Image 2

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

6/20/2000

MEMORANDUM

SUBJECT: **MSMA/DSMA.** List B Reregistration Case 2395. PC Codes 013803/013802. **Product Chemistry Chapter for the Reregistration Eligibility Decision [RED] Document.** DB Barcode D265816.

FROM: K. Dockter, Chemist
Reregistration Branch 2
Health Effects Division [7509C]
6-20-2000

THRU: Alan Nielsen, Branch Senior Scientist
Reregistration Branch 2
Health Effects Division [7509C]
6/20/2000

TO: Diana Locke, Ph.D., Risk Assessor
Reregistration Branch 2
Health Effects Division [7509C]

Attached is the RED document product chemistry chapter for MSMA [monosodium methanearsonate] / DSMA [disodium methanearsonate]. This chapter was assembled by Dynamac Corporation under supervision of HED. The data assessment has undergone secondary and tertiary review in HED and has been revised to reflect Agency policies. Many product chemistry data requirements remain outstanding.

Attachment: RED Document: Product Chemistry Considerations

cc: List B File, SF, RF, Dockter, S. Kinard, R. Sandvig, A. Lowit, R. Allen, K. Monk; SRRD.
RD/I RRB2 MSMA/DSMA RED Team.
7509C:RRB2:Rm712N:57886:KD/kd.
MSMA/DSMA.RED [954] = D265816.mem

METHANEARSONIC ACID (MAA) AND SALTS

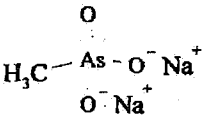
REREGISTRATION ELIGIBILITY DECISION:

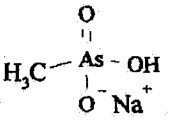
PRODUCT CHEMISTRY CONSIDERATIONS

Case No. 2395; PC Codes 013802 and 013806

DESCRIPTION OF CHEMICAL

Methanearsonic acid and its salts are selective postemergence organic arsenical herbicides registered for use on cotton, nonbearing fruits (including almond, apple, cherry, grapefruit, lemon, lime, orange, peach, pear, pecan, plum/prune, tangerine, walnut), bearing citrus, and non-crop areas (including lawns and ornamental turf). Of the five methanearsonic salts, only the disodium salt (DSMA, PC Code 013802) and the monosodium salt (MSMA, PC Code 013803) are registered for food/feed uses and are being supported for reregistration; there are no active products registered for the MAA octylammonium and dodecylammonium salts (PC Codes 013804 and 013805), and there are no registered food/feed uses for the MAA calcium salt (CAMA, PC Code 013806). Reregistration of DSMA and MSMA is being supported by the MAA Research Task Force Three, which consists of APC Holding Company, GB Biosciences (formerly ISK Biotech) Corporation, and Luxembourg-Pamol, Inc.





DSMA		MSMA	
Empirical Formula:	$CH_3AsNa_2O_3$	Empirical Formula:	CH_4AsNaO_3
Molecular Weight:	183.92	Molecular Weight:	161.94
CAS Registry No.:	144-21-8	CAS Registry No.:	2163-80-6
PC Code:	013802	PC Code:	013803

IDENTIFICATION OF ACTIVE INGREDIENT

DSMA is a white crystalline solid with a melting point >300 C, density of 1.04 g/mL, vapor pressure of 1 x 10^{-7} mm Hg, and octanol/water partition coefficient (log P_{ow}) of <1 at 25 C. DSMA is soluble in water at 34.1 g/100 mL, and is soluble in methanol (26 g/100 mL) and hexane (0.0025 g/100 mL).

MSMA is a white crystalline solid with a melting point of 116-121 C, density of 1.65 g/mL, vapor pressure of 1 x 10^{-5} Pa, and octanol/water partition coefficient (log P_{ow}) of <1 at 25 C. MSMA is soluble in water at 104 g/100 mL, is soluble in methanol (16 g/100 mL), and has limited solubility in hexane (0.005 g/100 mL) at 25 C.

