



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Pesticide Fact Sheet

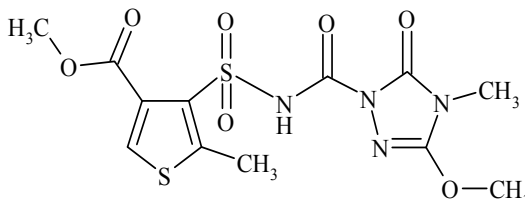
Name of Chemical: Thiencarbazone-methyl
Reason for Issuance: Conditional Registration
Date Issued: October 30, 2008

I. Description of Chemical

Chemical Name: Methyl 4-[(4,5-dihydro-3-methoxy-4-methyl-5-oxo-1H-1,2,4-triazol-1-yl)carboxamidosulfonyl]-5-methylthiophene-3-carboxylate

Common Name: Thiencarbazone-methyl

Chemical Formula:



EPA PC Code: 015804

**Chemical Abstracts
Service (CAS) Number:** 317815-83-1

**Year of Initial
Registration:** 2008

Pesticide Type: Herbicide

Chemical Class: sulfonyl-amino-carbonyl-triazolinone

U.S. Producer: Bayer CropScience

II. Use Patterns and Formulations

Application Sites: Thiencarbazone-methyl is registered for use on corn (field, sweet, pop), wheat, and turf and ornamentals in residential settings

Types of Formulations: Thiencarbazone-methyl Technical, 97.58% technical grade
 SC 450 Herbicide, 19.23% flowable concentrate formulation
 SC 450 Turf & Ornamental, 19.23% flowable concentrate formulation
 WG 63 Herbicide 21% water dispersible granule formulation
 WG 63 Turf & Ornamental, 21% water dispersible granule formulation
 OD 70 Herbicide 1.0% oil dispersion formulation;
 SC 465 Herbicide 7.6% flowable concentrate formulation
 SC 547 Herbicide 5.6% flowable concentrate formulation

Application Methods And Rates:

Thiencarbazone-methyl may be applied to corn as preplant, preemergence, or postemergence applications at maximum total seasonal rates of 0.040 lb ai/A, with a 45-day preharvest interval (PHI) and a 14-day retreatment interval (RTI). It may also be applied as a single postemergence application to spring wheat at 0.0044 lb ai/A, with PHIs of 7 days for forage and hay and 60 days for grain and straw. Agricultural crop applications are allowed by ground and aerial equipment. Thiencarbazone-methyl may also be applied to turf and ornamentals at maximum total seasonal rates of 0.040 lb ai/A. Applications to turf and ornamentals are allowed only by ground equipment and are not permitted to be applied through irrigation systems.

III. Physical and Chemical Properties:

Table 1 -- Physical and Chemical Properties of Thiencarbazone-methyl																	
Melting point	206 °C																
pH	3.8 at 22.4 °C																
Density	1.51, relative to water at 4 °C																
Water solubility at 20°C	72 mg/L in pure water 172 mg/L at pH 4 436 mg/L at pH 7 417 mg/L at pH 9																
Solvent solubility at 20°C	<table border="0"> <thead> <tr> <th></th> <th>g/L</th> </tr> </thead> <tbody> <tr> <td>Ethanol</td> <td>0.23</td> </tr> <tr> <td>n-Hexane</td> <td>0.00015</td> </tr> <tr> <td>Toluene</td> <td>0.19</td> </tr> <tr> <td>Dichloromethane</td> <td>100-120</td> </tr> <tr> <td>Acetone</td> <td>9.54</td> </tr> <tr> <td>Ethyl acetate</td> <td>2.19</td> </tr> <tr> <td>Dimethyl sulfoxide</td> <td>29.15</td> </tr> </tbody> </table>		g/L	Ethanol	0.23	n-Hexane	0.00015	Toluene	0.19	Dichloromethane	100-120	Acetone	9.54	Ethyl acetate	2.19	Dimethyl sulfoxide	29.15
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Table 1 -- Physical and Chemical Properties of Thien carbazone-methyl	
Vapor pressure	~9 x 10 ⁻¹⁴ Pa (20 °C, extrapolated)
Dissociation constant, pK _a	3.0
Octanol/water partition coefficient, Log(K _{ow})	-0.13 at pH 4, 24 °C; -1.98 at pH 7, 24 °C; -2.14 at pH 9, 23 °C
UV/visible absorption spectrum	No significant light absorbance at >290 nm

IV. HUMAN HEALTH RISK ASSESSMENT

A. Toxicity

1. Acute Toxicity: Thien carbazone-methyl has low acute toxicity via the oral, dermal or inhalation routes of exposure. Thien carbazone-methyl is not an eye or skin irritant and is not a skin sensitizer to guinea pigs. The acute toxicity findings for thien carbazone-methyl are summarized below in Table 2:

Table 2 -- Acute Toxicity

Acute Toxicity of Thien carbazone-methyl			
Guideline No.	Study Type	Results	Toxicity Category
870.1100	Acute Oral – rat	LD ₅₀ > 2000 mg/kg	III
870.1200	Acute Dermal - rat	LD ₅₀ > 2000 mg/kg	III
870.1300	Acute Inhalation - rat	LC ₅₀ > 2.018 mg/L	III
870.2400	Primary Eye Irritation – rabbit	Not an irritant to the eye	IV
870.2500	Primary Skin Irritation – rabbit	Not an irritant to the skin	IV
870.2600	Dermal sensitization - guinea pig	Not a dermal sensitizer	N/A

2. Subchronic and Chronic Toxicity: The most toxicologically significant effect of thien carbazone-methyl occurs in the urothelial system including the kidney, bladder, and urinary tract. Across species, the dog is more sensitive than the rat or the mouse, with the older animals being most affected. The toxicity to the urothelial system starts from the formation of calculi and stones which result in irritation and lead to potentially fatal nephropathy and in some cases neoplasia. Most other effects of thien carbazone-methyl were considered secondary to the stress caused by the

nephropathy. Common lesions in the urothelial tract include sulfonamide crystals (also stones and calculi of the parent compound), eosinophilic urolithiasis, hyperplasia, congestion, hemorrhage, inflammation, infiltrations and ulceration.

- 3. Carcinogenicity:** Thiencarbazon-methyl is classified as “Not likely to be a Carcinogen to Humans at doses that do not cause urothelial cytotoxicity.” No treatment-related increases in neoplasia occurred in the rat carcinogenicity study. In mice, at 599 mg/kg/day in males and 758 mg/kg/day in females, doses where there was formation of calculi in the urothelial system, thiencarbazon-methyl was associated with transitional cell epithelium tumors in the urinary bladder in one male and three females and in the prostatic urethra in one male. Since the neoplasia occurred only in the high dose group, thiencarbazon-methyl was classified as “Not likely to be a Carcinogen to Humans at doses that do not cause urothelial cytotoxicity”.
- 4. Prenatal and Postnatal Sensitivity:** There is no indication of increased susceptibility of rat or rabbit offspring to thiencarbazon-methyl as indicated by the rat and rabbit developmental toxicity studies and the rat reproduction study. There is no concern for increased susceptibility to offspring.
- 5. Metabolism:** Thiencarbazon-methyl was demonstrated to be rapidly absorbed from the gastrointestinal tract (with peak plasma levels after about one hour) although absorption represented only 48-55% of the administered dose. Retention was minimal (< 1% at 14 hours) and depending upon the location of the label, slightly more was found in the lungs and fat (thiophene label) and in the adrenals and thyroid (dihydrotriazole label). There was some evidence based on quantitative autoradiography of persistent residues in the nasal mucosa. The metabolism of thiencarbazon-methyl was limited since 91-92% of the administered dose was recovered as intact parent. Three minor metabolites were found from the thiophene label and five were found from the dihydrotriazole label. The postulated route of metabolism proceeds as: i. initial hydrolysis of the urea group releasing the thiophene-sulphonamide moiety; ii. hydrolysis of the methyl ester releases the sulphonamide-carboxylic acid that is subsequently cyclised to thienosaccharine; iii. a second metabolic pathway includes hydrolysis of thiencarbazon-methyl to the MMT derivative (5-methoxy-4-methyl-2,4-dihydro-3H-1,2,4-triazol-3-one) which can be further degraded to methyl carbamate.
- 6. Mutagenicity:** None of the battery of mutagenicity or genetic toxicity studies for thiencarbazon-methyl indicated a positive result.
- 7. Toxicology Profile:** The toxicological profile for thiencarbazon-methyl is discussed in Table 3 below:

Table 3 Subchronic, Chronic and Other Toxicity Profile for Thiencarbazone-methyl			
Guideline No.	Study Type	MRID No. (year)/ Classification /Doses	Results
870.3100	90-Day oral toxicity - rat	47070126 (2003) Acceptable/Guideline 0, 400, 2000 or 7000 ppm. M: 0, 24.7, 123 or 439 mg/kg/day. F: 0, 30.8, 154 or 543 mg/kg/day.	NOAEL = 123 in males and 154 mg/kg/day in females. LOAEL = 439 in males and 543 mg/kg/day in females based on urothelial effects. .
870.3100	90-Day oral toxicity - mouse	47070127 (2004) Acceptable/Non-Guideline 0, 500, 2000 or 4000 ppm. M: 0, 76, 315 or 637 mg/kg/day. F: 0, 103, 409 or 789 mg/kg/day.	NOAEL = 315 mg/kg/day in males but 789 mg/kg/day in females. LOAEL = 637 mg/kg/day in males based on urothelial effects. .
870.3150	90-day oral toxicity - dogs	47070129 (2005) Acceptable/Guideline 0, 1000, 5000 or 10000 ppm. M: 0, 34, 149 or 335 mg/kg/day. F: 0, 32, 159 or 351 mg/kg/day,	NOAEL = 149 in males and 159 in females mg/kg/day. LOAEL = 335 in males and 351 in females mg/kg/day based on urothelial effects.
870.3700 a	Prenatal developmental in rats	47070130 (2005) Acceptable/Guideline 0, 50, 200 or 1000 mg/kg/day.	Maternal NOAEL = 200 mg/kg/day LOAEL = 1000 mg/kg/day based on body weight loss, decreased placenta weight, yellowish sediment in the urothelial system (probably the test material). Developmental NOAEL = 200 mg/kg/day LOAEL = 1000 mg/kg/day based on reduced fetal weight and decreased ossification at several skeletal locations.

