submission to a peer review journal for publication by the end of 2019.	link link
Larvae toxicity and risk assessment	Analysis of the outcome of screening and tier 1 risk assessment using the results of larvae toxicity studies so that to discuss the value of larvae testing and the outcome of the risk assessment based on the current trigger value of 0.2	Ongoing An updated analysis of the larval tier I risk assessment has been presented at SETAC Europe Helsinki 2019 indicating that for many non-toxic substances higher tier refinement will be necessary.	Link

High tier studies			
Tier 2 studies to refine exposure	Quantified analysis of the options to refine exposure estimates in a risk assessment based on measured residue data, so that to propose revision of the EFSA guidance document to reflect actual options for exposure refinement and their use in the risk assessment.	Ongoing Industry is cooperating within multiple stakeholder teams (academia, government) to develop guidance and methods to meet global regulatory needs. A working group report is expected at ICPPR, Bern, 2019.	
Availability of high tier studies	Support to ICPPR working group to propose additional improvement of existing methods and develop large scale colony feeding studies, exposure studies, semi-field and field guidance	Ongoing Industry is cooperating within multiple stakeholder teams (academia, government) to develop guidance and methods to meet global regulatory needs. A working group report is expected at ICPPR, Bern, 2019.	
Bee colony effect models	Development of the ecotox module development of BEEHAVE to help design high tier testing for effects and exposure	Ongoing The validation of an ecotox module for BEEHAVE is underway with initial findings suggesting the model is more sensitive than real-life studies. A peer reviewed publication has been delayed but a manuscript has since been submitted to a peer review journal for publication in 2019. The updated model will be freely available for download. A study evaluating the BEEHAVE model using honey bee field study data has been completed and was presented at SETAC Europe Helsinki 2019 (Agatz and Preuss 2019) and a manuscript has been accepted for publication in the peer review journal Environmental Toxicology and Contamination.	link