MANUFACTURING-USE PRODUCTS

A search of the Reference Files System (REFS) conducted 1/17/00 identified one registered manufacturing-use product (MP) under PC Code 013802 (DSMA), the GB Biosciences Corporation 81% formulation intermediate (FI), EPA Reg. No. 50534-39, and one registered MP under PC Code 013803 (MSMA), the GB Biosciences Corporation 59% technical, EPA Reg. No. 50534-47. The 81% DSMA FI is repackaged from an EPA-registered product. In addition, Luxembourg-Pamol and APC Holdings have registered DSMA and MSMA end-use products that are produced by integrated systems. Because the methanearsonic acid salts are List B chemicals, only the Luxembourg-Pamol, APC Holdings, and GB Biosciences DSMA and MSMA technical grade active ingredients [TGAIs] and the GB Biosciences 59% MSMA technical [T] are subject to a reregistration eligibility decision.

REGULATORY BACKGROUND

DSMA and MSMA were the subject of the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger. Additional product chemistry data were required for DSMA and MSMA products produced by Luxembourg-Pamol, APC Holdings, and GB Biosciences.

The current status of the product chemistry data requirements for the DSMA and MSMA TGAIs and MPs is presented in the attached data summary tables. Refer to these tables for a listing of the outstanding product chemistry data requirements.

CONCLUSIONS

Pertinent product chemistry data requirements remain unfulfilled for the DSMA and MSMA TGAIs. Additional data are required for: (i) the Luxembourg-Pamol DSMA TGAI concerning discussion of the formation of impurities, stability, and UV/visible absorption (OPPTS 830.1670, 6313, and 7050); (ii) the APC Holdings DSMA TGAI concerning stability and UV/visible absorption (OPPTS 830.6313, and 7050); (iii) the Luxembourg-Pamol MSMA TGAI concerning description of the materials used to produce the product and UV/visible absorption (OPPTS 830.1600 and 7050); and (iv) the APC Holdings and GB Biosciences MSMA TGAIs concerning UV/visible absorption (OPPTS 830.7050). Since the GB Biosciences 81% DSMA FI is repackaged from an EPA-registered product, all product chemistry data requirements will be satisfied by data for the source product. We note that additional product-specific product chemistry data are required for the GB Biosciences 59% MSMA T concerning color, physical state, odor, pH, and density (OPPTS 830.6302, 6303, 6304, 7000, and 7300). Provided that the registrants submit the data required in the attached data summary tables for the DSMA and MSMA TGAIs, and either certify that the suppliers of beginning materials and the manufacturing processes have not changed since the last comprehensive product chemistry reviews or submit complete updated product chemistry data packages, HED has no objections to the reregistration of DSMA and MSMA with respect to product chemistry data requirements.

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Case No. 2395
Chemical No. 013802

Case Name: Methanearsonic acid salts
Registrant: Luxembourg-Pamol, Inc.
Product(s): DSMA TGAI

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	N/A [3]	
830.1600	Description of materials used to produce the product	Y	42388301 [4], 44150401 [5]
830.1620	Description of production process	Y	42388301 [4], 44150401 [5]
830.1670	Discussion of formation of impurities	N [6]	42388301 [4]
830.1700	Preliminary analysis	Y	42388302 [4], 44150401 [5]
830.1750	Certified limits	N/A [3]	
830.1800	Enforcement analytical method	N/A [3]	
830.6302	Color	Y	42451102 [7]
830.6303	Physical state	Y	42451102 [7]
830.6304	Odor	Y	42451102 [7]
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	N [8]	41976203 [9]
830.7000	pH	Y	41982002 [10]
830.7050	UV/Visible absorption	N [11]	
830.7200	Melting point/melting range	Y	41982001 [12]
830.7220	Boiling point/boiling range	N/A [13]	
830.7300	Density/relative density/bulk density	Y	42451102 [14]
830.7370	Dissociation constants in water	Y	41976201 [12]
830.7550	Partition coefficient (n-octanol/water), shake flask method	Y	41976202 [12]
830.7840	Water solubility: column elution method; shake flask method	Y	41602502 [7]
830.7950	Vapor pressure	Y	42120701 [4]

[1] Y = Yes; N = No; N/A = Not Applicable.