Table 3 Subchronic, Chronic and Other Toxicity Profile for Thiencarbazone-methyl			
Guideline No.	Study Type	MRID No. (year)/ Classification /Doses	Results
870.3700 b	Prenatal developmental in Rabbits.	47070131 (2006). Acceptable/Guideline 0, 50, 125 or 500 mg/kg/day.	Maternal NOAEL = 125 mg/kg/day LOAEL = 500 mg/kg/day based on mortality, weight loss, reduced food consumption and sediment in the urothelial system (probably the test material). Developmental NOAEL = 125 mg/kg/day LOAEL = 500 mg/kg/day based on runt fetuses and white sediment in the kidney of one fetus.
870.3800	Reproduction and fertility effects rat	47070132 (2006) Acceptable/Guideline 0, 500, 2500 or 10000 ppm. M: 0, 46, 245, or 945.8 for FO and 0, 50.2, 260.5 or 992.1 for F1 mg/kg/day. F: 0, 55.6, 263.7 or 968.4 for FO and 0, 68, 353.1 or 1284.0 for F1 mg/kg/day.	Parental/Systemic NOAEL = 245 and 264 mg/kg/day LOAEL = 946.8 and 968.4 mg/kg/day based on mortality, clinical signs and urothelial effects. Reproductive NOAEL = 992.1 for males and 1284 for females mg/kg/day. No effects at HDT. Offspring NOAEL = 245 in males and 264 in females mg/kg/day. LOAEL = 946.6 in males and 968.4 in females mg/kg/day based on macroscopic alterations in the kidney and bladder. .

Table 3 Subchronic, Chronic and Other Toxicity Profile for Thiencarbazone-methyl			
Guideline No.	Study Type	MRID No. (year)/ Classification /Doses	Results
870.4100 a	Chronic toxicity Rat	47070134 (2007) Acceptable/Guideline 0, 500, 2500 or 5000 ppm. M: 0, 10.6, 27.2, 136.4 or 268.6 mg/kg/day for one year and 0, 22.8, 115.2 or 234 mg/kg/day for two years, F: 0, 13.2, 35.8, 176.7 or 366.6 mg/kg/day for one year and 0, 29.9, 152.9 or 313.4 mg/kg/day for two years. .	NOAEL = 234 for males and 313.4 for females mg/kg/day - no effects at the highest dose tested.
870.4100 b	Chronic toxicity (dog)	47040133 (2007) Acceptable/Guideline 0, 1000, 4000 or 8000/7000/6000 ppm. M: 0, 29, 117 or 179 mg/kg/day. F: 0, 27, 127 or 200 mg/kg/day.	NOAEL = 117 for males and 127 for females mg/kg/day LOAEL = 179 for males and 200 for females mg/kg/day based on urothelial effects.

Table 3 Subchronic, Chronic and Other Toxicity Profile for Thiencarbazone-methyl			
Guideline No.	Study Type	MRID No. (year)/ Classification /Doses	Results
870.4200	Carcinogenicity (rat)	47070134 (2007) Acceptable/Guideline 0, 500, 2500 or 5000 ppm. M: 0, 10.6, 27.2, 136.4 or 268.6 mg/kg/day for one year and 0, 22.8, 115.2 or 234 mg/kg/day for two years, F: 0, 13.2, 35.8, 176.7 or 366.6 mg/kg/day for one year and 0, 29.9, 152.9 or 313.4 mg/kg/day for two years. .	No evidence of carcinogenicity
870.4300	Carcinogenicity (mouse)	47070216 (2006) Acceptable/Guideline 0, 200, 1000 or 4000 ppm M: 0, 29.2, 147 or 599 mg/kg/day. F: 0, 36.8, 185 or 758 mg/kg/day.	NOAEL = 147 for males and 185 for females mg/kg/day LOAEL = 599 for males and 758 for females mg/kg/day based on urothelial effects. Transitional cell epithelial tumors in the urinary bladder in one male and three females and in the prostatic urethra in one male.
Gene Mutation 870.5100	Ames test	47070137 (2005) Acceptable/Guideline	Negative up to 400 µg/plate.
Gene Mutation 870.5100	Ames test	47070136 (2007) Acceptable/Guideline	Negative up to 512 µg/plate
Forward mutation 870.5300	V79/HPRT test	47070140 (2007) Acceptable/Guideline	Negative at 600 µg/mL.
Forward mutation 870.5300	Forward mutation	47070141 (2005)	Negative

Table 3 Subchronic, Chronic and Other Toxicity Profile for Thiencarbazon-methyl			
Guideline No.	Study Type	MRID No. (year)/ Classification /Doses	Results
Chromosome aberration 870.5375	Chinese hamster ovary cells.	47070144 (2007)	Negative
Chromosome aberration 870.5375	Chinese hamster ovary cells	47070145 (2005)	Negative
Micronucleus test 870. 5395	Mouse	47070214 (2004)	No evidence of clastogenic effect at doses up 500 mg/kg.
870.6200 a	Acute neurotoxicity screening battery	47070148 (2006) Acceptable/Guideline 0, 131 512 or 2180 mg/kg/day.	NOAEL = 512 mg/kg/day LOAEL = 2180 mg/kg/day based on decreased motor and locomotor activity in both sexes (not definitely a neurotoxic effect).
870.6200 b	Subchronic neurotoxicity screening battery	47070149 (2006) Acceptable/Guideline 0, 500, 2000, 6000 ppm M: 0, 33.1, 137 or 411 mg/kg/day. F: 0, 42.4, 171 or 527 mg/kg/day.	NOAEL = 411 in males and 527 in females mg/kg/day. No effects at the highest dose tested.
870.7485	Metabolism and pharmacokinetics (species)	47070159 (2006) and 47070201(2006) Acceptable/Guideline	Adsorption, excretion, retention (very little) and metabolites identified.

8. FQPA Hazard Considerations: EPA has determined that reliable data show that it would be safe for infants and children to reduce the FQPA safety factor to 1X. That decision is based on the following findings:

- The toxicology database for thiencarbazon-methyl is complete except for

immunotoxicity studies (series 870.7800), a new requirement to characterize the toxicity of pesticides. Review of the thien carbazole-methyl toxicity database did not reveal any indication of specific effects on the immune system, even at the highest doses tested. In addition, thien carbazole-methyl does not belong to a class of chemicals that would be expected to be immunotoxic. Therefore, based on the above considerations, HED does not believe that conducting a special series 870.7800 immunotoxicity study will result in a NOAEL less than the NOAEL of 117 mg/kg/day already set for thien carbazole-methyl and an additional uncertainty factor for database uncertainties (UFDB) does not need to be applied.

- There is no pre- or post-natal susceptibility.
- There are no residual uncertainties identified in the exposure databases
- The exposure assessment is protective: the chronic dietary food exposure assessment utilizes tolerance level residues, assume 100% of crops with requested uses of thien carbazole-methyl are treated, and employ default processing factors.
- The drinking water assessment generated estimated drinking water concentrations (EDWCs) using models and associated modeling parameters which are designed to provide conservative, health protective, high-end estimates of water concentrations. The highest relevant EDWCs were used in the dietary (food and drinking water) exposure assessment
- By using these screening-level exposure assessments in the chronic dietary (food and drinking water) assessments, risk is not underestimated.

9. Toxicological Endpoints: A summary of the toxicological endpoints and doses chosen for the relevant exposure scenarios for dietary, residential, and occupational human health risk assessments is provided in the table below. The conventional interspecies extrapolation (10X) and intraspecies variation (10X) uncertainty factors were applied for all exposure scenarios. As stated above, the FQPA SF for increased susceptibility was reduced to 1X for all exposures scenarios. A summary of the toxicological endpoints are shown below in Table 3:

Table 4 -- Summary of Toxicological Doses and Endpoints for Thien carbazole-methyl for Use in Human Health Risk Assessments

Exposure/Scenario	Dose Used in Risk Assessment	Uncertainty/FQPA Safety Factors	Study and Toxicological Effects
Acute Dietary (All populations)	No selection because no indication of significant toxicity following a single dose.		
Chronic Dietary (All populations)	NOAEL= 117 mg/kg/day	UF _A = 10x UF _H = 10x FQPA SF= 1 x	Dog chronic feeding study LOAEL = 177 mg/kg/day

Exposure/Scenario	Dose Used in Risk Assessment	Uncertainty/FQPA Safety Factors	Study and Toxicological Effects
			based on urothelial effects.
Incidental Oral Short-and Intermediate-Term (1-30 days and 1-6 months)	NOAEL= 159 mg/kg/day	UF _A = 10x UF _H =10x FQPA SF= 1x	Dog subchronic study LOAEL = 335 mg/kg/day in males and 351 mg/kg/day in females based on urothelial effects.
Dermal Short- and Intermediate-Term (1-30 days and 1-6 months)	NOAEL= 159 mg/kg/day	UF _A = 10x UF _H =10x FQPA SF= 1x	Dog subchronic study LOAEL = 335 mg/kg/day in males and 351 mg/kg/day in females based on urothelial effects.
Dermal Long-Term (>6 months)	NOAEL= 117 mg/kg/day	UF _A = 10x UF _H =10x FQPA SF= 1x	Dog chronic feeding LOAEL = 177 mg/kg/day based on urothelial effects.
Inhalation Short and Intermediate Term (1-30 days and 1-6 months)	NOAEL= 159 mg/kg/day	UF _A = 10x UF _H =10x FQPA SF= 1x	Dog subchronic study LOAEL = 335 mg/kg/day in males and 351 mg/kg/day in females based on urothelial effects.
Cancer (oral, dermal, inhalation)	Classification: "Not Likely to be Carcinogenic to Humans at doses that do not cause urothelium cytotoxicity."		

