

PCS 84069

Buell, Thomas

From: Buell, Thomas
Sent: Tuesday, March 2, 2021 1:57 PM
To: 'Scott Tingelhoff'
Cc: 'Ron Yoder'; Engstrom, Timothy P; Pracheil, Brad
Subject: Digester Spill Results
Attachments: 20210217-004 - all results.pdf; Human Health and Ecological Benchmarks for Seed Treatment Pesticides.xlsx

Scott:
Attached are the complete results from the digester spill sampling. I've also included a table that was prepared by EPA that includes select pesticides found in seed corn and human health and ecological benchmarks.

Please let me know if you have any questions.

Tom Buell
DIVISION ADMINISTRATOR, MONITORING AND REMEDIATION DIVISION

Nebraska Department of Environment and Energy
P.O. Box 98922
Lincoln, Nebraska 68509-8922
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ET152001202

SELECT PESTICIDES REGISTERED FOR SEED TREATMENT OF FIELD CORN AND ASSOCIATED HUMAN HEALTH BENCHMARKS FOR DRINKING WATER.¹

Type	FRAC ² /IRAC ₃	Active Ingredient	Previously Analyzed? ⁴	Previously Detected? ⁴	cRfD ⁵ (mg/kg-day)	CSF ⁶ (mg/kg-day)	cHHBP ⁷ (µg/L)	Registrants ¹ (only for pesticides not previously analyzed)
Nematicide	IRAC 6	Abamectin	no	n/a	0.0004	n/a	3	Syngenta
Insecticide	IRAC 1B	Chlorpyrifos	✓	no (only lagoons & wet cake were tested)	0.00033	n/a	1.8	
	IRAC 4A	Clothianidin	✓	✓	0.098	n/a	630	
		Imidacloprid	✓	✓	0.057	n/a	360	
		Thiamethoxam	✓	✓	0.012	n/a	77	
	IRAC 28	Chlorantraniliprole	✓	✓	1.58	n/a	10,100	
		Cyantraniliprole	no	n/a	0.01	n/a	60	Syngenta
Fungicide	FRAC 1	Carbendazim (Thiophanate-methyl)	✓	✓	0.025	0.00239	160	
		Thiabendazole	✓	✓	0.033	n/a	210	
	FRAC 3	Desthioprothioconazole (Prothioconazole degradate)	✓	✓	n/a	n/a	n/a	
		Difenoconazole	✓	✓	0.01	n/a	60	
		Ipconazole	✓	✓	0.015	n/a	96	
		Metconazole	✓	✓	0.04	n/a	300	
		Propiconazole	✓	✓	0.1	n/a	600	
		Prothioconazole	✓	✓	0.01	n/a	60	
		Tebuconazole	✓	✓	0.029	n/a	190	
	FRAC 4	Metalaxyl (equal R and S enantiomers) or Mefenoxam (R enantiomer)	✓	✓	0.0741	n/a	474	
	FRAC 7	Carboxin	no	n/a	n/a	n/a	n/a	UPL NA
		Penflufen	no	n/a	0.38	n/a	2,400	Bayer
		Sedaxane	✓	✓	0.11	0.00464	690	

FRAC 11	Azoxystrobin	✓	✓	0.18	n/a	1,200	
	Fluoxastrobin	✓	✓	0.015	n/a	96	
	Picoxystrobin	✓	✓	0.046	n/a	290	
	Pyraclostrobin	✓	✓	0.034	n/a	220	
	Trifloxystrobin	✓	✓	0.038	n/a	240	
FRAC 12	Fludioxonil	no	n/a	0.03	n/a	200	Albaugh, Loveland, Nufarm, Syngenta, UPL NA
FRAC 14	Tolclofos-methyl	no	n/a	n/a	n/a	n/a	Valent
FRAC 22	Ethaboxam	✓	✓	0.055	n/a	350	
FRAC M 03	Mancozeb	no	n/a	0.016	0.0601	53	UPL NA
	Thiram	no	n/a	0.015	n/a	96	Bayer, Nu Farm, UPL NA
FRAC M 04	Captan	no	n/a	0.13	n/a	830	Albaugh, Drexel

¹ Disclaimer - this table is not a comprehensive list of all pesticides registered for seed treatment of field corn since 2015 or all associated registrants.

² FRAC = Fungicide Resistance Action Committee Mode of Action classification - <https://www.frac.info/>

³ IRAC = Insecticide Resistance Action Committee Mode of Action classification - <https://irac-online.org/modes-of-action/>

⁴ Matrices analyzed include groundwater, surface water, wet cake, corn seed, soil, nectar, honey, pollen, and/or other plants.

