

Analytical method for cumyluron in soil

Reports: ECM: EPA MRID No.: 51301801. Smith, R.J. 2020. Environmental Chemistry Method: Validation of the Analytical Method for the Determination of Cumyluron in Soil by LC-MS/MS. Report prepared by Smithers, Wareham, Massachusetts, sponsored by Marubeni Corporation, Tokyo, Japan, and submitted by Helena Chemical Company, Collierville, Tennessee (p. 2) and Marubeni America Corporation, New York, New York; 53 pages. Smithers Viscient Study No.: 14102.6121. Final report issued May 18, 2020.

ILV: EPA MRID No.: 51301802. Cashmore, A., and O. Idialu. 2020. Independent Laboratory Validation of Analytical Method 14102.6121 for the Determination of Cumyluron in Soil. Report prepared by Smithers ERS Limited, North Yorkshire, United Kingdom, sponsored by Marubeni Corporation, Tokyo, Japan, monitored by Wagner Regulatory Associates, Hockessin, Delaware, and submitted by Helena Chemical Company, Collierville, Tennessee (p. 2) and Marubeni America Corporation, New York, New York; 78 pages. Study No.: 3202654. Final report issued 9/22/2020.

Document No.: MRIDs 51301801 & 51301802

Guideline: 850.6100

Statements: ECM: The study was conducted in compliance with USEPA FIFRA GLP standards (40 CFR Part 160), as accepted by OECD GLP (1998; p. 3 of MRID 51301801). Signed and dated Data Confidentiality, GLP, and Quality Assurance statements were provided (pp. 2-4). An Authenticity statement was included with the Quality Assurance statement.

ILV: The study was conducted in compliance with United Kingdom (1999) GLP standards, as amended by GLP (2004), and OECD GLP (1998), as well as the United Kingdom Department of Health, with the following exception: some characterization of the sandy loam test soil by LUFA Speyer (a GLP facility; p. 3; Appendix 6, p. 69 of MRID 51301802). The study was suitable for submission to US FDA, USEPA, and Japanese regulatory authorities. Signed and dated Data Confidentiality, GLP, Quality Assurance, and Authenticity statements were provided (pp. 2-5). An Authenticity statement was also included with the GLP and Quality Assurance statements (pp. 3-4).

Classification: This analytical method is classified as **acceptable**. The ECM method should be updated with the ILV study recommendations of the use of disposable glassware, since contamination in the calibration standards prevented the initial validation of the method by the ILV laboratory in both test soils.

PC Code: 027902

EFED Final Reviewer: He Zhong, Ph.D.
Biologist

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This Data Evaluation Record may have been altered by the Environmental Fate and Effects Division subsequent to signing by CDM/CSS-Dynamac JV personnel. The CDM/CSS-Dynamac Joint Venture role does not include establishing Agency policies.

Executive Summary

The analytical method, Smithers Viscient Study No. 14102.6121, is designed for the quantitative determination of cumyluron in soil at the stated LOQ of 0.05 mg/kg using LC-MS/MS. The LOQ is less than the lowest toxicological level of concern in soil ($EC_{25} = 0.26$ lbs a.i./A or 0.13 mg a.i./kg soil) for cumyluron.

The ECM validated the method using characterized sandy loam and loam soil matrices; the ILV validated the method using characterized sandy loam and clay soil matrices. It could not be determined if the ILV was provided with the most difficult matrices with which to validate the method and if the ILV soil matrices covered the range of soils used in the terrestrial field dissipation studies since no cumyluron terrestrial field dissipation studies were submitted. The ILV validated the method for cumyluron in soil in the first trial with insignificant modifications to the analytical parameters. The analysis from the first injection of the samples failed due to high peak areas for calibration standards. The samples were re-injected with freshly prepared calibration standards. The ILV modifications did not warrant an updated ECM; however, the ILV recommended the use of disposable glassware due to the contamination seen in the calibration standards of both test soils. Therefore, the ECM method should be updated with the ILV study recommendations of the use of disposable glassware, since the contamination in the calibration standards prevented the validation of the method by the ILV laboratory in both test soils.

All ILV and ECM data regarding repeatability, accuracy, precision, linearity, and specificity were satisfactory for cumyluron in all test soil matrices.