UF = uncertainty factor, UF_A = extrapolation from animal to human (interspecies). UF_H = potential variation in sensitivity among members of the human population (intraspecies). UF_{FQPA} = FQPA Safety Factor. NOAEL = no observed adverse effect level. LOAEL = lowest observed adverse effect level. UF = uncertainty factor. UF_A = extrapolation from animal to human (interspecies). UF_H = potential variation in sensitivity among members of the human population (intraspecies). FQPA SF = FQPA Safety Factor.

B. Dietary Exposure and Risk

- 1. Dietary Exposure from Food:** As to residues in food, EPA relied upon tolerance level residues and assumed 100% crop treated for all commodities for chronic exposures.
- 2. Dietary Exposure from Water:** Drinking water was incorporated directly into the chronic dietary assessment using the chronic concentration for surface water generated by the FIRST model. Modeled estimates of drinking water concentrations were directly entered into the dietary exposure model. For the chronic dietary risk assessment, the water concentration value of 0.36 µg/L was used to assess the contribution to drinking water.

It was determined that the residue of concern in drinking water for risk assessment purposes is the parent only.

- 3. Aggregate Exposure Risk Assessments:** For thien carbazone-methyl, aggregate exposure risk assessments were performed for the following scenario: chronic aggregate exposure (food and drinking water) and short-term aggregate exposure (averaged food & drinking water with oral, dermal and inhalation residential exposures). An acute aggregate risk assessment was not conducted due to the lack of an acute toxicity endpoint. A long-term aggregate risk assessment was not conducted because the dietary route alone is relevant for long-term/chronic exposure and risk assessment. A cancer aggregate risk assessment was not conducted based on the classification that thien carbazone-methyl is not likely to be carcinogenic to humans at doses that do not cause urothelium cytotoxicity.

- 4. Chronic Aggregate Risk:** The exposure to thien carbazone-methyl from food and water will utilize less than 0.1% of the cPAD for the general U.S. population and 0.1% of the cPAD for children 1-2 years old, the most highly exposed population subgroup. Therefore, the chronic aggregate risk associated with the proposed uses of thien carbazone-methyl are not of concern to the general U.S. population or any subgroup. A summary of the chronic dietary exposure analyses is shown in Table 4 below:

Table 5 -- Summary of the Dietary Exposure and Risk to Thien carbazone-methyl

Population Subgroup	PAD, mg/kg/day	Chronic Dietary Risk	
		Dietary Exposure, mg/kg/day	%cPAD
U.S. Population	1.17	0.000194	<0.1
All infants (< 1 yr)		0.000320	<0.1
Children 1-2 yrs		0.000856	0.1
Children 3-5 yrs		0.000594	0.1
Children 6-12 yrs		0.000367	<0.1
Youth 13-19 yrs		0.000180	<0.1
Adults 20-49 yrs		0.000117	<0.1
Adults 50+ yrs		0.000103	<0.1
Females 13-49 yrs		0.000118	<0.1

5. Short-Term Aggregate Risk:

To determine the thien carbazone-methyl short-term aggregate risk, the averaged food & water exposures were combined with the oral, dermal and inhalation residential exposures. The results indicate that aggregate risk estimates are not of concern for adults and children. Additionally, this analysis demonstrates that residential

exposures comprise most of the expected short-term exposures to thien carbazole-methyl. A summary of the short-term aggregate exposure analysis is shown in Table 6 below:

Table 6 Short-Term Aggregate Risk Calculations						
Population	Short-Term Scenario					
	NOAEL mg/kg/day	LOC ¹	Max Allowable Exposure ² mg/kg/day	Average Food & Water Exposure ³ mg/kg/day	Residential Exposure ⁴ mg/kg/day	Aggregate MOE (food and residential) ⁵
Adult	159	100	1.59	0.000194	0.00831	18,700
Child	159	100	1.59	0.000856	0.0109	13,500

¹ Based on the standard inter- and intra- species uncertainty factors totaling 100.

² Maximum Allowable Exposure (mg/kg/day) = NOAEL/LOC

³ Adults from U.S. Population and Child from Children 1-2 years old.

⁴ Residential Exposure = [Oral exposure + Dermal exposure + Inhalation Exposure].

⁵ Aggregate MOE = [(NOAEL / (Avg Food & Water Exposure + Residential Exposure))]

6. Cumulative Risk: Although thien carbazole-methyl has in common with other sulfonamide chemicals, including cyprosulfamide, the ability to cause urinary tract stones and in some cases tumors in the urinary tract (only at high doses), EPA has not made a common mechanism finding for thien carbazole-methyl such that cumulative risk assessment based on chemicals with a common mechanism is necessary for cyprosulfamide and thien carbazole-methyl. This decision is based on the assumption that cyprosulfamide and thien carbazole-methyl are not additive with regard to the formation of urinary tract stones at anticipated exposure levels.

C. Handler and Worker Risk Assessments

- 1. Worker Exposure:** Based on the proposed use patterns, there is a potential for exposure to thien carbazole-methyl during mixing, loading, and application activities. Short-term and intermediate-term (1-30 days and 1-6 months), dermal, inhalation and incidental oral (for toddlers) exposures were estimated. The proposed uses of thien carbazole-methyl involves application to agricultural crops as well as turf (residential and commercial lawns) and ornamentals (landscapes, commercial greenhouses, and nurseries). Thien carbazole-methyl is also intended for non-agricultural use sites (e.g., golf course) to which the WPS does not apply; the labels appropriately contain language cautioning unprotected persons to keep out of treated areas until sprays have dried.
- 2. Applicator and Mixer Loader Risk Assessment:** There is a potential for exposure to thien carbazole-methyl during mixing, loading, and application activities. Chronic exposure is not expected for the proposed use patterns associated with thien carbazole

-methyl. Estimated short- and intermediate-term dermal, inhalation and incidental oral (for toddlers) exposures were compared to the oral NOAEL of 159 mg/kg/day from a subchronic feeding - dog toxicity study in which no effects were observed at highest dose tested. 100% absorption via the dermal and inhalation routes of exposure is assumed, resulting in very conservative estimates of risk. Where appropriate, dermal, inhalation, and incidental oral MOEs were combined into total MOEs because the same dose and endpoint were chosen to evaluate all routes of exposure. The FQPA safety factor was removed (i.e., reduced to 1x) for all potential exposure scenarios; therefore, the level of concern (LOC) for both non-occupational and occupational risk is for margins of exposure (MOEs) <100. The results of the handler occupational exposure and risk assessment indicate that risks are not of concern with baseline clothing, or when gloves are worn (which is required on the proposed labels). The total short/intermediate-term MOEs range from 100 to 858,000; which reach or exceed the LOC of 100, and are not of concern. Exposure/risks for short and intermediate-term dermal and inhalation exposures at baseline are presented in Table 7 below:

Table 7 -- Summary of Short- and Intermediate-Term Occupational Exposure and Risk Estimates for Thiencarbazone-methyl

Table 7: Short and Intermediate-Term Risk Assessment For Agricultural Uses of Thiencarbazone -methyl								
Exposure Scenario (Scenario #)	Dermal Unit Exposure (mg/lb ai) ¹		Inhalation Unit Exposure (mg/lb ai) ²	Use Site	Application Rate (lb ai/A) ³	Area Treated (A/day) ⁴	Total Short-/Int-term MOE ⁵	
	Baseline	PPE (gloves)					Baseline	PPE (gloves)
(1) Mixing/Loading Liquid for Aerial application	2.9	0.023	0.0012	Corn	0.033	1200	100	-
(2) Mixing/Loading Liquid for Groundboom application	2.9	0.023	0.0012	Corn	0.033	200	580	-
(3) Mixing/Loading Liquid for Aerial application	2.9	0.023	0.0012	Spring wheat	0.0044	1200	727	-
(4) Mixing/Loading Liquid for Groundboom application	2.9	0.023	0.0012	Spring wheat	0.0044	200	4,360	-

Table 7: Short and Intermediate-Term Risk Assessment For Agricultural Uses of Thiencarbazono -methyl

Exposure Scenario (Scenario #)	Dermal Unit Exposure (mg/lb ai) ¹		Inhalation Unit Exposure (mg/lb ai) ²	Use Site	Application Rate (lb ai/A) ³	Area Treated (A/day) ⁴	Total Short-/Int-term MOE ⁵	
	Baseline	PPE (gloves)					Baseline	PPE (gloves)
(5) Mixing/Loading Water soluble granular for Aerial application	0.066	0.066	0.00077	Corn	0.013	1200	10,700	-
(6) Mixing/Loading Water soluble granular for ground boom application	0.066	0.066	0.00077	Corn	0.013	200	64,112	-
(7) Applying Sprays with Fixed-wing Aircraft (closed cab)	0.005 Eng. C	-	0.000068	Corn	0.033	1200	-	55,500 Eng.C
	0.005 Eng. C		0.000068	Spring wheat	0.0044	1200	-	416,000 Eng.C
(8) Applying Sprays with Open Cab Groundboom	0.014		0.00074	Corn	0.033	200	114,500	-
	0.014		0.00074	Spring wheat	0.0044	200	858,000	-
(9) Flagging to Support Aerial Applications	0.011	-	0.00035	Corn	0.013	350	210,500	-
	0.011		0.00035	Spring wheat	0.0044		637,000	-

Table 7: Short and Intermediate-Term Risk Assessment For Agricultural Uses of Thiencarbazone -methyl								
Exposure Scenario (Scenario #)	Dermal Unit Exposure (mg/lb ai) ¹		Inhalation Unit Exposure (mg/lb ai) ²	Use Site	Application Rate (lb ai/A) ³	Area Treated (A/day) ⁴	Total Short-/Int-term MOE ⁵	
	Baseline	PPE (gloves)					Baseline	PPE (gloves)
(10) Mixing/Loading Liquid and Applying with Handgun Sprayer	no data	0.50	0.0019	Turf	0.027	5	no data	164,000
(11) Mixing/Loading Liquid and Applying with Low-Pressure Handwand	100	0.43	0.03	Turf	0.01 (lb ai/gal)	40 (gal/day)	278	-
(12) Mixing/Loading Liquid and Applying with High-Pressure Handwand	no data	2.5	0.12	Ornamentals	0.01 (lb ai/gal)	1,000 (gal/day)	no data	425
(13) Mixing/Loading Liquid and Applying with Backpack Sprayer	no data	2.5	0.03	Turf	0.01(lb ai/gal)	40 (gal/day)	no data	11,000
				Ornamentals	0.01 (lb ai/gal)	40 (gal/day)	no data	11,000
(14) Mixing/Loading water soluble granular and Applying with Backpack Sprayer, handgun sprayer, low pressure handwand or high pressure handwand.	no data	no data	no data	Turf	0.003lb ai/A	40 (gal/day) or 5A/Day	No Assessment	No Assessment

¹ Baseline dermal unit exposure values represent long pants, long sleeved shirts, shoes, and socks; PPE values represent the addition of chemical-resistant gloves for those scenarios in which the MOEs do not reach 100 at baseline or those for which data are not available without gloves. Values are reported in the PHED Surrogate Exposure Guide dated August 1998, except for the handgun value which was obtained from ORETF.