⁵ cRFD = Chronic Reference Dose - Only provided if listed in <https://www.epa.gov/pesticides/updated-list-human-health-benchmarks-pesticides-drinking-water-available>

⁶ CSF = Cancer Slope Factor - Only provided if listed in <https://www.epa.gov/pesticides/updated-list-human-health-benchmarks-pesticides-drinking-water-available>

⁷ cHHBP = lower of the Chronic or Carcinogenic (1E-04 excess cancer risk) Human Health Benchmarks for Pesticides - Only provided if listed in:

<https://www.epa.gov/pesticides/updated-list-human-health-benchmarks-pesticides-drinking-water-available>

Gray indicates a compound is registered for seed treatment of corn, but no samples have been analyzed.

SELECT PESTICIDES REGISTERED FOR SEED TREATMENT OF FIELD CORN AND ASSOCIATED ECOLOGICAL AQUATIC LIFE BENCHMARKS.

Type	FRAC ² /IRAC ³	Active Ingredient	Previously Analyzed? ⁴	Previously Detected? ⁴	Fish Acute ⁵ (µg/L)	Fish Chronic ⁵ (µg/L)	Invertebrate Acute ⁵ (µg/L)	Invertebrate Chronic ⁵ (µg/L)	Non-Vascular Plants Acute ⁵ (µg/L)	Vascular Plants Acute ⁵ (µg/L)	Maximum Concentration ⁵ (µg/L)	Continuous Concentration ⁵ (µg/L)	Registrants ¹ (only for pesticides not previously analyzed)
Nematicide	IRAC 6	Abamectin	no	n/a	1.6	0.52	0.17	n/a	100,000	3,900			Syngenta
Insecticide	IRAC 1B	Chlorpyrifos	✓	no (only lagoons & wet cake were tested)	0.9	0.57	0.05	0.04	140	n/a	0.083	0.041	
		Clothianidin	✓	✓	50,750	9,700	11	0.05	n/a	n/a			
		Imidacloprid	✓	✓	114,500	9,000	0.385	0.01	n/a	n/a			
	IRAC 4A	Thiamethoxam	✓	✓	57,000	20,000	17.5	0.74	99,000	90,200			
		Chlorantraniliprole	✓	✓	6,900	110	5.8	4.47	1,780	2,000			
		Cyantraniliprole	no	n/a	5,000	10,700	10.2	6.56	10,000	12,100			Syngenta
Fungicide	FRAC 1	Carbendazim (Thiophanate-methyl)	✓	✓	5,500	n/a	2,700	n/a	930	4,700			
		Thiabendazole	✓	✓	280	110	155	42	1,420	2,320			
	FRAC 3	Desthioprothioconazole (Prothioconazole degradate)	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a			
		Difenoconazole	✓	✓	405	0.86	385	5.6	98	1,900			
		Ipconazole	✓	✓	765	180	850	n/a	n/a	n/a			
		Metconazole	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a			
		Propiconazole	✓	✓	425	95	650	260	21	3,500			
		Prothioconazole	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a			
		Tebuconazole	✓	✓	1,135	11	1,440	120	1,450	151			
	FRAC 4	Metalaxyl (equal R and S enantiomers) or Mefenoxam (R enantiomer)	✓	✓	65,000	9,100	14,000	1,200	n/a	n/a			
	FRAC 7	Carboxin	no	n/a	600	n/a	42,200	n/a	370	670			UPL NA
		Penflufen	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a			Bayer
		Sedaxane	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a			
	FRAC 11	Azoxystrobin	✓	✓	235	147	130	44	49	3,400			
		Fluoxastrobin	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a			
		Picoxystrobin	✓	✓	32.5	36	12	1	4	210			
		Pyraclostrobin	✓	✓	3.1	2.35	7.85	4	1.5	1,197			
		Trifloxystrobin	✓	✓	7.15	4.3	12.65	2.76	37.1	1,930			
	FRAC 12	Fludioxonil	no	n/a	235	18	450	14	280	630			Albaugh, Loveland, Nufarm, Syngenta, UPL NA
	FRAC 14	Tolclofos-methyl	no	n/a	345	12	1,200	26	780	n/a			Valent
	FRAC 22	Ethaboxam	✓	✓	1,090	880	185	50	3,600	13,000			
	FRAC M 03	Mancozeb	no	n/a	455	1.35	520	18	47	n/a			UPL NA
		Thiram	no	n/a	3.5	1.1	105	20	3	1,600			Bayer, Nu Farm, UPL NA
	FRAC M 04	Captan	no	n/a	13.1	16.5	4,200	560	320	12,700			Albaugh, Drexel

¹ Disclaimer - this table is not a comprehensive list of all pesticides registered for seed treatment of field corn since 2015 or all associated registrants.

² FRAC = Fungicide Resistance Action Committee Mode of Action classification - <https://www.frac.info/>

³ IRAC = Insecticide Resistance Action Committee Mode of Action classification - <https://irac-online.org/modes-of-action/>

⁴ Matrices analyzed include groundwater, surface water, wet cake, corn seed, soil, nectar, honey, pollen, and/or other plants.