[2] The bolded reference was determined to be acceptable for Phase 5 review under the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger, and was reviewed as noted; all other references were reviewed as noted.

[3] Data are not required for the TGAI.

[4] CBRS Nos. 9143, 10156, and 10216, D172598, D180025, and D180715, 2/8/93, F. Toghrol.

[5] D265640, currently under review.

[6] A discussion is required concerning the possible formation of impurities resulting from the composition of each

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starting material and its impurities, and from side reactions which may occur.

[7] D235020, 5/17/99, K. Dockter.

[8] Stability data must be generated using solid DSMA TGAI; analytical data demonstrating the stability of the TGAI to metals and metal ions are required.

[9] CBRS No. 8526, D167786, 7/6/92, F. Toghrol.

[10] CBRS No. 8473, D168029, 7/6/92, F. Toghrol.

[11] The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

[12] CBRS No. 8810, D170296, 1/13/92, S. Funk.

[13] Data are not required because the TGAI is a solid at room temperature.

[14] CBRS No. 10542, D182275, 10/27/92, A. Aikens.

Case No. 2395
Chemical No. 013802

Case Name: Methanearsonic acid salts
Registrant: APC Holdings, Inc.
Product(s): DSMA TGAI

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	N/A [3]	
830.1600	Description of materials used to produce the product	Y	42361001 [4]
830.1620	Description of production process	Y	42361001 [4]
830.1670	Discussion of formation of impurities	Y	42053701 [5]
830.1700	Preliminary analysis	Y	42053702 [6]
830.1750	Certified limits	N/A [3]	
830.1800	Enforcement analytical method	N/A [3]	
830.6302	Color	Y	42451102 [7]
830.6303	Physical state	Y	42451102 [7]
830.6304	Odor	Y	42451102 [7]
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	N [8]	41976203 [9]
830.7000	pH	Y	41982002 [10]
830.7050	UV/Visible absorption	N [11]	
830.7200	Melting point/melting range	Y	41982001 [12]
830.7220	Boiling point/boiling range	N/A [13]	
830.7300	Density/relative density/bulk density	Y	42451102 [14]
830.7370	Dissociation constants in water	Y	41976201 [12]
830.7550	Partition coefficient (n-octanol/water), shake flask method	Y	41976202 [12]
830.7840	Water solubility: column elution method; shake flask method	Y	41602502 [7]
830.7950	Vapor pressure	Y	42120701 [4]

[1] Y = Yes; N = No; N/A = Not Applicable.

[2] The bolded reference was determined to be acceptable for Phase 5 review under the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger, and was reviewed as noted; all other references were reviewed as noted.

[3] Data are not required for the TGAI.

[4] CBRS Nos. 9143, 10156, and 10216, D172598, D180025, and D180715, 2/8/93, F. Toghrol.

[5] Addendum to CBRS No. 8916, D170574, 3/11/92, S. Funk.

[6] CBRS No. 8916, D170574, 1/13/92, S. Funk.

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[7] D235020, 5/17/99, K. Dockter.

[8] Stability data must be generated using solid DSMA TGAI; analytical data demonstrating the stability of the TGAI to metals and metal ions are required.

[9] CBRS No. 8526, D167786, 7/6/92, F. Toghrol.

[10] CBRS No. 8473, D168029, 7/6/92, F. Toghrol.

[11] The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

[12] CBRS No. 8810, D170296, 1/13/92, S. Funk.

[13] Data are not required because the TGAI is a solid at room temperature.

[14] CBRS No. 10542, D182275, 10/27/92, A. Aikens.

