Additional information relevant to the risk management evaluation for methoxychlor

NOTE: This document will be issued as an information document, currently referenced in the draft risk management evaluation as "UNEP/POPS/POPRC.17/INF/[…]"

1. Introduction

1.1 Chemical identity of methoxychlor

Table 1. Synonyms and trade names of methoxychlor

Synonyms and Trade name	1,1-Bis(*para*-methoxyphenyl)-2,2,2-trichloroethane 2,2-Bis(*para*-methoxyphenyl)-1,1,1-trichloroethane 2,2-Di-*para*-anisyl-1,1,1-trichloroethane *para*,*para'*-Dimethoxydiphenyltrichloroethane Dimethoxy-DDT Dimethoxy-DT Di(*para*-methoxyphenyl)trichloromethyl methane DMDT *para*,*para'*-DMDT ENT1716 Higalmetox Methoxychlore Maralate Marlate OMS 466 *para*,*para'*-Methoxychlor Metox Methoxy-DDT Prentox 1,1,1-Trichloro-2,2-bis(*para*-methoxyphenyl)ethane 1,1,1-Trichloro-2,2-di(4-methoxyphenyl)ethane 1,10-(2,2,2-Trichloroethylidene)bis(4-methoxy-benzene) Ethane, 1,1,1-trichloro-2-(*o*-methoxyphenyl)-2-(*p*-methoxyphenyl)- 2,4'-Methoxychlor *o*,*p*-Methoxychlor *o*,*p'*-Methoxychlor Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[2-methoxy- Benzene, 1-methoxy-3-[2,2,2-trichloro-1-(4-methoxyphenyl)ethyl]- Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[3-methoxy-

2. Summary of information relevant to the risk management evaluation

2.2 Efficacy and efficiency of possible control measures in meeting risk reduction goals

2.2.1 Technical feasibility

Table 2. Maximum residual concentration for methoxychlor in food (all values as mg/kg) under Reg. (EC) No 149/2008

Product	**Pesticide residue(s) and maximum residue levels (mg/kg)**
Fruits, fresh or frozen; tree nuts	0.01
Vegetables, fresh or frozen	0.01
Pulses	0.01
Oilseeds and oil fruits	0.01
Cereals	0.01
Teas, coffee, herbal infusions, cocoa and carobs	0.1
Hops	0.1
Spices	0.1

Sugar plants	0.01

Table 3 Summary of data from EFSA Annual Reports on Pesticide Residues[1]

Year	Number of samples	Number of participating countries	No. of detects for methoxychlor above LOQ	Food types where methoxychlor was found (number of samples above LOQ reported when available)
2013	51,555	28	10 (0.02% of total samples)	Milk (2), honey (3), animal fat (2)
2014	53,769	29	8 (0.01% of total samples)	Honey (3), milk (2), other products (2)
2015	56,329	29	17 (0.03% of total samples)	Honey (11), milk, muscle, egg
2016	57,141	30	2 (0.003% of total samples)	Honey
2017	57,491	30	2 (0.003% of total samples)	n.a.
2018	56,428	30	5 (0.01% of total samples)	Animal fat