Table 1. Analytical Method Summary

Analyte(s) by Pesticide	MRID		Matrix	Method Date (dd/mm/yyyy)	Registrant	Analysis	Limit of Quantitation (LOQ)
	Environmental Chemistry Method	Independent Laboratory Validation					
Cumyluron	51301801 ¹	51301802 ²	Soil	18/05/2020	Marubeni Corporation	LC-MS/MS	0.05 mg/kg

1 In the ECM, sandy loam soil (Smithers Batch No. 09Oct19Soil-D; 74% sand, 15% silt, 11% clay; pH 6.8 in 1:1 soil:water ratio; 3.6% organic matter) collected from Northwood, North Dakota, and loam soil (Smithers Batch No. 09Oct19Soil-A; 30% sand, 49% silt, 21% clay; pH 6.8 in 1:1 soil:water ratio; 1.6% organic matter) collected from Hanford, California, were used in the study (USDA soil texture classification; pp. 11-12 of MRID 51301801). The soils were characterized by Agvise Laboratories, Northwood, North Dakota. The soil texture was verified by the reviewer using USDA-NRCS technical support tools.

2 In the ILV, sandy loam soil (Speyer 2.3; ID: CS04/20; 59% sand, 33% silt, 7% clay; pH 7.0 in water; pH 6.1 in 0.01M CaCl₂; 0.7% organic carbon) from Rhineland-Pfalz, Germany, and clay soil (South Witham; ID: CS06/20; 34% sand, 23% silt, 43% clay; pH 8.1 in water; pH 7.5 in 0.01M CaCl₂; 2.9% organic carbon) from Lincolnshire, United Kingdom, were sourced by Smithers ERS and used in the study (USDA soil texture classification; p. 12; Appendix 2, pp. 54-55 of MRID 51301802). The soils were characterized by LUF A Speyer and Smithers Viscient (ERS) Ltd., United Kingdom. The soil texture was verified by the reviewer using USDA-NRCS technical support tools.

I. Principle of the Method

Soil samples (5.00 g dry wt.) were fortified (0.25 mL of 1.00 or 10.0 mg/L fortification solution) and extracted twice with 20 mL with acetonitrile:purified reagent water (80:20, v:v) via sonication for 10 minutes, shaking on a shaker table for 30 minutes (at 250 rpm), and centrifugation at 3000 rpm for 10 minutes (pp. 14-16 of MRID 51301801). The volume of the combined supernatants was adjusted to 50 mL with acetonitrile:purified reagent water (80:20, v:v). The LOQ samples (0.10 mL aliquot) were diluted 1000xs with acetonitrile:purified reagent water (20:80, v:v). The 10×LOQ samples (0.02 mL aliquot) were diluted 5000xs with acetonitrile:purified reagent water (20:80, v:v). An aliquot of the diluted samples was taken for LC-MS/MS analysis.

Samples were analyzed for cumyluron using a Shimadzu LC-20ADXR HPLC coupled with an AB MDS Sciex API 4000 QTrap MS with an ESI Turbo V ion source operated in the positive ion mode with multiple reaction monitoring (MRM; pp. 11, 16-17 of MRID 51301801). The following LC conditions were used: Water XBridge BEH C18 column (2.1 x 50 mm, 2.5 μm; column temperature 40°C), mobile phase of (A) 0.1% formic acid in reagent grade water and (B) 0.1% formic acid in acetonitrile [mobile gradient phase of percent A:B (v:v) at 0.01-0.50 min. 75.0:25.0, 4.00-6.00 min. 0.00:100, 6.10-7.50 min. 75.0:25.0] and injection volume of 100 μL. MS source temperature was 550°C. Two ion pair transitions were monitored for cumyluron (quantitation and confirmation, respectively): m/z 303.0→184.9 and m/z 303.0→125.0. Reported retention time was *ca.* 3.6 minutes for cumyluron.