² Inhalation unit exposure values represent no respirator. Values are reported in the PHED Surrogate Exposure Guide dated August 1998.

³ Application rates are based on maximum values found in proposed labels

⁴ Daily area treated is based on the area or gallons that can be reasonably applied in a single day for each exposure scenario of concern based on the application method and formulation/packaging type. (standard EPA/OPP/HED values).

⁵ Short-/Intermediate-Term MOE = NOAEL (159 mg/kg/day) / (Daily Dermal Dose + Daily Inhalation Dose). The LOC is 100.

Note. Daily Dose (mg/kg/day) was calculated by Unit Exposure * 100% Absorption * Application rate * Area treated / 70 kg; where dermal absorption is 100% and inhalation absorption is assumed to be 100%.

3. Postapplication Handler Risk Assessment: Postapplication inhalation exposure is expected to be negligible; however, dermal exposure is possible for workers entering treated areas to tend or harvest crops, mow/maintain turfgrass, or tend ornamentals in nurseries and greenhouses. In addition to DFR and TTR, transfer coefficients (Tc) are used to relate the residue values to activity patterns, which take place after application, to estimate potential human exposure. The transfer coefficients used in this assessment are from an interim transfer coefficient guidance document developed by HED’s Science Advisory Council for Exposure using proprietary data from the Agricultural Re-entry Task Force (ARTF) database (SOP# 3.1). A summary of occupational short and intermediate-term post-application risks associated with the proposed uses of thiencarbazon-methyl are presented in Table 8a and 8b below:

Table 8a & b -- Summary of Short and Intermediate-Term Occupational Post-Application Risks for Thiencarbazon-methyl

Table 8a Summary of Estimated Post-application MOEs for Agricultural Crops						
Crop	Application Rate (lb ai/A) ¹	DAT ²	DFR ³ (µg/cm ²)	TC ⁴ (cm ² /hr)	Activity ⁴	Short-/Int-Term MOE ⁵
Spring Wheat	0.0044	0	0.0098	100	Hand weeding, scouting	1,400,000
				1500	Scouting, irrigation	94,000
Corn	0.033	0	0.076	400	Scouting	47,000
				1000	Irrigation	19,000
				17000	Hand harvesting, Detasseling	1,100

¹ Maximum application rate from proposed labels

² DAT = Days after treatment needed to reach the LOC of 100; DAT 0 = the day of treatment, after sprays have dried; assumed to be approximately 12 hours.

³ DFR (µg/cm²) = dislodgeable foliar residues corresponding to DAT, based on 20% of application rate.

⁴ TC (cm²/hr) = transfer coefficients and associated activities from ExpoSAC Policy Memo #003.1 “Agricultural Transfer Coefficients”, 8/17/2000.

⁵ MOE = MOE on the corresponding DAT. MOE = NOAEL / Daily Dose. Values in bold indicate when 1 day, or longer, is necessary for the MOE to reach 100.

Daily Dose = [(TTR or DFR x TC x 100% Dermal absorption x 8-hr Exposure Time)] / [(CF: 1000 µg/mg) x (70-kg Body Weight)]
Short-/intermediate-term NOAEL = 159 mg/kg/day. The LOC is 100.

Table 8b. Summary of Estimated Post-application MOEs for Turf and Ornamentals						
Crop	Application Rate (lb ai/A) ¹	DAT ²	TTR or DFR ³ (µg/cm ²)	TC ⁴ (cm ² /hr)	Activity ⁴	Short-/Int-Term MOE ⁵
Turf						
Turf	0.027	0	0.015	3,400	Mowing and other maintenance activities	27,000
				6,800	Sod harvesting and transplanting	13,500

Crop	Application Rate (lb ai/A) ¹	DAT ²	TTR or DFR ³ (µg/cm ²)	TC ⁴ (cm ² /hr)	Activity ⁴	Short-/Int-Term MOE ⁵
Ornamentals – Nursery Stock						
Nursery Stock	0.027	0	0.015	100	Hand pruning containerized ornamentals	920,000
				400	Harvesting, ball/burlap containerized ornamentals	230,000
Ornamentals – Cut Flowers						
Cut Flowers	0.027	0	0.015	500	Pinching	184,000
		0	0.015	5,100	Hand harvesting, pruning, thinning, pinching	18,000

¹ Maximum application rate from proposed labels

² DAT = Days after treatment needed to reach the LOC of 100; DAT 0 = the day of treatment, after sprays have dried; assumed to be approximately 12 hours.

³ Turf transferable residues: TTR (µg/cm²) = Application rate (lb ai/A) x CF (4.54E+8 µg/lb) x CF (2.47E-8 A/cm²) x Initial Fraction of ai Retained on the Foliage (standard assumptions of 5% for turf)

⁴ TC (cm²/hr) = transfer coefficients and associated activities from ExpoSAC Policy Memo #003.1 “Agricultural Transfer Coefficients”, 8/17/2000.

⁵ MOE = MOE on the corresponding DAT. MOE = NOAEL / Daily Dose.

Daily Dose = [(TTR x TC x 100% Dermal absorption x 8-hr Exposure Time)] / [(CF: 1000 µg/mg) x (70-kg Body Weight)]

Short-/intermediate-term NOAEL = 159 mg/kg/day. The LOC is 100.

4. Residential Exposure: Thien carbazono-methyl has uses proposed for application to residential turfgrass and recreational sites. The labels do not prohibit homeowners from using these products; therefore, residential handlers may receive short-term dermal and inhalation exposure to thien carbazono methyl when mixing, loading and applying the formulations; therefore, short-term non-occupational handler exposure was evaluated. The Total MOEs for residential handlers are above the LOC of 100, and are not of concern. Summaries of residential handler exposure and risk estimates associated with the proposed uses of thien carbazono-methyl are presented in Table 9 below:

Handler Scenario	Application Rate ¹ (lb ai/A)	Area Treated ² (acres/day)	Unit Exposure ³ (mg/lb ai)	Short-Term	
				Daily Dose ⁴ (mg/kg/day)	Total MOE ⁵
(1) Mix/load and spot application of liquid formulation (low-pressure hand sprayer)	0.027	0.023 (1,000 ft ²)	Dermal: 100	Dermal: 0.00089	179,000
			Inhalation: 0.030	Inhalation: 2.6e-7	
(2) Mix/load and broadcast application of liquid formulation (garden hose-end sprayer)	0.027	0.50	Dermal: 11	Dermal: 0.0021	76,000
			Inhalation: 0.017	Inhalation: 0.000033	

¹ Application rate is based on maximum values found in proposed labels

² Area treated is based on the area that can be reasonably treated in a single day based on the application method (standard EPA/OPP/HED)

values).

³ Dermal unit exposure values represent short pants and short-sleeved shirt; inhalation values represent no respirator. Values for low-pressure handwand are reported in the PHED Surrogate Exposure Guide dated August 1998, and those for hose-end sprayer were obtained from the ORETF data.

⁴ Daily Absorbed Dose (mg/kg/day) = [(unit exposure * 100 absorption) * Application rate * Area treated] / 70 kg; where dermal absorption is 100% and inhalation absorption is assumed to be 100%.

⁵ Short-Term Total MOE = NOAEL (159 mg/kg/day) / Total Daily Absorbed Dose (dermal + inhalation). The LOC is 100.

Residential postapplication exposure via the inhalation route is expected to be negligible; however, dermal exposure is likely for adults and children entering treated lawns. Toddlers may also experience exposure via incidental non-dietary ingestion (i.e., hand-to-mouth, object-to-mouth (turfgrass), and soil ingestion) during postapplication activities on treated turf. Summaries of residential postapplication risks associated with the proposed uses of thiencazzone-methyl are presented in Tables 10a, 10b, 10c and 10d below:

Subgroup Exposed	Application Rate (lb ai/A)	Post-application day (t)	Fraction of ai Transferable from the Foliage	Turf Transferable Residue ¹ (µg/cm ²)	Dermal Transfer Coefficient (cm ² /hr)	Body Weight (kg)	Daily Dermal Dose ² (mg/kg/day)	Dermal MOE ³
								Short-/term
Adults	0.027	0	0.05	0.015	14,500	70	0.00621	26,000
Children					5,200	15	0.01040	15,000

Application Rate (lb ai/A)	Post-application day (t)	Fraction of ai Transferable from the Foliage	Turf Transferable Residue ¹ (µg/cm ²)	Hand Surface Area (cm ² /event)	Saliva Extraction Factor	Frequency (events/hr)	Body Weight (kg)	Daily Dose ² (mg/kg/day)	Oral MOE ³
									Short-term
0.027	0	0.05	0.015	20	50%	20	15	0.00040	394,000

Application Rate (lb ai/A)	Post-application day (t)	Fraction of ai Transferable from the Foliage	Grass/Object Residue ¹ (µg/cm ²)	Ingestion Rate (cm ² /day)	Body Weight (kg)	Daily Dose ² (mg/kg/day)	Oral MOE ³
							Short-term
0.027	0	0.20	0.06	25	15	0.00010	1,580,000

Application Rate (lb ai/A)	Fraction of ai Retained in the Soil	Soil Residue ¹ (µg/g)	Ingestion Rate (mg/day)	Body Weight (kg)	Daily Dose ² (mg/kg/day)	Oral MOE ³
						Short-term
0.027	1	0.2	100	15	0.0000014	118,000,000

Spray drift is always a potential source of exposure to residents nearby to spraying operations. This is particularly the case with aerial application, but, to a lesser extent, could also be a potential source of exposure from the ground application method employed for thien carbazone-methyl. However, thien carbazone-methyl is directly applied to residential turf and does not result in exposures of concern. It is unlikely that the potential for risk of exposure to spray drift from the agricultural uses would be higher than that estimated for contact with treated turf. Recreational exposures to turf (including playing golf) are expected to be similar to, or in many cases less than, those evaluated for residential postapplication exposure and risk; therefore, a separate recreational exposure assessment was not needed.

