

Annexure 2

COMPOUNDS OF CONCERN TO BE ANALYSED FOR DISSIPATION AND DECOMPOSITION (BREAK DOWN) TRENDS, AND POTENTIAL RISKS PHRASES

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Key to colour codes of compounds

Red	Compounds of significant concern in terms of human toxicology, eco-toxicology or very long half-life; not all such substances necessarily pose a risk due to potential irreversible soil adsorption
Blue	Compounds of selective toxicological concern such as impact on plant life or long half-life
Brown	Compounds of very selective toxicological concern or long half-life that may act as markers to track metabolism and dissipation
Green	Compounds that probably do not pose any risk due to rapid decomposition but that warrant investigation

Nr	Compounds of concern	Analysis required	Rate of metabolism in animals and soil environmental fate DT50	Risk Human Acute	Risk Human Chronic	Risk Plants Acute	Risk Plants Chronic	Risk Aquatic inverts Acute	Risk Aquatic inverts Chronic	Risk Fish Acute	Risk Fish Chronic	Risk Shellfish & crust. Acute	Risk Shellfish & crust. Chronic	Risk Birds Acute	Risk Birds Chronic
#####	Acetamidiprid	Only once qual & quan	>90% metabolised DT50 = 5.64 - 67 days	Low	Low	Nil	Nil	Low	Low	Low	Low	Low	Low	Medium	Very low
#####	Acetochlor	Only once qual	Rapidly excreted DT50 = 8 - 18 days	Low to medium	Very low	High seedlings	Low	Low to medium	Low	Low to medium	Low	Prob. High	Low	Very low	Very low
#####	Amicarbazone	Twice qual and quan	Rapidly metabolised DT50 = 50 days	Low to medium	Very low	High	Medium	Very low	Very low	Very low	Very low	Unknown	Unknown	Very low	Very low
#####	Arsenic elemental	Long term qual and quan	Infinite DT50	High to very high	Very high	Low	Low	High	High	High	High	Very high	Very high	High	High
#####	Arsenic as MSMA/MAA	Long term qual and quan	DT50 = 88 days	Medium	Medium	Very high	Very high	High	Very high	High	Very high	High	High	Medium	Low
				Elemental arsenic and arsenic oxides are much more toxic than MSMA or MAA; if MSMA and MAA oxidise to arsenic oxide, the environment in which it occurs becomes much higher risk. This is main risk substances in all the risk areas in and around Cornubia											
#####	Atrazine	Only once qual and quan	Rapidly metabolised DT50 = 35 to 80 days	Low	Very low	High	Low	Low	Low	Low	Low	Low	Low	Low	Low
#####	Bromoxynil	Only once qual and quan	Quick metabolism DT50 <1 day	Unlikely to be detected in meaningful concentrations Good marker to check for rate of dissipation and chemical metabolism of pesticides											
#####	Carbofuran	Not required, metabol.	72% eliminated after 24 hrs DT50 = 30 to 60 days	High	Medium	Nil	Nil	Medium	Low	Medium	Low	Low	Low	Very high	High
#####	Clothianidin	Long term qual and quan	Very limited metabolism DT50 = 143 - 1001 days	Low to medium	Low	Nil	Nil	High	High	Low	Low	High	High	Low to medium	Very low
#####	Chlorothalonil	Not required, metabol.	