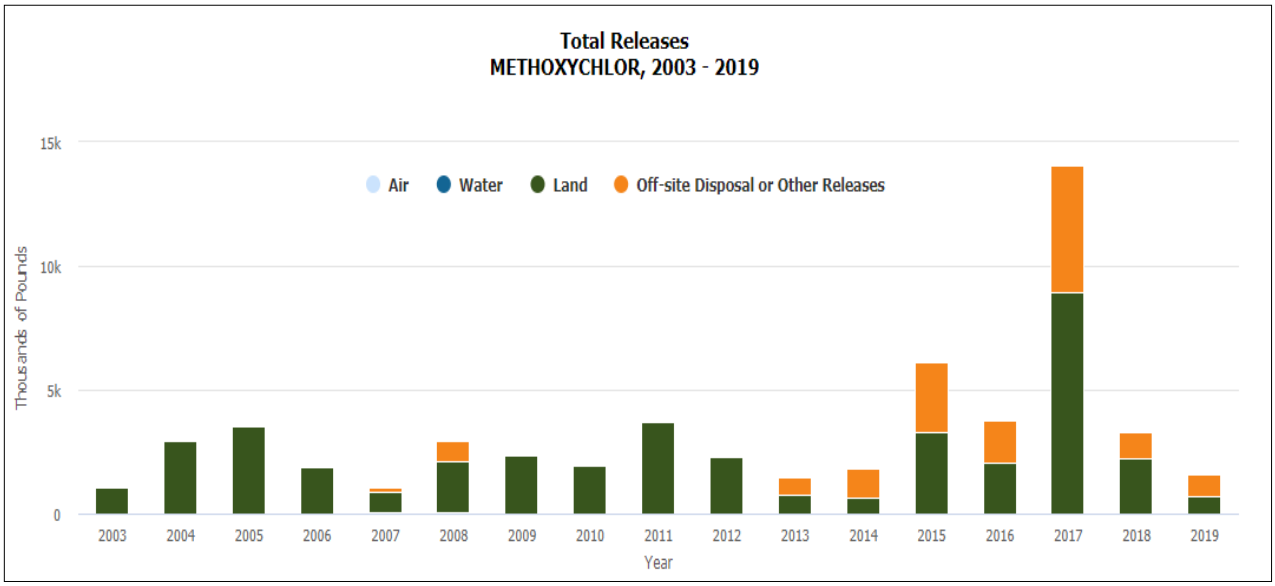

Figure 1 Total releases (on-site (land, water and air) and off-site disposal or other releases) of methoxychlor in the U.S. from 2003 onwards[2]

[1] Reports available at https://efsa.onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1831-4732.CHEMICALRESIDUES-DATA#heading-level-1-2

[2] https://enviro.epa.gov/triexplorer/chemical.html?pYear=2019&pLoc=0000072435&pParent=TRI&pDataSet=TRIQ1

1.3 Information on alternatives (products and processes)

2.3.2 Chemical alternatives

Table 4. Chemical alternatives suggested by the United Kingdom in the Annex F response.

Pesticide	Regulatory status under Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market	Hazard classification (under CLP)	Comments
Permethrin	Not Approved (00/817/EC)	H302 – Acute Tox.4 H317 – Skin Sens. 1 H332 – Acute Tox 4 H400 - Aquatic Acute 1 H410 – Aquatic Chronic 1	Renewal year: 2000. Only partial data was provided to the rapporteur (Ireland) for renewal of the approval in late 1999 with the main license holder (Zeneca Agrochemicals) withdrawing. Concerns over aquatic toxicity highlighted by the rapporteur. Some possible use for forestry, but license not approved pending more data. License never renewed.
Cypermethrin	Approved (Expiry 31/10/2021)	H302 – Acute Tox.4 H332 – Acute Tox 4 H335 – STOT SE 3 H400 - Aquatic Acute 1 H410 – Aquatic Chronic 1	Request for renewal of the approval was submitted in March 2019. Approval in the UK has been extended.
Esfenvalerate	Approved (Expiry 31/12/2022)	H301 – Acute Tox3 H317 – Skin Sens. 1 H331 – Acute Tox3 H400 – Aquatic Acute 1 H410 – Aquatic Chronic 1	Approval last renewed in 2015 with approval granted. Co-rapporteurs were UK and Portugal. The approval identified the following possible issues: • Possible risk of bioaccumulation • Risk to honeybees and non-target arthropods • Possible risk to ground water in vulnerable regions.
Fluvalinate	Approved (Expiry 31/08/2024)	H302 – Acute tox4 H315 – Skin irrit.2 H400 – Aquatic acute 1 H410 Aquatic chronic 1	Approval last renewed in 2009 with approval granted. Rapporteur was Denmark. No unacceptable risks identified, only point for consideration was risk to non-target species.
Clothianidin	Not approved (Expired 31/01/2019)	H302 – Acute Tox4 H400 – Aquatic acute 1 H410 – Aquatic Chronic 1	The approval for clothianidin was reviewed in 2018 over concerns for risks to bees in particular. The conclusion of the review was that risks cannot be ruled out and as such all outdoor use was prohibited.
Thiamethoxam	Not approved (Expired 31/01/2017)	H302 – Acute Tox4 H400 – Aquatic acute 1 H410 – Aquatic Chronic 1	The approval for thiamethoxam was reviewed in 2018 over concerns for risks to bees in particular. The conclusion of the review was that risks cannot be ruled out and as such all outdoor use was prohibited.
Imidacloprid	Not approved (Expired 01/12/2020)	H302 – Acute Tox4 H400 – Aquatic acute 1 H410 – Aquatic Chronic 1	The approval for imidacloprid was reviewed in 2018 over concerns for risks to bees in particular. The conclusion of the review was that risks cannot be ruled out and as such all outdoor use was prohibited.
Tefluthrin	Approved (Expiry 31/12/2024)	H300 – Acute Tox2 H310 – Acute Tox2 H330 – Acute Tox1 H400 – Aquatic acute 1 H410 Aquatic chronic 1	Approval last renewed in 2009 with approval granted. Rapporteur was Germany. The approval identified the following possible issues: • the operators and workers must use adequate personal protective equipment as well as respiratory protective equipment. • The risk to birds and mammals. Risk mitigation measures should be applied to achieve a high degree of incorporation in soil and avoidance of spillage. • Ensure that the label of treated seed includes the indication that the seeds were treated with tefluthrin and