V. ENVIRONMENTAL CHARACTERIZATION

A. Environmental Fate Characterization

Thien carbazone-methyl is not expected to persist in aerobic soil environments, aerobic aquatic or anaerobic aquatic environments, but may persist in anaerobic soil conditions. Thien carbazone-methyl is stable to both aqueous and soil photolysis and degrades slowly via hydrolysis at environmentally relevant pHs. Under aerobic aquatic conditions thien carbazone-methyl will degrade moderately fast. Aerobic soil metabolism and anaerobic aquatic metabolism are the primary routes of degradation for thien carbazone-methyl with half-lives ranging from 3.2 to 55 days. Thien carbazone-methyl is not expected to volatilize, with a reported vapor pressure of 8.8×10^{-14} Pa at 20°C. According to the Food and Agriculture Organization (FAO) classification scheme, thien carbazone-methyl is ‘mobile’ to ‘moderately mobile’ based on adsorption K_{OC} values in all soils ranging from 59.9 to 236. Thien carbazone-methyl weakly sorbs to soil; however, the compound’s sorption correlates with organic matter. Spray drift, runoff and leaching represent potential mechanisms of transport of thien carbazone-methyl to aquatic and terrestrial habitats. To address these concerns, label language will be required in the form of surface and ground water advisories that stress the potential of runoff after treatment, describe conditions that may promote leaching to groundwater, and suggest practices that may reduce contamination of water.

B. Potential Risks to Non-Target Plants

As would be expected with any herbicide, Agency levels of concern were exceeded for non-target terrestrial and aquatic vascular plants. The results of this risk assessment indicate that the proposed uses of thien carbazone-methyl have the potential for direct adverse effects to non-listed aquatic plants from use of thien carbazone-methyl on

ornamentals and on corn and potential for risk to listed aquatic plants from all uses of thien carbazone-methyl. There is also potential risk of effects to non-listed and listed terrestrial plants from exposures to thien carbazone-methyl resulting from all uses.

The Agency strategy to mitigate these risks involve label language that is intended to keep the pesticide on the intended treatment area, and therefore reduce the potential for exposure to non-target plants. For example, spray drift management language will be required on the labeling, which advises users of applicator responsibilities and offers specific techniques to reduce the possibility of spray drift. In addition, the use of buffer strips will be discussed in the surface water advisory language, which may further reduce possible exposure to non-target plants.

C. Potential Risks to Non-Target Animals

Thien carbazone-methyl is classified as practically non-toxic to fish, aquatic invertebrates, birds, terrestrial mammals and terrestrial invertebrates on an acute basis, and therefore RQ values were not calculated for acute exposures. For chronic risks to fish, aquatic-phase amphibians, aquatic invertebrates, birds, mammals, terrestrial-phase amphibians and reptiles inhabiting terrestrial habitats, resulting RQs do not exceed the chronic risk LOC ($RQ \geq 1.0$) for any proposed use of thien carbazone-methyl. Although direct effects to animals are not expected, potential effects to plants from the proposed uses of thien carbazone-methyl cannot be precluded and could indirectly affect animals through loss of forage and habitat.

VI. Regulatory Decision

A. Conditional Registration: A conditional registration is issued for thien carbazone-methyl for control of certain broadleaf weeds in corn (field, sweet, pop) and wheat, and in turf and ornamentals in residential settings.

1. Conditional Data (Confirmatory)

- Guideline 830.1700: Submission of a 5-batch analysis reflecting commercial scale production
- Guideline 830.6317 Submission of a storage stability study conducted for a minimum of one year at ambient warehouse conditions
- Guideline 860.1380: Submission of additional storage stability data for the wheat crop field trial study
- Guideline 860.1650: Submission of analytical reference standards for thien carbazone-methyl and its metabolites BYH 18636-MMT-glucoside (M22), and BYH 18636-MMT (M21) and labeled internal standards to the EPA National Pesticide Standards Repository

- Guideline 870.7800: Submission of a immunotoxicity study, a new data requirement under 40 CFR Part 158 as a part of the data requirements for registration of a pesticide (food and non-food uses). The immunotoxicity study prescribes functional immunotoxicity testing and is designed to evaluate the potential of a repeated chemical exposure to produce adverse effects (i.e., suppression) on the immune system. Immunotoxicity studies provide critical scientific information needed to characterize potential hazard to the human population on the immune system from pesticide exposure. If the immunotoxicity study shows that the test material poses either a greater or a diminished risk than that given in the interim decision's conclusion, the risk assessments for the test material may need to be revised to reflect the magnitude of potential risk derived from the new data.
 - Guideline 835.6100: The Terrestrial Field Dissipation guideline is currently classified as supplemental-upgradable pending review of recently submitted additional soil storage stability data
 - Submission of the Analytical Method For The Determination of Residues of BYH18636 And Its Metabolites BYH18636-carboxylic acid, BYH18636-sulfonamide, BYH18636 sulfonamide-carboxylic acid, BYH18636-MMT, and BYH18636-triazolinone carboxamide In Soil and Sediment Using LC/MS/MS using an additional transition ion
 - Submission of the Independent Laboratory Validation of Method GS-004-W06-01 for the Determination of BYH18636 and Its Metabolites BYH18636-carboxylic acid, BYH18636-sulfonamide, BYH18636-sulfonamide carboxylic acid, BYH18636-MMT and BYH18636-dicarboxy sulfonamide in Water Using LC-MS/MS
 - Submission of a copy of Analytical Method AM003506MP1 and samples to EPA's Analytical Chemistry Laboratory for validation of the PAI
2. **Public Interest Finding:** A conditional registration under FIFRA Section 3(c)(7)(C) may be granted if EPA determines that use of the pesticide during such period will not cause any unreasonable adverse effect on the environment, and that use of the pesticide is in the public interest.

B. TOLERANCES

Tolerance Levels: Tolerances are established for residues of thien carbazonemethyl per se, in or on corn, field, forage at 0.04 ppm; corn, field, grain at 0.01 ppm; corn, pop, grain at 0.01 ppm; corn, field, stover at 0.02 ppm; corn, pop, stover at 0.01 ppm; corn, sweet, kernel plus cob with husks removed at 0.01 ppm; corn, sweet, forage at 0.05 ppm; corn, sweet, stover at 0.05 ppm; wheat, forage at 0.10 ppm; wheat, grain at 0.01 ppm; wheat, hay at 0.01 ppm; and wheat, straw at 0.01 ppm.

Tolerances are established for combined residues of thien carbazole-methyl and BYH 18636-MMT [5-methoxy-4-methyl-2,4-dihydro-3H-1,2,4-triazol-3-one], calculated as thien carbazole-methyl in or on cattle, meat at 0.02 ppm; cattle, meat byproducts at 0.02 ppm; goat, meat byproducts at 0.02 ppm; goat, meat at 0.02 ppm; horse, meat byproducts at 0.02 ppm; horse, meat at 0.02 ppm; milk at 0.02 ppm; sheep, meat at 0.02 ppm; and sheep, meat byproducts at 0.02 ppm.

Tolerances are established for indirect or inadvertent combined residues of thien carbazole-methyl, and BYH 18636-MMT-glucoside [2-hexopyranosyl-5-methoxy-4-methyl-2,4-dihydro-3H-1,2,4-triazol-3-one], calculated as thien carbazole-methyl in or on soybean, forage at 0.04 ppm; and soybean, hay at 0.15 ppm.

International MRLs: EPA established tolerances are harmonized with those being established in Canada and those being recommended by the United Kingdom for establishment in the European Union, except for EPA specific tolerances on livestock commodities, livestock feedstuffs, and soybeans (as a rotational crop).

C. REQUIRED ENVIRONMENTAL LABEL STATEMENTS: End use products containing thien carbazole-methyl as an active ingredient will be required to add the following protective language on the product labeling:

1. **Environmental Hazards:** “For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high tide mark. Do not contaminate water when disposing of equipment wash water or rinsate.”
2. **Ground Water Advisory:** “This chemical has properties and characteristics associated with chemicals detected in ground water. This chemical may leach into ground water if used in areas where soils are permeable, particularly where the water table is shallow.”
3. **Surface Water Advisory:**
 - a. For Agricultural Labels: “This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having “high potential for reaching surface water via runoff”, according to the pesticide’s “mean” soil partition coefficient (Kd) for several days after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of thien carbazole-methyl from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.”

- b. For Residential Labels: “This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having “high potential for reaching surface water via runoff”, according to the pesticide’s “mean” soil partition coefficient (Kd) for several days after application. Avoid accidental or intentional application of this product to ditches, swales, drainage ways or impervious surfaces such as driveways. Runoff of this product to surface water will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.”

4. Spray Drift Management

Spray drift is always a potential source of exposure to residents nearby to spraying operations. This is particularly the case with aerial application, but, to a lesser extent, could also be a potential source of exposure from the ground application method employed for thiencazone-methyl. The Agency has been working with the Spray Drift Task Force, EPA Regional Offices and State Lead Agencies for pesticide regulation and other parties to develop the best spray drift management practices. The Agency is now requiring interim mitigation measures for aerial applications that must be placed on product labels/labeling. The Agency has completed its evaluation of the new data base submitted by the Spray Drift Task Force, a membership of U.S. pesticide registrants, and is developing a policy on how to appropriately apply the data and the AgDRIFT computer model to its risk assessments for pesticides applied by air, orchard airblast and ground hydraulic methods. After the policy is in place, the Agency may impose further refinements in spray drift management practices to reduce off-target drift and risks associated with aerial as well as other application types where appropriate. Thiencazone-methyl may be directly applied to residential turf, but does not result in exposures of concern. It is unlikely that the potential for risk of exposure to spray drift from the agricultural uses would be higher than that estimated for contact with treated turf.