⁵ Aquatic Screening Levels = <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>

Gray indicates a compound is registered for seed treatment of corn, but no samples have been analyzed.

Analyzed By:

South Dakota Agricultural Laboratories
1335 Western Avenue
Brookings, South Dakota 57006
Phone: 605-692-7325
E-Mail: regina.wixon@sdaglabs.com

Collected By:

Nebraska Dept. of Environment & Energy-David
Schum
245 Fallbrook Blvd
Lincoln, NE 68521
Phone: 402-471-4709
E-Mail: david.schumacher@nebraska.gov

Report Date: 2021-03-01**Final Report**

Report Of Analysis

Date Received : 2021-02-17**Package Id : 20210217-004**

21PE001084**Description: Water****Date Collected: 2021-02-12**

Site 1

Analyte	Result
Acetamprid	ND ppb
Azoxystrobin	ND ppb
Bifenthrin	ND ppb
Brassinazole	ND ppb
Clothianidin	159 ppb
Cyhalothrin 1-2	ND ppb
Cyhalothrin 1-4	ND ppb
Cypermethrin 1-4	ND ppb
Cyproconazole	ND ppb
Deltamethrin 1-2	ND ppb
Desthio-Prothioconazole	33.2 ppb
Difenoconazole	<5 ppb
Dimoxystrobin	ND ppb
Dinotefuron	ND ppb
Epoxiconazole	ND ppb
Fluconazole	ND ppb
Fluoxastrobin	5.09 ppb
Glufosinate	ND ppb
Glyphosate	95.8 ppb
Imidacloprid	ND ppb
Ipconazole	16.9 ppb
Isavuconazole	ND ppb
Metconazole	ND ppb
Nitenpyram	ND ppb
Orysastrobin	ND ppb
Permethrin 1-2	ND ppb
Picoxystrobin	ND ppb
Propiconazole	ND ppb
Prothioconazole	337 ppb
Pyraclostrobin	ND ppb
Ravuconazole	ND ppb
Sulfonic Acid Prothioconazole	ND ppb
Tebuconazole	316 ppb
Tetraconazole	ND ppb
Thiabendazole	6230 ppb
Thiacloprid	ND ppb
Thiamethoxam	25.7 ppb
Trifloxystrobin	ND ppb
Uniconazole	ND ppb
Voriconazole	ND ppb

21PE001085**Description: Water****Date Collected: 2021-02-12**

Site 2

Analyte	Result
Acetamprid	ND ppb
Azoxystrobin	ND ppb
Bifenthrin	ND ppb
Brassinazole	ND ppb
Clothianidin	144 ppb
Cyhalothrin 1-2	ND ppb
Cyhalothrin 1-4	ND ppb
Cypermethrin 1-4	ND ppb
Cyproconazole	ND ppb
Deltamethrin 1-2	ND ppb
Desthio-Prothioconazole	38.9 ppb
Difenoconazole	<5 ppb
Dimoxystrobin	ND ppb
Dinotefuron	ND ppb
Epoxiconazole	ND ppb
Fluconazole	ND ppb
Fluoxastrobin	5.93 ppb
Glufosinate	ND ppb
Glyphosate	80.3 ppb
Imidacloprid	ND ppb
Ipconazole	22.0 ppb
Isavuconazole	ND ppb
Metconazole	ND ppb
Nitenpyram	ND ppb
Orysastrobin	ND ppb
Permethrin 1-2	ND ppb
Picoxystrobin	ND ppb
Propiconazole	ND ppb
Prothioconazole	234 ppb
Pyraclostrobin	ND ppb
Ravuconazole	ND ppb
Sulfonic Acid Prothioconazole	ND ppb
Tebuconazole	351 ppb
Tetraconazole	ND ppb
Thiabendazole	3770 ppb
Thiacloprid	ND ppb
Thiamethoxam	25.8 ppb
Trifloxystrobin	ND ppb
Uniconazole	ND ppb
Voriconazole	ND ppb