The ILV performed the ECM method (Smithers Viscient Method No. 14102.6121) as written, except for insignificant modifications to the analytical parameters (pp. 13-18; Appendix 3, pp. 56-65 of MRID 51301802). Samples were analyzed for cumyluron using Shimadzu Nexera series HPLC coupled with an AB Sciex API 5000 Triple Quadrupole LC-MS/MS. The LC-MS/MS parameters were the same as those of the ECM, with the exception that the injection volume was 50 μL and some minor MS parameters. Two ion pair transitions were monitored for cumyluron (quantitation and confirmation, respectively): m/z 303.0→185.3 and m/z 303.0→125.2. These ion transitions were similar to those of the ECM. Reported retention time was *ca.* 3.0 minutes for cumyluron. The ILV noted that the LC column and mobile phase solvents could not be modified. The ILV modifications did not warrant an updated ECM.

The Limit of Quantification (LOQ) for cumyluron in soil was 0.05 mg/kg in the ECM and ILV (pp. 9, 19-23 of MRID 51301801; pp. 10, 19-25 of MRID 51301802). In the ECM, the Limit of Detection (LOD) for cumyluron was calculated as 0.00008-0.0009 mg/kg for sandy loam soil and 0.0004-0.0007 mg/kg for loam soil. In the ILV, the LOD for cumyluron was calculated as 0.00203-0.00204 mg/kg for sandy loam soil and 0.00014-0.00094 mg/kg for clay soil. Since the LOQ was not based on scientifically acceptable procedures defined in 40 CFR Part 136, the reported LOQ is the lowest level of method validation (LLMV) rather than an LOQ.

II. Recovery Findings

ECM (MRID 51301801): Mean recoveries and relative standard deviations (RSDs) were within guidelines (mean 70-120%; RSD ≤20%) for analysis of cumyluron at fortification levels of 0.05 mg/kg (LOQ) and 0.5 mg/kg (10×LOQ) in two soil matrices (Tables 1-4, pp. 26-29). Two ion pair

transitions were monitored; performance data was comparable between the quantitation and confirmation analyses. The sandy loam soil (Smithers Batch No. 09Oct19Soil-D; 74% sand, 15% silt, 11% clay; pH 6.8 in 1:1 soil:water ratio; 3.6% organic matter) collected from Northwood, North Dakota, and loam soil (Smithers Batch No. 09Oct19Soil-A; 30% sand, 49% silt, 21% clay; pH 6.8 in 1:1 soil:water ratio; 1.6% organic matter) collected from Hanford, California, were used in the study (USDA soil texture classification; pp. 11-12). The soils were characterized by Agvise Laboratories, Northwood, North Dakota.

ILV (MRID 51301802): Mean recoveries and RSDs were within guidelines for analysis of cumyluron at fortification levels of 0.05 mg/kg (LOQ) and 0.5 mg/kg (10×LOQ) in two soil matrices (Tables 1-4, pp. 28-31). Two ion pair transitions were monitored; performance data was comparable between the quantitation and confirmation analyses. The sandy loam soil (Speyer 2.3; ID: CS04/20; 59% sand, 33% silt, 7% clay; pH 7.0 in water; pH 6.1 in 0.01M CaCl₂; 0.7% organic carbon) from Rhineland-Pfalz, Germany, and clay soil (South Witham; ID: CS06/20; 34% sand, 23% silt, 43% clay; pH 8.1 in water; pH 7.5 in 0.01M CaCl₂; 2.9% organic carbon) from Lincolnshire, United Kingdom, were sourced by Smithers ERS and used in the study (USDA soil texture classification; p. 12; Appendix 2, pp. 54-55). The soils were characterized by LUFA Speyer and Smithers Viscient (ERS) Ltd., United Kingdom. The method for cumyluron in soil was validated in the first trial with insignificant modifications to the analytical parameters (pp. 10, 22-25; Appendix 4, p. 67). The analysis from the first injection of the samples failed due to high peak areas for calibration standards. The samples were re-injected with freshly prepared calibration standards. The ILV modifications did not warrant an updated ECM; however, the ILV recommended the use of disposable glassware due to the contamination seen in the calibration standards of both test soils. Therefore, the ECM method should be updated with the ILV study recommendations of the use of disposable glassware due to the contamination seen in the calibration standards of both test soils, since the contamination in the calibration standards prevented the validation of the method by the ILV laboratory.