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DISCLAIMER: The information presented in this Pesticide Fact Sheet is for informational purposes only and may not be used to fulfill data requirements for pesticide registration and reregistration.

Bibliography

61-1 Chemical Identity

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

61-2 Description of Beginning Materials and Manufacturing Process

MRID	Citation Reference
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47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

61-3 Discussion of Formation of Impurities

MRID	Citation Reference
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62-1 Preliminary Analysis

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62-2 Certification of limits

MRID	Citation Reference
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62-3 Analytical Method

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63-2 Color

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63-3 Physical State

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63-4 Odor

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63-5 Melting Point**MRID****Citation Reference**

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63-6 Boiling Point**MRID****Citation Reference**

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63-7 Density**MRID****Citation Reference**

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63-8 Solubility

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63-9 Vapor Pressure

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-10 Dissociation Constant

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.

47114001 Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-11 Oct/Water partition Coef.

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-12 pH

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

63-13 Stability

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-14 Oxidizing/Reducing Action

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-15 Flammability

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-16 Explodability

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

63-17 Storage stability

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number:

M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.

47114001 Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

47114022 Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

63-18 Viscosity

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

63-19 Miscibility

MRID	Citation Reference
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

63-20 Corrosion characteristics

MRID**Citation Reference**

47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

63-21 Dielectric breakdown voltage**MRID****Citation Reference**

47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

72-2 Acute Toxicity to Freshwater Invertebrates**MRID****Citation Reference**

47069903	Banman, C.; Lam, C. (2005) Acute Toxicity of BYH 18636 Technical to the <i>Daphnia magna</i> Under Static Conditions. Project Number: EBGSM007. Unpublished study prepared by Bayer Corp. 34 p.
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123-1 Seed germination/seedling emergence and vegetative vigor**MRID****Citation Reference**

47070227	Pallet, K.; Nguyen, D.; Gosch, H.; et. al. (2006) BYH 18636 + AE0001789 SC 450 Effects on Eleven Species of Non-Target Terrestrial Plants: Seedling Emergence and Seedling Growth Test (Tier 2). Project Number: SE06/001,
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EBGSM019, M/281379/01/2. Unpublished study prepared by Bayer Cropsience Gmbh. 264 p.

- 47114002 Pallett, K.; Nguyen, D.; Gosch, H. (2006) BYH 18636 + AE 0001789 + IFT SC 465: Effects on Eleven Species of Non-Target Terrestrial Plants: Vegetative Vigour Test (Tier 2). Project Number: VV/05/064, EBGSP025. Unpublished study prepared by Bayer Cropsience Gmbh. 211 p.
- 47114003 Pallett, K.; Gosch, H.; Nguyen, D.; et al. (2006) BYH 18636 + (Inert Ingredient) + IFT SC 465: Effects on Eleven Species of Non-Target Terrestrial Plants: Seeding Emergence and Seedling Growth Test (Tier 2). Project Number: SE/05/063, EBGSP026. Unpublished study prepared by Bayer Cropsience Gmbh. 281 p.
- 47114032 Gosch, H.; Bach, F.; Nguyen, D. (2007) Isoxaflutole + Cyprosulfamide SC 240 + 240 g/L Effects on Eleven Species of Non-Target Terrestrial Plants: Seedling Emergence and Seedling Growth Test (Tier 2). Project Number: SE/06/033, EBUBP062, M/283723/01/1. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 247 p.

161-1 Hydrolysis

MRID	Citation Reference
47070001	Sneikus, M. (2005) BYH18636: Hydrolytic Degradation. Project Number: M1111344/5, M/259661/02/2, MEF/04/183. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 146 p.

161-3 Photodegradation-soil

MRID	Citation Reference
47070003	Stupp, H. (2005) BYH18636: Phototransformation on Soil. Project Number: M1131370/6, M/259443/01/2, MEF/04/561. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 97 p.

162-1 Aerobic soil metabolism

MRID	Citation Reference
47070002	Sneikus, J. (2005) BYH18636: Phototransformation in Water. Project Number: M1121383/9, M/244065/02/2, MEF/04/381. Unpublished study prepared by

Bayer Ag, Institute of Product Info. & Residue Anal. 82 p.

- 47070004 Fliege, R. (2005) [Dihydrotriazole-3-Carbon] and [Thiophene-4-Carbon] BYH 18636: Aerobic Soil Metabolism in One US Soil: Project Number: M1251357/4, M/263213/01/2, MEF/05/224. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 119 p.
- 47070005 Nicolaus, B; Fliege, R. (2006) [Dihydrotriazole-3-(14-Carbon)] and [Thiophene-4-(14-Carbon)] BYH 18636: Aerobic Soil Metabolism in Four Soils. Project Number: M1251264/1, M/276687/01/2, MEF/05/532. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 168 p.
- 47070007 Heinemann, O. (2006) BYH18636-Trizolinone Carboxamide: Aerobic Soil Degradation in 3 EU Soils. Project Number: M1251514/9, M/276814/01/2, MEF/05/519. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 88 p.

162-2 Anaerobic soil metabolism

MRID	Citation Reference
47070008	Fliege, R. (2007) [Dihydrotriazole-3-(14-Carbon)] and [Thiophene-4-(14-Carbon)] BYH 18636: Anaerobic Soil Metabolism. Project Number: M1261402/6, MEF/05/490, M/274584/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 125 p.

162-3 Anaerobic aquatic metab.

MRID	Citation Reference
47070009	Arthur, E.; Shepherd, J.; Ripperger, R.; et. al. (2007) [Dihydrotriazole-3-(14-Carbon) and Thiophene-4-(14-Carbon)] BYH18636: Anaerobic Aquatic Metabolism. Project Number: MEGSM012, M/285668/01/1. Unpublished study prepared by Bayer Corp. 118 p.

162-4 Aerobic aquatic metab.

MRID	Citation Reference
47070010	Henk, F.; Haas, M. (2005) BYH18636: Aerobic Aquatic Metabolism. Project Number: M1511345/0, MEGSM011, M/262178/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 139 p.

163-1 Leach/adsorp/desorption

MRID	Citation Reference
47070011	Fliege, R. (2003) Adsorption/Desorption of BYH 18636 on Five Soils. Project Number: M1311278/3, MO/03/013980, M/110732/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 85 p.
47070012	Henk, F.; Haas, M. (2004) GSE12201: Adsorption/Desorption on Five Soils: (Fs 500 Sorghum Seed Protectant). Project Number: M1311337/9, M/081509/01/2, MEF/027/04. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 94 p.
47070013	Stupp, H. (2004) GSE28226: Adsorption/Desorption in Five Soils. Project Number: M1311343/6, M/086868/01/2, MEF/191/04. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 84 p.
47070014	Fliege, R. (2004) GSE 18448: Adsorption/Desorption on Five Soils. Project Number: M1311335/7, M/082278/01/2, MO/04/007461. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 104 p.
47070015	Simmonds, M.; Early, E. (2005) [14-Carbon]-BYH18636-[Inert Ingredient]-Carboxylic Acid: Adsorption to and Desorption From Five Soils. Project Number: CX/04/069, M/263558/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 96 p.

164-1 Terrestrial field dissipation

MRID	Citation Reference
47070016	Wyatt, D. (2007) Terrestrial Field Dissipation of BYH18636 in California Soil, 2005. Project Number: MEGSM013, M/285682/01/1. Unpublished study prepared by Bayer Corp., Agvise Inc. and Research for Hire. 246 p.
47070017	Wyatt, D. (2007) Terrestrial Field Dissipation of BYH18636 in Nebraska Soil, 2005. Project Number: MEGSP002, M/285681/01/1, GS/003/S06/01. Unpublished study prepared by Bayer Corp., Agvise Inc. and Midwest Research, Inc. 236 p.
47070018	Wyatt, D. (2007) Terrestrial Field Dissipation of BYH18636 in Ontario, Canada Soil, 2005. Project Number: MEGSP003, M/285678/01/1. Unpublished study prepared by Bayer Corp., Agvise Inc. and Bayer CropScience Canada. 238 p.
47070019	Wyatt, D. (2007) Terrestrial Field Dissipation of BYH18636 in Illinois Soil, 2005. Project Number: MEGSP004, M/285673/01/1, GS/003/S06/01. Unpublished study prepared by Bayer Corp., Agvise Inc. and Alvey Lab & Agr

Research Services. 233 p.

810.2700 Products for treating water systems

MRID	Citation Reference
47070040	Heinemann, O. (2004) BYH18636: Determination of the Quantum Yield and Assessment of the Environmental Half-life of the Direct Photodegradation in Water. Project Number: MEF/04/200, M1431325/9, M/093045/02/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 24 p.

830.1550 Product Identity and composition

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1600 Description of materials used to produce the product

MRID	Citation Reference
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47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1620 Description of production process

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1650 Description of formulation process

MRID	Citation Reference
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
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47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1670 Discussion of formation of impurities

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
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47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer

CropScience LP. 282 p.

47114022 Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1700 Preliminary analysis

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
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47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1750 Certified limits

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number:

BR/2553. Unpublished study prepared by Bayer Corp. 237 p.

47114001 Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

47114022 Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.1800 Enforcement analytical method

MRID	Citation Reference
47069901	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2558, VB1/AM003506MP1, ANR/05307. Unpublished study prepared by Bayer Corp. 341 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
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47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.6302 Color

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared

by Bayer Corp. 325 p.

- 47070222 Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
- 47070243 Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
- 47070301 Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
- 47070309 Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
- 47114001 Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
- 47114022 Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.6303 Physical state

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
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47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.6304 Odor

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
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47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.6313 Stability to sunlight, normal and elevated temperatures, metals, and metal ions

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.6314 Oxidizing or reducing action

MRID	Citation Reference
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47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47492701	Smeykal, H. (2008) Thiencarbazone-Methyl (BYH 18636): Oxidizing Properties: Final Report. Project Number: 20080269/01. Unpublished study prepared by Siemens AG. 15 p.