21PE001086**Description: Water****Date Collected: 2021-02-12**

QC Field Replicate

Analyte	Result
Acetamprid	ND ppb
Azoxystrobin	ND ppb
Bifenthrin	ND ppb
Brassinazole	ND ppb
Clothianidin	163 ppb
Cyhalothrin 1-2	ND ppb
Cyhalothrin 1-4	ND ppb
Cypermethrin 1-4	ND ppb
Cyproconazole	ND ppb
Deltamethrin 1-2	ND ppb
Desthio-Prothioconazole	36.2 ppb
Difenoconazole	5.10 ppb
Dimoxystrobin	ND ppb
Dinotefuron	ND ppb
Epoxiconazole	ND ppb
Fluconazole	ND ppb
Fluoxastrobin	7.28 ppb
Glufosinate	ND ppb
Glyphosate	140 ppb
Imidacloprid	ND ppb
Ipconazole	23.1 ppb
Isavuconazole	ND ppb
Metconazole	ND ppb
Nitenpyram	ND ppb
Orysastrobin	ND ppb
Permethrin 1-2	ND ppb
Picoxystrobin	ND ppb
Propiconazole	<5 ppb
Prothioconazole	410 ppb
Pyraclostrobin	ND ppb
Ravuconazole	ND ppb
Sulfonic Acid Prothioconazole	ND ppb
Tebuconazole	344 ppb
Tetraconazole	ND ppb
Thiabendazole	5710 ppb
Thiacloprid	ND ppb
Thiamethoxam	29.7 ppb
Trifloxystrobin	ND ppb
Uniconazole	ND ppb
Voriconazole	ND ppb

21PE001087**Description: Water****Date Collected: 2021-02-12**

QC Trip Blank

Analyte	Result
Acetamprid	ND ppb
Azoxystrobin	ND ppb
Bifenthrin	ND ppb
Brassinazole	ND ppb
Clothianidin	ND ppb
Cyhalothrin 1-2	ND ppb
Cyhalothrin 1-4	ND ppb
Cypermethrin 1-4	ND ppb
Cyproconazole	ND ppb
Deltamethrin 1-2	ND ppb
Desthio-Prothioconazole	ND ppb
Difenoconazole	ND ppb
Dimoxystrobin	ND ppb
Dinotefuron	ND ppb
Epoxiconazole	ND ppb
Fluconazole	ND ppb
Fluoxastrobin	ND ppb
Glufosinate	ND ppb
Glyphosate	ND ppb
Imidacloprid	ND ppb
Ipconazole	ND ppb
Isavuconazole	ND ppb
Metconazole	ND ppb
Nitenpyram	ND ppb
Orysastrobin	ND ppb
Permethrin 1-2	ND ppb
Picoxystrobin	ND ppb
Propiconazole	ND ppb
Prothioconazole	ND ppb
Pyraclostrobin	ND ppb
Ravuconazole	ND ppb
Sulfonic Acid Prothioconazole	ND ppb
Tebuconazole	ND ppb
Tetraconazole	ND ppb
Thiabendazole	ND ppb
Thiacloprid	ND ppb
Thiamethoxam	ND ppb
Trifloxystrobin	ND ppb
Uniconazole	ND ppb
Voriconazole	ND ppb

ND Not Detected**Reviewed By: Katie Ahlstrom.**

The analytical results on this report reflect what was found in the laboratory sample as it was received at the laboratory.

Submitted by the customer:



Pesticide Residue Sample Submission Form

South Dakota Agricultural Laboratories
1335 Western Avenue
Brookings, SD. 57006
(605) 692-7325

20210217-004
21PE001084-1087

20210217-004
21PE001084-001087

Name: David Schumacher - Nebraska Dept. of Environment and Energy
Address: 245 Fallbrook Blvd. City: Lincoln State: NE Zip: 68501
Phone: (402) 471-4709 Email: david.schumacher@nebraska.gov
*Sample ID: Site 1, Site 2, QC Field Replicate, QC Trip Bank

*Sample ID must be marked clearly on the sample you submit. **Results will be emailed to the provided email address.

Billing Information: ☐ Check box if billing is the same as the customer information

Name: NDEE Address: P.O. Box 98922
City: Lincoln State: NE Zip: 68501
Phone: (402) 471-4709 Email: NDEE.accounting@nebraska.gov

Individual tests are \$162 each, unless otherwise marked. Scans are \$212 and include all of the compounds in a particular category. Acceptable samples include Vegetation, Water or Soil. Call to confirm other substrates.

Thank you for choosing South Dakota Agricultural Labs! We do add analytes to our testing regiment throughout the year. If a chemical of interest is not listed, please call us:
(605) 692-7325.

How much sample should you send?

Please send 30g of vegetation or 100g of soil to run an individual test. What does this look like? For vegetation, it would be about a quart sized bag packed full. If more than one test is required, please fill a gallon sized bag. For soil samples, please send 2 cups, if more than one test is required send 4 cups.

Analyses offered

Please turn page over to view the current pesticide analyses.

If you are interested in a screen of active ingredients, please check the box next to the **bold-faced** heading. This will include all active ingredients within the PGR screen for \$212.

Example: PGR Screen ☒

If you are interested in single analyses, please circle the active ingredients. The cost of each individual analyte is \$162 unless otherwise marked.

Example: Mesotrione

Sample(s) Received at SD Ag Labs
Date 2021-02-17
Received by
Alyssa Kennedy