Table 2. Initial Validation Method Recoveries for Cumyluron in Soil^{1,2}

Analyte	Fortification Level (mg/kg)	Number of Tests	Recovery Range (%)	Mean Recovery (%)	Standard Deviation (%)	Relative Standard Deviation (%)
Sandy Loam Soil						
Quantitation ion transition						
Cumyluron	0.05 (LOQ)	5	98.4-102	99.7	1.89	1.90
	0.5	5	97.2-102	98.3	1.92	1.95
Confirmation ion transition						
Cumyluron	0.05 (LOQ)	5	100-108	103	2.58	2.49
	0.5	5	96.0-106	99.1	3.81	3.84
Loam Soil						
Quantitation ion transition						
Cumyluron	0.05 (LOQ)	5	94.8-103	98.5	3.18	3.23
	0.5	5	96.1-97.7	96.9	0.636	0.657
Confirmation ion transition						
Cumyluron	0.05 (LOQ)	5	97.6-105	101	2.93	2.91
	0.5	5	93.4-101	97.7	2.88	2.95

Data (uncorrected recovery results; pp. 18-19) were obtained from Tables 1-4, pp. 26-29 of MRID 51301801.

1 In the ECM, sandy loam soil (Smithers Batch No. 09Oct19Soil-D; 74% sand, 15% silt, 11% clay; pH 6.8 in 1:1

soil:water ratio; 3.6% organic matter) collected from Northwood, North Dakota, and loam soil (Smithers Batch No. 09Oct19Soil-A; 30% sand, 49% silt, 21% clay; pH 6.8 in 1:1 soil:water ratio; 1.6% organic matter) collected from Hanford, California, were used in the study (USDA soil texture classification; pp. 11-12 of MRID 51301801). The soils were characterized by Agvise Laboratories, Northwood, North Dakota. The soil texture was verified by the reviewer using USDA-NRCS technical support tools.

- 2 Two ion pair transitions were monitored for cumyluron (quantitation and confirmation, respectively): m/z 303.0→184.9 and m/z 303.0→125.0.

Table 3. Independent Validation Method Recoveries for Cumyluron in Soil^{1,2}

Analyte	Fortification Level (mg/kg)	Number of Tests	Recovery Range (%)	Mean Recovery (%)	Standard Deviation (%)	Relative Standard Deviation (%)
Sandy Loam Soil						
Quantitation ion transition						
Cumyluron	0.05 (LOQ)	5	96.0-107	99.6	4.79	4.81
	0.5	5	83.4-105	95.6	8.42	8.81
Confirmation ion transition						
Cumyluron	0.05 (LOQ)	5	85.2-97.6	90.4	4.75	5.25
	0.5	5	86.2-107	98.2	8.37	8.53
Clay Soil						
Quantitation ion transition						
Cumyluron	0.05 (LOQ)	5	91.4-97.4	94.8	2.50	2.64
	0.5	5	84.0-98.2	92.1	6.43	6.98
Confirmation ion transition						
Cumyluron	0.05 (LOQ)	5	96.8-104	102	3.01	2.95
	0.5	5	87.0-102	94.7	6.99	7.38

Data (uncorrected recovery results; p. 19) were obtained from Tables 1-4, pp. 28-31 of MRID 51301802.

- 1 The sandy loam soil (Speyer 2.3; ID: CS04/20; 59% sand, 33% silt, 7% clay; pH 7.0 in water; pH 6.1 in 0.01M CaCl₂; 0.7% organic carbon) from Rhineland-Pfalz, Germany, and clay soil (South Witham; ID: CS06/20; 34% sand, 23% silt, 43% clay; pH 8.1 in water; pH 7.5 in 0.01M CaCl₂; 2.9% organic carbon) from Lincolnshire, United Kingdom, were sourced by Smithers ERS and used in the study (USDA soil texture classification; p. 12; Appendix 2, pp. 54-55 of MRID 51301802). The soils were characterized by LUFA Speyer and Smithers Viscient (ERS) Ltd., United Kingdom. The soil texture was verified by the reviewer using USDA-NRCS technical support tools.
- 2 Two ion pair transitions were monitored for cumyluron (quantitation and confirmation, respectively): m/z 303.0→185.3 and m/z 303.0→125.2. These ion transitions were similar to those of the ECM.