830.6315 Flammability

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.6316 Explodability

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical.

Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.

- 47070301 Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
- 47070309 Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
- 47114001 Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.6317 Storage stability of product

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thien carbazole-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.
47487001	Tebbe, R. (2008) Storage Stability and Corrosion Characteristics of (Inert Ingredient) + Thien carbazole-Methyl WG 42+21. Project Number: 06SG002, 06MG006, 201765. Unpublished study prepared by Bayer CropScience. 28 p.
47487102	Tebbe, R. (2008) Storage Stability and Corrosion Characteristics of Thien carbazole-methyl + (Inert Ingredient) 10 + 60 g/l. Project Number: 06SG028, 06MG026, M/297478/01/1. Unpublished study prepared by Bayer CropScience. 29 p.

830.6319 Miscibility

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thien carbazole-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.6320 Corrosion characteristics

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thien carbazole-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.
47487001	Tebbe, R. (2008) Storage Stability and Corrosion Characteristics of (Inert Ingredient) + Thien carbazole-Methyl WG 42+21. Project Number: 06SG002, 06MG006, 201765. Unpublished study prepared by Bayer CropScience. 28 p.
47487102	Tebbe, R. (2008) Storage Stability and Corrosion Characteristics of Thien carbazole-methyl + (Inert Ingredient) 10 + 60 g/l. Project Number:

06SG028, 06MG026, M/297478/01/1. Unpublished study prepared by Bayer CropScience. 29 p.

830.6321 Dielectric breakdown voltage

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.7000 pH of water solutions or suspensions

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.7050 UV/Visible absorption

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.7100 Viscosity

MRID	Citation Reference
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.7200 Melting point/melting range

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer

CropScience LP. 282 p.

830.7220 Boiling point/boiling range

MRID	Citation Reference
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

830.7300 Density/relative density

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070222	Mitchell, H. (2007) Product Chemistry of SC 450 Herbicide. Project Number: FOR0852, BR2555, ANR/02207. Unpublished study prepared by Bayer Corp. 160 p.
47070301	Long, D. (2007) Product Chemistry of WG 63 Herbicide. Project Number: BR/2557. Unpublished study prepared by Bayer Corp. 144 p.
47070309	Mitchell, H. (2007) Product Chemistry of SC 547 Herbicide. Project Number: BR/2553. Unpublished study prepared by Bayer Corp. 237 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.
47114022	Mitchell, H. (2007) Product Chemistry of SC 480 Herbicide. Project Number: BR/2556, FOR0873/PC/01, FTA06/019. Unpublished study prepared by Bayer Corp. 249 p.

830.7370 Dissociation constant in water

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.

830.7520 Particle size, fiber length, and diameter distribution

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.

830.7560 Partition coefficient (n-octanol/water), generator column method

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.

830.7840 Water solubility: Column elution method, shake flask method

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.

830.7950 Vapor pressure

MRID	Citation Reference
47069902	Fontaine, L. (2007) Product Chemistry of Thiencarbazone-Methyl Technical. Project Number: BR2559, PA05/089, 20050633/01. Unpublished study prepared by Bayer Corp. 325 p.
47070243	Mitchell, H. (2007) Product Chemistry of OD 70 Herbicide. Project Number: M/286092/01, BR/2552. Unpublished study prepared by Bayer CropScience LP. 172 p.
47114001	Mitchell, H. (2007) Product Chemistry of SC 465 Herbicide. Project Number: BR/2554, ANR/01807, RM/G01437. Unpublished study prepared by Bayer CropScience LP. 282 p.

835.1230 Sediment and soil absorption/desorption for parent and degradates

MRID**Citation Reference**

47070042 Koenig, H; Fliege, R. (2006) BHY 18636-Triazolinone-Carboxamide (AE 1430601): Estimation of the Adsorption Coefficient (KOC) on Soil Using High Performance Liquid Chromatography. Project Number: MEF/05/417, M1381518/7, M/268082/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 39 p.

835.4300 Aerobic aquatic metabolism**MRID****Citation Reference**

47070041 Sneikus, J. (2006) BYH18636-MMT: Aerobic Aquatic Degradation. Project Number: MEF/06/500, M1511573/3, M/281546/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 79 p.

850.1010 Aquatic invertebrate acute toxicity, test, freshwater daphnids**MRID****Citation Reference**

47069903 Banman, C.; Lam, C. (2005) Acute Toxicity of BYH 18636 Technical to the Daphnia magna Under Static Conditions. Project Number: EBGSM007. Unpublished study prepared by Bayer Corp. 34 p.

47069904 Bruns, E. (2006) BYH 18636-Sulfonamide (tech): Comparative Toxicity of Two Different Batches of the Test-Item to the Waterflea Daphnia magna in a Static Laboratory Test System. Project Number: EBGSP081, M/271240/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 7 p.

47069905 Bruns, E. (2007) Acute Toxicity of BYH 18636-sulfonamide to the Waterflea Daphnia magna in a Static Laboratory Test System: Limit-Test. Project Number: E/320/3195/3, EBGSP087, 00991/MOO1. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 42 p.

47069945 Banman, C.; Lam, C. (2007) Acute Toxicity of BYH 18636 [Inert Ingredient] to the Daphnia magna Under Static Conditions. Project Number: EBGSP002/1, M/261931/02/1. Unpublished study prepared by Bayer Corp. 37 p.

47070225 Bruns, E. (2007) Acute Toxicity of BYH 18636 and AE 0001789 SC 450 to the Waterflea Daphnia magna in a Static Laboratory Test System. Project Number: E/320/3081/7, EBGSP051, MR/06/106. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 56 p.

- 47114011 Grade, R.; Wydra, V. (2006) Acute Toxicity of Thiencarbazone-Methyl + Isoxaflutole + (Inert Ingredient) SC (90 +225 + 150 g/L) Formulation to *Daphnia magna* in a 48-Hour Immobilization Test: Final Report. Project Number: 30172220. Unpublished study prepared by Institut fuer Biologische Analytik und Consulting IBACON. 58 p.
- 47114029 Burns, E. (2007) Acute Toxicity of [inert ingredient] & Isoxaflutole SC 240 + 240 to the Waterflea *Daphnia magna* in a Static Laboratory Test System-Limit Test. Project Number: E/320/3163/8, EBUBP106, 01001. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 48 p.

850.1025 Oyster acute toxicity test (shell deposition)

MRID	Citation Reference
47069907	Cafarella, M. (2006) BYH 18636 Technical - Acute Toxicity to Eastern Oyster (<i>Crassostrea virginica</i>) Under Flow-Through Conditions. Project Number: 13798/6188, EBGSP010, M/281935/01/1. Unpublished study prepared by Springborn Smithers Laboratories. 56 p.

850.1035 Mysid acute toxicity test

MRID	Citation Reference
47069906	Putt, A. (2006) BYH 18636 Technical - Acute Toxicity to Mysids (<i>Americamysis bahia</i>) Under Flow-Through Conditions. Project Number: 13798/6189, EBGSP011. Unpublished study prepared by Springborn Smithers Laboratories. 52 p.

850.1075 Fish acute toxicity test, freshwater and marine

MRID	Citation Reference
47069908	Banman, C.; Lam, C. (2005) Acute Toxicity of BYH 18636 Technical to the Sheepshead Minnow (<i>Cyprinodon variegatus</i>) Under Static Conditions. Project Number: EBGSM011, MO/05/008919. Unpublished study prepared by Bayer Corp. 34 p.
47069909	Banman, C.; Lam, C. (2005) Acute Toxicity of BYH 18636 Technical to the Bluegill (<i>Lepomis macrochirus</i>) Under Static Conditions. Project Number: EBGSM013, M/257680/01/1. Unpublished study prepared by Bayer Corp. 37 p.

- 47069910 Banman, C.; Lam, C. (2005) Acute Toxicity of BYH 18636 Technical to the Rainbow Trout (*Oncorhynchus mykiss*) Under Static Conditions. Project Number: EBGSM014, MO/05/009287. Unpublished study prepared by Bayer Corp. 37 p.
- 47069944 Banman, C.; Roberts, J.; Lam, C. (2007) Acute Toxicity of BYH 18636 [Inert Ingredient] to the Rainbow Trout (*Oncorhynchus mykiss*) Under Static Conditions. Project Number: EBGSP001/1, M/262252/02/01. Unpublished study prepared by Bayer Corp. 38 p.
- 47070223 Nieden, D. (2006) Acute Toxicity of BYH 18636 & AE 0001789 SC 450 to Fish (*Oncorhynchus mykiss*) under Static Conditions. Project Number: EBGSP049, E/320/3097/9, MR/06/106. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 57 p.
- 47114012 Grade, R.; Wydra, V. (2006) Acute Toxicity of Thiencarbazone-Methyl + Isoxflutole + (Inert Ingredient) SC (90 + 225 + 150 g/L) Formulation to Rainbow Trout (*Oncorhynchus mykiss*) in a 96-Hour Static Test: Final Report. Project Number: 30173230, M/278096/01/1. Unpublished study prepared by Institut fuer Biologische Analytik und Consulting IBACON. 56 p.
- 47114030 Nieden, D. (2007) Acute Toxicity of Cyprosulfamide & Isoxaflutole SC 240+240 to Fish (*Oncorhynchus mykiss*) Under Static Conditions. Project Number: EBUBP107, E/280/3207/2, 01001. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Analysis. 56 p.

850.1300 Daphnid chronic toxicity test

MRID	Citation Reference
47069911	Kern, M.; Lam, C. (2007) Chronic Toxicity of BYH 18636 Technical to the <i>Daphnia magna</i> Under Static-renewal Conditions. Project Number: EBGSM008, M/264057/02/1. Unpublished study prepared by Bayer Corp. 58 p.

850.1350 Mysid chronic toxicity test

MRID	Citation Reference
47069912	Putt, A. (2006) BYH 18636 Technical - Life-Cycle Toxicity Test with Mysids (<i>Americamysis bahia</i>). Project Number: 13798/6190, EBGSP004, M/281198/01/2. Unpublished study prepared by Springborn Smithers Laboratories. 93 p.

