

How does it work?

Sulfometuron methyl is a member of the sulfonyl urea group of herbicides and stops plant growth by inhibiting the biosynthesis of the essential amino acids valine and isoleucine in sensitive plants. This is accomplished by the inhibition of the enzyme acetolactate synthase. Man does **not** produce this enzyme. This inhibition causes cell division and plant growth to stop. Both roots and shoots are effected. Activity begins immediately after sufficient rainfall or soil moisture moves the product into the soil profile. While visual symptoms such as chlorosis may not appear for several days, root and shoot growth of sensitive weeds is inhibited almost immediately, and the plants die in 7 to 21 days. Sulfometuron Methyl is a group B herbicide.

Terbacil is a member of the uracil group of herbicides and stops plant growth by inhibiting photosynthesis at photosystem II. This is the process by which plants manufacture foods. The active ingredients enter the soil with sufficient rainfall and are taken up by the plant roots. They are then transported to various parts of the plant which turn yellow due to the lack of chlorophyll (green pigment). The plant becomes weakened, the leaves drop and the plant ultimately dies.

Behaviour in the Environment

Acute Toxicity Test Species	Terbacil (80% a.i.)	¹ Toxicity Rating
LD ₅₀ - Mammals (rat)	> 5000 mg/kg	PNT
NOEL - 3 generation study, reproduction	250 ppm (12.5 mg/kg)	PNT
LD ₅₀ - Bobwhite quail	> 2250 mg/kg*	PNT
LC ₅₀ - Mallard duck (sub acute)	> 5000 ppm*	PNT
LD ₅₀ - Honey bee	> 193 µg/bee	PNT
LC ₅₀ - Rainbow trout (96 hr)	54 to 79 ppm	ST
LC ₅₀ - Bluegill Sunfish (96 hr)	103 to 112 ppm	PNT
LC ₅₀ - Carp (48 hr)	96 ppm	ST
LC ₅₀ - Japanese Goldfish (48 hr)	> 40 ppm	ST
LC ₅₀ - Killifish (48 hr)	> 40 ppm	ST
LC ₅₀ - Loach (48 hr)	> 40 ppm	ST
LC ₅₀ - Sheepshead minnow (96 hr)	108.5 ppm*	PNT
EC ₅₀ - Waterflea (48 hr)	63 to 68 ppm*	ST
LC ₅₀ - Eastern oyster (embryo - larvae) (48 hr.)	> 4.9 ppm	MT
Fiddler crab (96 hr)	> 1000 ppm	PNT
Grass shrimp (96 hr)	> 56.4 ppm	ST

Terbacil data sourced from US EPA. *96 to 96.6% a.i.

¹Toxicity Rating - PNT (practically non-toxic), ST (slightly toxic), MT (moderately toxic).

Acute Toxicity Test Species	Sulfometuron Methyl	Toxicity Rating
LD ₅₀ - Mammals (rat)	> 5000mg/kg	PNT
NOEL - 3 generation study, reproduction	500 ppm (2 year)	PNT
LD ₅₀ - Bobwhite quail	> 5000 mg/kg	PNT
LC ₅₀ - Mallard duck (sub acute)	> 5000 mg/kg	PNT
LD ₅₀ - Honey bee	> 12.5 µg/bee	PNT
LC ₅₀ - Rainbow trout	> 12.5 ppm	PNT
LC ₅₀ - Bluegill Sunfish	< 12.5 ppm	PNT
LC ₅₀ - Sheepshead minnow	> 45 ppm	PNT
LC ₅₀ - Crayfish	> 5000 ppm	PNT
EC ₅₀ - Waterflea (48 hr)	8500 ppm	PNT
LD ₅₀ - Earthworm	> 1000mg/kg	PNT
Anabaena (algae)	> 414 ppb	?
Navicula (algae)	> 414 ppb	?
Skeletonema (algae)	> 414 ppb	?
Selenastrum capricornutum (algae)	4.6 ppb	T
Lemma Gibba (aquatic plant)	0.4 ppb	T

Bio-accumulation

Studies have shown that levels of Terbacil in fish exposed over a 4 week period, have declined below the level of detection (<0.01 µg/g) during a 3 day depuration period. Studies on Sulfometuron Methyl in the US would indicate that it does not bioaccumulate.

Behaviour In Soil and Water.

Terbacil is dissipated in the soil by microbial-mediated degradation, and in water by photodegradation.

	Terbacil	Sulfometuron Methyl
Half life - soil in the field (@ 5.6 kg/ha)*	204 to 252 days	14 to 21 days
Half life - water Lab. tests	29 to 54 days	
Potential to leach K _{oc}	44 to 61 ml/g	105
Potential to leach K _{ad}	0.39 to 1.3 ml/g	

*The maximum label rate of Terbacil in Trimac is 880 g/ha a.i. when used according to label instructions.

The half life of Sulfometuron Methyl is influenced by several factors. The following table demonstrates the relationship between temperature and pH. Other factors effecting degradation are moisture and organic matter (microbial activity).

Soil Temperature (°C)	Sulfometuron Methyl Half life in days / Soil pH			
	pH5	pH6	pH7	pH8
25	18	-	-	-
35	1.8	6	15	20
45	0.4	1	6	7
55	0.1	0.3	2	2

The maximum rate of Sulfometuron Methyl in Trimac is 40 g/ha a.i. when used according to label instructions.

Leaching Potential of Terbacil Compared With Other Herbicides

Compound	¹ GUS
Terbacil	5.32 to 6.38
Hexazinone	5.29
Metribuzin	4.48
Simazine	3.77
Ametryn	3.41
Asulam	2.84
Diuron	2.73
2,4-D	2.70
Pendimethalin	0.66
Bromoxynil	0.25
Trifluralin	0.19

¹GUS = Groundwater Ubiquity Score

A GUS above 2.8 indicates a relatively high leaching potential; a score above 1.8 indicates a moderate leaching potential. Field studies in the US indicate that the maximum depth of detection in soil was 45 to 50 cm.

Given all of the above data, there should be no threat to the environment where these products are used in strict accordance with the label. All care should be taken however to avoid application during seasons or current weather and soil conditions which may predispose off-site movement of the products.

DISCLAIMER: We make every reasonable attempt to ensure the accuracy of all statements made in this brochure. However, it is impossible to know the impact our products or the advice herein may have in your situation without first speaking with you in detail. The only way we can ensure that you receive the correct products and advice and the only way you can protect against unsuccessful and/or unwanted results is to speak to us in detail concerning your circumstances and requirements and follow the recommendations/instructions which appear on all product labels. We must therefore disclaim any responsibility for all statements and advice contained herein as well as any actions you may take having read this brochure. Accordingly, we strongly recommend that you closely follow all label directions and speak with us before using any of our products or relying upon any of the advice herein.

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