Oxidised to hydroxy comp. DT50 = 38 days	Very low	Very low	Nil	Nil	70 ug/l	Medium	29 ug/l	Medium	Probably high	Probably high	Very low	Very low
#####	Chlorpyrifos	Only once, metab.	Rapidly metabolised DT50 = 33-56 days	Medium	Medium	Nil	Nil	High	High	High	High	High	High	Medium	Medium
#####	Clomazone	Only once qual and quan	Rapid metabolism DT50 = 30 - 153 days	Low	Very low	High	Medium	Medium	Medium	Low	Low	Low	Low	Very low	Very low
#####	Cu (elemental)	Long term qual and quan	Infinite DT50	Low	Low	Medium	Low	Medium	Low	Medium	Medium	Medium	Medium	Low	Low
#####	Diquat	Not required, too little Should be totally soil bound	Quick excretion DT50 = 0.4 - 21, free diquat DT50 = 1.2 - 41 years, soil adsorbed diquat	Medium	High (bio-accum)	Medium	Low	Low	Low	Low	Low	Medium	Medium (bio-acc)	Medium	Low
#####	Diuron	Long term qual and quan	Quick metabolism DT50 = 90 - 180 days	Low	Very low	High	High	High	Medium	Low	Low	Probab. Low	Low	Medium	Very low
#####	Bromacil	Not required, too little Unlikely to be detected	Slow metabolism Very long half-life of years	Low	Low	High (woody)	High (woody)	Low	Low	Low	Low	Low	Low	Low	Low
#####	Fosetyl-Aluminium	Not required, metabol. Unlikely to be detected	Slowly but complete metab. DT50 = 14 - 40 hours	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
#####	Glyphosate	Only once qual	Rapidly excreted unchanged DT50 < 91 days	Low	Very low	High on contact	Low	Very low	Very low	Low to very low	Very low	Very low	Very low	Very low	Very low
#####	Halosulfuron	Not required, too little Unlikely to be detected	Rapidly eliminated DT50 < 18 days	Low	Low	Very potent	High	Low	Low	Low	Low	Low	Low	Low	Low
#####	Imazapyr	Not required, too little Unlikely to be detected	Rapidly excreted unchanged DT50 = 24 - 143 days	Low	Low	High	High	Low	Low	Low	Low	Low	Low	Low	Low
#####	Imidacloprid	Long term qual and quan	Rapidly excreted unchanged DT50 = 4 hours	Medium	Very low	Nil	Nil	Low	Low	Very low	Very low	Unknown	Unknown	High	Low
#####	Lambda-cyhalothrin	Not required, metabol.	Rapidly eliminated DT50 = 6 - 40 days	Medium	Medium	Nil	Nil	0.26 ug/l Daphnia	High	0.21 ug/l trout	High	Probab. very high	Very high	Very low	Very low
#####	Alpha-cypermethrin	Not required, metabol.	Slowly eliminated DT50 = 91 days	Medium	Medium	Nil	Nil	0.1 ug/l Daphnia	High	2.8 ug/l trout	High	Probab. very high	Very high	Very low	Very low
#####	Mancozeb	Not required, metabol.	Rapidly excreted DT50 <1 day	Very low	Very low	Very low	Very low	3.8 mg/l Daphnia	Low	22 ug/l minnows	High	Probab. High	Probably high	Very low	Very low
#####	Maneb	Not required, metabol.	Rapidly excreted	Very low	Very low	Very low	Very low	Low	Low	Low	Low	Low	Low	Very low	Very low