III. Method Characteristics

The LOQ for cumyluron in soil was 0.05 mg/kg in the ECM and ILV (pp. 9, 19-23 of MRID 51301801; pp. 10, 19-25 of MRID 51301802). In the ECM and ILV, the LOQ was defined as the lowest fortification level validated. Also, in the ECM, the LOQ was defined as the level which the blank values did not exceed 30% of the LOQ. In the ECM, the LOD was calculated as 0.00008-0.0009 mg/kg for sandy loam soil and 0.0004-0.0007 mg/kg for loam soil from the signal-to-noise response of each analyte in matrix at the LOQ level using the following equation:

$$\text{LOD} = (3 \times (N_{\text{ctl}})) / (\text{Resp}_{\text{LS}}) \times \text{Conc}_{\text{LS}} \times \text{DF}_{\text{CNTL}}$$

Where, LOD is the limit of detection of the analysis, N_{ctl} is the mean signal to noise in height of the control samples (or blanks), Resp_{LS} is the mean response in height of the two low calibration standards, Conc_{LS} is the concentration of the low calibration standard, and DF_{CNTL} is the dilution

factor of the control samples (smallest dilution factor used, i.e., 1000).

The LOD for cumyluron in soil was calculated in the ILV as 0.00203-0.00204 mg/kg for sandy loam soil and 0.00014-0.00094 mg/kg for clay soil at 3 x height of control baseline noise x control sample dilution factor x calibration standard concentration ($\mu\text{g/L}$) / height of calibration standard peak.

Since the LOQ was not based on scientifically acceptable procedures defined in 40 CFR Part 136, the reported LOQ is the lowest level of method validation (LLMV) rather than an LOQ.

Table 4. Method Characteristics in Soil

		Cumyluron
Limit of Quantitation (LOQ)*	ECM	0.05 mg/kg
	ILV	
Limit of Detection (LOD)	ECM (calc)	0.00008-0.0009 mg/kg (Q/C, SL) 0.0004-0.0007 mg/kg (Q/C, LS)
	ILV (calc)	0.00203-0.00204 mg/kg (Q/C, SL) 0.00014-0.00094 mg/kg (Q/C, CS)
Linearity (calibration curve r and concentration range)	ECM ^{1,2}	r = 0.9995 (Q, SL & LS) r = 0.9990 (C, SL & LS)
	ILV ²	r = 0.9996 (Q, SL) r = 0.9986 (C, SL) r = 0.9973 (Q, CS) r = 0.9980 (C, CS)
	Range	0.005-0.200 $\mu\text{g/L}$
Repeatable	ECM ³	Yes at LOQ (0.05 mg/kg) and 10 \times LOQ (0.50 mg/kg) (two characterized soil matrices)
	ILV ^{4,5}	
Reproducible		Yes for 0.05 mg/kg (LLMV)* and 0.50 mg/kg in soil matrices
Specific	ECM	Yes, matrix interferences were <1% of the LOQ (based on peak area).
	ILV	Yes, matrix interferences were <5% of the LOQ (based on peak area).

Data were obtained from pp. 9, 19-23 (LOQ/LOD); Tables 1-4, pp. 26-29 (recovery results); p. 20; Figures 10-“7”, pp. 41-42 (calibration curves); Figures 1-9, pp. 32-40 (chromatograms) of MRID 51301801; pp. 10, 19-25 (LOQ/LOD); Tables 1-4, pp. 28-31 (recovery results); pp. 15, 23-24; Figures 1-2, pp. 35-36; Figures 15-16, pp. 43-44 (calibration curves); Figures 3-28, pp. 37-50 (chromatograms) of MRID 51301802; DER Excel Attachment. Q = quantitation ion transition; C = confirmation ion transition; SL = Sandy Loam Soil; LS = Loam Soil; CS = Clay Soil.

* Since the LOQ was not based on scientifically acceptable procedures defined in 40 CFR Part 136, the reported LOQ is the lowest level of method validation (LLMV) rather than an LOQ. The lowest concentration tested with sufficiently accurate and precise recoveries is the LLMV.

1 ECM correlation coefficients (r) were reviewer-calculated based on r^2 values reported in the study report (p. 20 of MRID 51301801; DER Excel Attachment).