			sets out the risk mitigation measures provided for in the authorisation

2.5 Other considerations

2.5.2 Status of control and monitoring capacity

Mexico provided several results from monitoring of methoxychlor in the environment (sediment, surface water and agricultural land), in various animal species and in human blood in the country (Annex F, 2021). Methoxychlor has been detected on agricultural lands. Levels of ND to 71.7 µg/g (dw) (mean 4 µg/g (dw) and ND to 15.9 µg/g (dw) (mean 0.5 µg/g (dw) were measured in soils samples in the Yaqui and Mayo Valleys, Sonora, respectively (Cantú-Soto *et al*., 2011). Concentrations of methoxychlor from ND to 0.043 ug/L were detected in water samples from irrigation canals and ditches in the Municipalities of Ahome and El Fuerte, Sinalia (Ibarra-Cecena y Corrales-Vega, 2011). The average concentration of methoxychlor in soil samples was 7.57 µg/g and in water 0.565 µg/L water in the Navolato Valley, Sinaloa (FD in both matrices was 100%)(Galindo-Reyes y Alegría, 2018). In the same study levels of methoxychlor in the blood from farmers (N=49) was 240 µg/mL blood (study group FD 73%, control FD 0%). In another study Santillán-Sidón *et al*., 2020 measured 19.43 ppm methoxychlor (FD 6.3%) in the blood serum of farmers (men)(N=63) residing in the town of Todos Santos, Baja California. The following concentrations of methoxychlor has been measures in a variety of animal species; 215 to 300 µg/g lipid base in the frog (Charadrahyla taeniopus and Ecnomiohyla miotympanum (Valdespino *et al*., 2015); 17.764 to 52.580 µg/g in the adipose tissue in 3 out of 10 bottlenose dolphins from the Terminos lagoon, Campeche (Delgado-Estrella *et al*., 2015); ND – 6.71 µg/g dw in liver of three different species of mice in the wetlands of the Terminos Lagoon Flora and Fauna Protection Area (Chi-Coyoc *et al*., 2016); 0.03 µg/g in feathers and 0.05 µg/L in blood of the Ferruginous pygmy owl (Glaucidium brasilianum)(Arrona-Rivera *et al*., 2016); ND to 0.0052 µg /g in the blood plasma of Hawksbill turtles (Eretmochelys imbricata) in Punta Xen, Campeche (Salvarani *et al*., 2018) and 0.6 x 10-4 to 1.1 x 10-3 µg /g in eggs from the Hawksbill turtles (Eretmochelys imbricata) and the Green turtle (Chelonia mydas) from the shores of Campeche (Salvarani *et al*., 2019). Relatively low levels in surface water of < 0.0021 ppm (dry season) to <0.03 ppm (rainy season) were measured in two lakes (Chapala and Sayula) and the levels in the liver of fish (Goodea atripinnis) from these lakes were <0.0022 to 0.02 ppm (Reynoso-Silva *et al*., 2014). Methoxychlor was measured in the concentration of 0.12 µg/L in the Tula river, Hidalgo (Serrano-Balderas *et al*., 2017) and 0.004 to 0.029 µg/g in sediments of the Alvarado lagoon system, Veracruz (Castañeda-Chávez *et al*., 2018).