850.1400 Fish early-life stage toxicity test

MRID**Citation Reference**

47069913 Kern, M.; Roberts, J.; Lam, C. (2006) Early Life Stage Toxicity of BYH 18636 Technical to the Fathead Minnow (*Pimephales promelas*) Under Flow-Through Conditions. Project Number: EBGSP013, M/264063/01/1. Unpublished study prepared by Bayer Corp. 77 p.

850.2100 Avian acute oral toxicity test**MRID****Citation Reference**

47069914 Barfknecht, R. (2005) Acute Oral Toxicity for Bobwhite quail (*Colinus virginianus*) with BYH 18636 a.s. Project Number: E/204/2985/0, BAR/LD075, M/261212/01/2. Unpublished study prepared by Bayer Ag, Institute of Product Info. & Residue Anal. 30 p.

850.2200 Avian dietary toxicity test**MRID****Citation Reference**

47069915 Stoughton, T. (2005) Technical BYH 18636: A Substance Dietary LC50 with Northern Bobwhite. Project Number: EBGSM006, M/278496/01/1. Unpublished study prepared by Bayer Corp. 52 p.

47069916 Stoughton, T. (2006) Technical BYH 18636: A Subacute Dietary LC50 with Mallards. Project Number: EBGSP009, M/278504/01/1. Unpublished study prepared by Bayer Corp. 53 p.

850.2300 Avian reproduction test**MRID****Citation Reference**

47069917 Christ, M.; Lam, C. (2007) Effect of BYH 18636 Technical on Mallard Reproduction. Project Number: EBGSP007, M/285456/01/1. Unpublished study prepared by Bayer Corp. 111 p.

47069918 Christ, M.; Lam, C. (2007) Effect of Technical BYH 18636 on Northern Bobwhite Reproduction. Project Number: EBGSP008. Unpublished study prepared by Bayer Corp. 148 p.

850.3020 Honey bee acute contact toxicity

MRID	Citation Reference
47069919	Barth, M. (2005) Acute Toxicity of BYH 18636 a.i. tech to the Honeybee <i>Apis mellifera</i> L. Under Laboratory Conditions: Final Report. Project Number: 05/10/48/030, M/253914/01/2. Unpublished study prepared by Bayer Cropscience Gmbh. 32 p.
47070231	Barth, M. (2006) Acute Toxicity of BYH 18636 & AE 0001789 SC 225 + 225 to the Honeybee <i>Apis mellifera</i> L. Under Laboratory Conditions: Final Report. Project Number: 06/10/48/048, M/274661/01/2. Unpublished study prepared by Bayer Cropscience Gmbh. 30 p.
47114004	Waltersdorfer, A. (2006) Toxicity to the Parasitoid Wasp <i>Aphidius Rhopalosiphii</i> (DeStaphani-Perez) (Hymenoptera: Braconidae) in the Laboratory BYH 18636 and Isoxaflutole and (Inert Ingredient) SC 90 + 225 + 150g/l. Project Number: CW05/090. Unpublished study prepared by Bayer Cropscience Gmbh. 28 p.
47114014	Barth, M. (2004) Acute Toxicity of BYH 18636 and Isoxaflutole and (Inert Ingredient) SC 90 + 225 + 150 to the Honeybee <i>Apis mellifera</i> L. Under Laboratory Conditions. Project Number: 06/10/48/049. Unpublished study prepared by Biochem Agrar, Lab fuer Biologische und Chemische. 30 p.
47114023	Waltersdorfer, A. (2006) Toxicity to the Predatory Mite <i>Typhlodromus pyri</i> Scheuten (Acari, Phytoseiidae) in the Laboratory Isoxaflutole & Cyprosulfamide SC 240 + 240 g/l. Project Number: CW06/049, M/279415/01/1. Unpublished study prepared by Bayer Cropscience Gmbh. 33 p.
47114026	Muther-Paul, J. (2006) Assessment of Side Effects of Isoxaflutole & Cyprosulfamide SC 240+240 g/L to the Honey Bee, <i>Apis mellifera</i> L., in the Laboratory: Final Report. Project Number: 20061213/01/BLEU, M/278327/01/1. Unpublished study prepared by GAB Biotechnologie Gmbh. 30 p.

850.4100 Terrestrial plant toxicity, Tier 1 (seeding emergence)

MRID	Citation Reference
47070235	Bach, F.; Pallett, K. (2007) Higher Tier Non Target Terrestrial Plants Study on the Seedling Emergence and Growth of 4 Plants Species Under Semi-Field Conditions. The Phytotoxic Effects of TCM + CSA SC 225 + 225 G (Thiocarbazone-Methyl + [Inert Ingredient] + 225 G/L). Project Number: EBGSP082, HT06/041, M/282887/02/2. Unpublished study prepared by Bayer Cropscience Gmbh. 158 p.
47114013	Bach, F.; Pallett, K. (2007) Higher Tier Non Target Terrestrial Plant Study on the Seedling Emergence and Growth of 3 Plant Species Under Semi-Field

Conditions: The Phytotoxic Effects of BYH 18636 + Isoxaflutole +(Inert Ingredient) SC 90 + 225 + 150 (TCM+IFT+CSA SC 90 + 225 + 150 G). Project Number: HT06/055, EBGSP083. Unpublished study prepared by Bayer Cropscience Gmbh. 137 p.

850.4150 Terrestrial plant toxicity, Tier 1 (vegetative vigor)

MRID	Citation Reference
47070233	Bach, F.; Pallett, K. (2006) Higher Tier Non Target Terrestrial Plant Study on the Vegetative Vigour Test of 3 Plant Species Determined Under Semi-Field Conditions. The Phytotoxic Effects of BYH 18636 + AE 0001789 SC 225 + 225 (Thiocarbazone-methyl + Cyprosulfamide SC 225 + 225 G, High load). Project Number: HT06/040, EBGSP054, M/281484/02/2. Unpublished study prepared by Bayer CropScience Gmbh. 109 p.

850.4225 Seedling emergence, Tier II

MRID	Citation Reference
47114003	Pallett, K.; Gosch, H.; Nguyen, D.; et al. (2006) BYH 18636 + (Inert Ingredient) + IFT SC 465: Effects on Eleven Species of Non-Target Terrestrial Plants: Seeding Emergence and Seedling Growth Test (Tier 2). Project Number: SE/05/063, EBGSP026. Unpublished study prepared by Bayer Cropscience Gmbh. 281 p.
47376805	Gosch, H.; Nguyen, D. (2007) BYH 18636 + AE F107892 OD 10 + 60 g/L: Effects on Ten Species of Non-Target Terrestrial Plants: Seedling Emergence and Seedling Growth Test (Tier 2). Project Number: SE/07/023, EBGSP094. Unpublished study prepared by Bayer Cropscience Gmbh. 181 p.

850.4250 Vegetative vigor, Tier II

MRID	Citation Reference
47070228	Pallett, K.; Nguyen, D.; Gosch, H. (2006) BYH18636 + AE 0001789 SC 450 Effects on Eleven Species of Non-Target Terrestrial Plants: Vegetative Vigour Test (Tier 2). Project Number: VV/06/002, EBGSM020, M/281425/01/2. Unpublished study prepared by Bayer Cropscience Gmbh. 229 p.
47114002	Pallett, K.; Nguyen, D.; Gosch, H. (2006) BYH 18636 + AE 0001789 + IFT SC 465: Effects on Eleven Species of Non-Target Terrestrial Plants: Vegetative

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850.4400 Aquatic plant toxicity test using Lemna spp. Tiers I and II

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850.5400 Algal toxicity, Tiers 1 and II

MRID	Citation Reference
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860.1000 Background

MRID	Citation Reference
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860.1300 Nature of the residue - plants, livestock

MRID	Citation Reference
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860.1340 Residue analytical method

MRID	Citation Reference
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860.1360 Multiresidue method

MRID	Citation Reference
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860.1380 Storage stability data

MRID	Citation Reference
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860.1480 Meat/milk/poultry/eggs

MRID

Citation Reference

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860.1500 Crop field trials

MRID

Citation Reference

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860.1520 Processed food/feed

MRID	Citation Reference
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860.1850 Confined accumulation in rotational crops

MRID	Citation Reference
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860.1900 Field accumulation in rotational crops

MRID	Citation Reference
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870.1100 Acute oral toxicity

MRID	Citation Reference
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870.1200 Acute dermal toxicity

MRID	Citation Reference
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870.1300 Acute inhalation toxicity

MRID

Citation Reference

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870.2400 Acute eye irritation

MRID	Citation Reference
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47070246	Gmelin, C. (2006) BYH 18636 + Mefenpyr-diethyl OD 70: Acute Eye Irritation on Rabbits. Project Number: AT03305, T/7076590, M/279251. Unpublished study prepared by Bayer Ag. 23 p.
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870.2500 Acute dermal irritation

MRID	Citation Reference
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870.2600 Skin sensitization

MRID	Citation Reference
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870.3100 90-Day oral toxicity in rodents

MRID	Citation Reference
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870.3150 90-day oral toxicity in nonrodents

MRID	Citation Reference
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870.3200 21/28-day dermal toxicity

MRID

Citation Reference

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870.3700 Prenatal developmental toxicity study

MRID

Citation Reference

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870.3800 Reproduction and fertility effects

MRID

Citation Reference

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870.4100 Chronic toxicity

MRID	Citation Reference
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870.4200 Carcinogenicity

MRID	Citation Reference
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870.4300 Combined chronic toxicity/carcinogenicity

MRID	Citation Reference
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870.5100 Bacterial reverse mutation test

MRID	Citation Reference
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870.5300 In vitro mammalian cell gene mutation test

MRID	Citation Reference
47070140	Herbold, B. (2007) BYH 18636: V79/HPRT-Test in Vitro for the Detection of Induced Forward Mutations. Project Number: TXGSP053, AT03686, T/6076832. Unpublished study prepared by Bayer Ag Inst. of Toxicology. 43 p.
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