2 In the ECM and ILV, matrix effects were insignificant ($\leq 20\%$) for all soils; therefore, solvent-based calibration standards were used for all soils (pp. 21-22; Tables 5-6, pp. 30-31 of MRID 51301801; pp. 22-25; Tables 5-6, pp. 32-33 of MRID 51301802).

3 In the ECM, sandy loam soil (Smithers Batch No. 09Oct19Soil-D; 74% sand, 15% silt, 11% clay; pH 6.8 in 1:1 soil:water ratio; 3.6% organic matter) collected from Northwood, North Dakota, and loam soil (Smithers Batch No. 09Oct19Soil-A; 30% sand, 49% silt, 21% clay; pH 6.8 in 1:1 soil:water ratio; 1.6% organic matter) collected from Hanford, California, were used in the study (USDA soil texture classification; pp. 11-12 of MRID 51301801). The soils were characterized by Agvise Laboratories, Northwood, North Dakota.

4 In the ILV, sandy loam soil (Speyer 2.3; ID: CS04/20; 59% sand, 33% silt, 7% clay; pH 7.0 in water; pH 6.1 in 0.01M CaCl_2 ; 0.7% organic carbon) from Rhineland-Pfalz, Germany, and clay soil (South Witham; ID: CS06/20; 34% sand, 23% silt, 43% clay; pH 8.1 in water; pH 7.5 in 0.01M CaCl_2 ; 2.9% organic carbon) from Lincolnshire, United

Kingdom, were sourced by Smithers ERS and used in the study (USDA soil texture classification; p. 12; Appendix 2, pp. 54-55 of MRID 51301802). The soils were characterized by LUFA Speyer and Smithers Viscient (ERS) Ltd., United Kingdom.

- 5 The ILV validated the method for cumyluron in the first trial with insignificant modifications to the analytical parameters (pp. 10, 22-25; Appendix 4, p. 67 of MRID 51301802). The analysis from the first injection of the samples failed due to high peak areas for calibration standards. The samples were re-injected with freshly prepared calibration standards. The ILV modifications did not warrant an updated ECM; however, the ILV recommended the use of disposable glassware due to the contamination seen in the calibration standards of both test soils. Therefore, the ECM method should be updated with the ILV study recommendations of the use of disposable glassware due to the contamination seen in the calibration standards of both test soils, since the contamination in the calibration standards prevented the validation of the method by the ILV laboratory.

IV. Method Deficiencies and Reviewer's Comments

1. Since the reported method LOQ was not based on scientifically acceptable procedures defined in 40 CFR Part 136, the reported LOQ is the lowest level of method validation (LLMV) rather than an LOQ (pp. 9, 19-23 of MRID 51301801; pp. 10, 19-25 of MRID 51301802). The lowest concentration tested with sufficiently accurate and precise recoveries is the LLMV. Based on the performance data submitted by the ILV and ECM, the LLMV was equivalent to the ECM reported method LOQ for cumyluron in the tested soil matrices (0.05 mg/kg).
2. The ILV matrices appeared similar in overall complexity to the ECM matrices. In the ILV, sandy loam soil (7% clay; 0.7% organic carbon) and clay soil (43% clay; 2.9% organic carbon) were used in the study (p. 12; Appendix 2, pp. 54-55 of MRID 51301802). In the ECM, sandy loam soil (11% clay; 3.6% organic matter) and loam soil (21% clay; 1.6% organic matter) were used in the study (pp. 11-12 of MRID 51301801). OCSPP 850.6100 guidance suggests for a given sample matrix, the registrant should select the most difficult analytical sample condition from the study (*e.g.*, high organic content versus low organic content in a soil matrix) to analyze from the study to demonstrate how well the method performs.
3. The ECM method should be updated with the ILV study recommendations of the use of disposable glassware due to contamination seen in the calibration standards of both test soils (pp. 22 of MRID 51301802). The contamination in the calibration standards prevented the validation of the method by the ILV laboratory.
4. The communications between the ILV study authors (Angela Cashmore and Ofure Idialu, Smithers ERS Limited) and ILV Study Monitor (James Wagner, Wagner Regulatory Associates) were not summarized (p. 1; Appendix 5, p. 68 of MRID 51301802). Reported communications included: protocol issue and the ILV study results after first and second injection of first validation samples.
5. The reviewer noted that the ECM and ILV laboratories were part of the same company, Smithers and Smithers ERS Limited, respectively (pp. 1, 5-6 of MRID 51301801; pp. 1, 6 of MRID 51301802). The laboratory location, personnel and equipment differed between the two laboratories. The only exchange of information was the ECM Method/Protocol provided to the ILV staff via the Sponsor Monitor (Appendix 3, pp. 56-65; Appendix 5, p. 68 of MRID 51301802).