##### Manganese elemental	Short term qual and quan	DTSO = 25 days	Will deposit manganese and manganese oxides											
##### MCPA	Only once qual	Infinite DTSO	Low	Very low	Nil	Nil	Low	Very low	Medium	Low	Low	Low	Very low	Very low
		Rapidly excreted	Medium	Low	High	Low	Very low to low	Very low	Very low	Very low	Probab. low	Low	Very low	Very low
##### Mesotrione	Only once qual	DTSO = 90 - 120 days	Soil borne herbicide with relatively long half-life; good compounds as a marker to track metabolism											
		Rapidly excreted unchanged	Very low	Very low	Medium	Medium	Very low	Very low	Low	Very low	Probab. low	Low	Very low	Very low
##### Methamidophos	Not required, metabol.	DTSO = 3.2 - 50 days	No real concern but soil borne herbicide with impact on monocotyledons and dicotyledons											
	Unlikely to be detected	Slow metabolism	Toxic to all organisms!											
##### Methomyl	Not required, metabol.	DTSO = 2 days	Highly unlikely to have survived fire and harsh remediation protocols but very toxic to all organisms											
	Unlikely to be detected	Rapidly metabolised	Toxic to all organisms!											
##### Metolachlor	Long term qual and quan	DTSO = 4 - 8 days	Highly unlikely to have survived fire and harsh remediation protocols but very toxic to all organisms											
		Rapidly oxidised	Low	Very low	High	Medium	Medium	Low	Medium	Low	Proba. Medium	Low	Very low	Very low
##### S-metolachlor	Long term qual and quan	DTSO = 20 days	No real concerns but good substances to use a marker to track dissipation and chemical decomposition											
		Rapidly oxidised	Low	Very low	High	Medium	Medium	Low	Medium	Low	Proba. Medium	Low	Very low	Very low
##### Paraquat	Not required, too little	DTSO = 30 days	No real concerns but good substances to use a marker to track dissipation and chemical decomposition											
	Should be totally soil bound	Rapid elimination via faeces	Very high	Very high	High	Very low	Low to medium	Very low	Low	Low	Probab. Low	Low	High	High
		DTSO < 7 days, free paraquat	Very unlikely to find free paraquat in water bodies due to strong and irreversible binding to clay particles											
##### Pendimethalin	Long term qual and quan	DTSO < 7 - 20 years, soil adsorbed paraquat												
		Slow oxidation												
##### Picloram	Long term qual and quan	DTSO < 90 - 120 days	Relatively long half-life and good substances to track dissipation and chemical decomposition											
		Rapidly excreted unchanged	Very low	Very low	Very high (woody)	Very high (woody)	Low	Low	Low	Low	Low	Low	Very low	Very low
##### Quisalofop	Only once qual	DTSO < 30 - 90 days	Very mobile in soil and ground water and may move very off target site to cause serious damage to woody plants											
		Rapid metabolism	Low	Low	Medium	Very low	Low	Low	Low	Low	Probab. low	Low	Very low	Very low
##### Tebuconazole	Only once qual	DTSO < 1 day	No concern but track once for sense of dissipation											
		Full elimination in 3 days	Very low	Very low	Nil	Nil	Low	Low	Low	Low	Low	Low	Very low	Very low
##### Tebuthiuron	Long term qual and quan	DTSO 28 - 42 days	No concern but track once for sense of dissipation											
		Slow metabolism	High to medium	Very low	Very high (woody)	Very high (woody)	Low	Low	Low	Low	Low	Low	Medium	Low
##### Terbufos	Only once qual and quan	DTSO < 21 - 176 days	Remains active in soil for prolonged periods and may move very off target site to cause serious damage to woody plants											
		Rapid oxidation	Very high	High	Nil	Nil	High	High	High	High	High	High	Very high	High
##### Terbutylazine	Qual and quan	DTSO = 9 - 27 days	Unlikely to be present in concentration of concern, but needs to be traced for dissipation and chemical decomposition											
		Rapid elimination	Medium	Medium	High	Medium	Low	Low	Low	Low	Low	Low	Very low	Very low
##### Thiamethoxam	Qual and quan	DTSO = 6.5 - 149 days	Long half-life and tough on grass species											
		Slow metabolism	Refer to the data set on clothianidin because thiamethoxam metabolises to clothianidin											
##### Triclopyr	Only 2X qual and quan	DTSO = 7 - 109 days												
		Excreted slowly unchanged	Medium	Medium	Medium (woody)	Medium (woody)	Low	Low	Low	Low	Low	Low	Very low	Very low
##### Trifluralin	Only once qual	DTSO = 50 - 90 days	No real concern but will impact on woody plants if in direct contact											
		Quick elimination unchang	Very low	Very low	High	High	High	High	Medium	Medium	High	High	Very low	Very low
##### Oxamyl	Qual and quan	DTSO = 116 - 201 days	Very long half-life and needs to be tracked for dissipation and chemical decomposition											
		Slowly metabolised	Very high	High	Nil	Nil	Medium	Medium	Low	Low	Probab. medium	Probab. Medium	Very high	Medium
		DTSO = 7 days	DTSO = 20 - 400 days 1 aerobic water May be a pose a serious risk if dissolved in water and not metabolised; water solubility is high at 280 g/l											

Solvents and other hydrocarbons: analysis need to be done for all of these main compounds. Analysis will also detect and identify alkylated substances related to these ones

##### Benzene	Long term qual and quan
##### Toluene	Long term qual and quan
##### Xylenes	Long term qual and quan
##### Chlorobenzene	Long term qual and quan
##### Naphthalene	Long term qual and quan

NOTES

Compounds were selected based on the (1) volumes stored at the warehouse, (2) their toxicity for any one of the listed organisms, (3) their half-life and (4) to be used to gauge the general chemical breakdown of the pesticides

Qual = qualitative, quan = quantitative

Compounds listed for once off qualitative analysis were chosen because they should be close to fully metabolised by now