6. The reviewer noted the following typographical error in the titling of the linear regression data for the confirmation ion transition which was a second “Figures 7”, instead of “Figure 11” (Figures 10-“7”, pp. 41-42 of MRID 51301801). It is correctly reported as Figure 11 in p. 8 under Table of Contents.
7. The determinations of the LOQ in the ECM and ILV were not based on scientifically acceptable procedures as defined in 40 CFR Part 136 (pp. 9, 19-23 of MRID 51301801; pp. 10, 19-25 of MRID 51301802). In the ECM and ILV, the LOQ was defined as the lowest fortification level validated. Also, in the ECM, the LOQ was defined as the level which the blank values did not exceed 30% of the LOQ. No further justification of the LOQ was reported in the ECM or ILV. The LOD was calculated in the ECM using the following equation: $LOD = (3 \times N_{ctl}) / (Res_{PLS}) \times Con_{CLS} \times DF_{CNTL}$, where LOD is the limit of detection of the analysis, N_{ctl} is the mean noise in height of the control samples (or blanks), Res_{PLS} is the mean response in height of the two low calibration standards, Con_{CLS} is the concentration of the low calibration standard, and DF_{CNTL} is the dilution factor of the control samples (smallest dilution factor used, i.e., 1000). The LOD was calculated in the ILV using the following equation: $3 \times \text{height of control baseline noise} \times \text{control sample dilution factor} \times \text{calibration standard concentration} (\mu\text{g/L}) / \text{height of calibration standard peak}$. Detection limits should not be based on the arbitrarily selected lowest concentration in the spiked samples.

Since the LOQ was not based on scientifically acceptable procedures defined in 40 CFR Part 136, the reported LOQ is the lowest level of method validation (LLMV) rather than an LOQ.

The method detection limit (MDL) was calculated in the ECM and ILV as dependent upon the lowest concentration calibration standard and the dilution factor of the controls (p. 19 of MRID 51301801; p. 22 of MRID 51301802). In the ECM and ILV, the MDL was equivalent to $0.00500 \mu\text{g/L} \times 1000 \times (1 \text{ L}/1000 \text{ mL}) = 0.0050 \text{ mg/kg}$. This MDL calculation was not in accordance with the EPA Definition and Procedure for the Determination of the Method Detection Limit, Revision 2 (2016).

8. The total time required to complete one set of thirteen samples was reported in the ILV as one working day (8 hours; p. 13 of MRID 51301802).

V. References

- U.S. Environmental Protection Agency. 2012. Ecological Effects Test Guidelines, OCSPP 850.6100, Environmental Chemistry Methods and Associated Independent Laboratory Validation. Office of Chemical Safety and Pollution Prevention, Washington, DC. EPA 712-C-001.
- USEPA. 2012. *Environmental Chemistry Method Guidance*. Memorandum From D. Brady to Environmental Fate and Effects Division. December 20, 2012. Environmental Fate and Effects Division. Office of Pesticide Programs. Office of Chemical Safety and Pollution Prevention. U.S. Environmental Protection Agency. Available at: <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/environmental-chemistry-methods-guidance-pesticides>.
- 40 CFR Part 136. Appendix B. Definition and Procedure for the Determination of the Method Detection Limit-Revision 1.11, pp. 344-347, and Revision 2; 2015 and 2016.

Attachment 1: Chemical Names and Structures**Cumyluron****IUPAC Name:** 1-(2-Chlorobenzyl)-3-(1-methyl-1-phenylethyl)urea**CAS Name:** Not reported**CAS Number:** 99485-76-4**SMILES String:** Not found