Case No. 2395
Chemical No. 013802

Case Name: Methanearsonic acid salts
Registrant: GB Biosciences Corporation
Product(s): 81% DSMA FI (EPA Reg. No. 50534-39)

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	Y	42051902, CSF 9/23/91
830.1600	Description of materials used to produce the product	N/A	
830.1620	Description of production process	N/A	
830.1670	Discussion of formation of impurities	N/A	
830.1700	Preliminary analysis	N/A	
830.1750	Certified limits	Y [3]	42051902, CSF 9/23/91
830.1800	Enforcement analytical method	N/A	
830.6302	Color	N/A	
830.6303	Physical state	N/A	
830.6304	Odor	N/A	
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	N/A	
830.7000	pH	N/A	
830.7050	UV/Visible absorption	N/A	
830.7200	Melting point/melting range	N/A	
830.7220	Boiling point/boiling range	N/A	
830.7300	Density/relative density/bulk density	N/A	
830.7370	Dissociation constants in water	N/A	
830.7550	Partition coefficient (n-octanol/water), shake flask method	N/A	
830.7840	Water solubility; column elution method; shake flask method	N/A	
830.7950	Vapor pressure	N/A	

[1] Y = Yes; N = No; N/A = Not Applicable. The GB Biosciences 81% DSMA FI is repackaged from an EPA-registered product and all product chemistry data requirements will be satisfied by data for the source product.

[2] The MRID and CSF references were reviewed by the Registration Division (RD), D170330, 12/26/91, M. Getz.

[3] The CSF has been determined acceptable by RD; however, we note that the nominal concentration and certified limits listed on the CSF should be based on the actual amount of the active ingredient in the product.

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Case No. 2395
Chemical No. 013803

Case Name: Methanearsonic acid salts
Registrant: Luxembourg-Pamol, Inc.
Product(s): MSMA TGAI

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	N/A [3]	
830.1600	Description of materials used to produce the product	N [4]	**41602701** [5], **42387801** [5]
830.1620	Description of production process	Y	**41602701** [5], **42387801** [5]
830.1670	Discussion of formation of impurities	Y	**41602701** [5], **42387801** [5]
830.1700	Preliminary analysis	Y	**42387802** [6]
830.1750	Certified limits	N/A [3]	
830.1800	Enforcement analytical method	N/A [3]	
830.6302	Color	Y	**41610001** [5], **42451101** [7]
830.6303	Physical state	Y	**41610001** [5], **42451101** [7]
830.6304	Odor	Y	**41610001** [5], **42451101** [7]
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	Y	**41610001** [5], **42378601** [8]
830.7000	pH	Y	**41610001** [5], **42378601** [8]
830.7050	UV/Visible absorption	N [9]	
830.7200	Melting point/melting range	Y	**41789501** [10]
830.7220	Boiling point/boiling range	N/A [11]	
830.7300	Density/relative density/bulk density	Y	**42451101** [7]
830.7370	Dissociation constants in water	Y	**41610001** [5]
830.7550	Partition coefficient (n-octanol/water), shake flask method	N/A [12]	
830.7840	Water solubility: column elution method; shake flask method	Y	**41610001** [5]
830.7950	Vapor pressure	Y	**41610001** [5], **41651901** [13]

[1] Y = Yes; N = No; N/A = Not Applicable.

[2] **Bolded** references were determined to be acceptable for Phase 5 review under the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger, and were reviewed as noted; all other references were reviewed as noted.

[3] Data are not required for the TGAI.

[4] Information is required concerning the sources and specifications of the starting materials.

[5] D235020, 5/17/99, K. Dockter.

[6] CBRS No. 10527, D182420, 2/9/93, F. Toghrol.

[7] CBRS No. 10535, D182274, 10/26/92, D. McNeilly.

[8] CBRS No. 10254, D180533, 2/22/93, A. Aikens.

[9] The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

[10] CBRS No. 8155, D165463, 11/20/91, F. Toghrol.

[11] Data are not required because the TGAI is a solid at room temperature.

[12] Data are not required because MSMA is polar.

[13] CBRS No. 8811, D170285, 1/13/92, S. Funk.

Case No. 2395
Chemical No. 013803

Case Name: Methanearsonic acid salts
Registrant: APC Holdings, Inc.
Product(s): MSMA TGAI

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	N/A [3]	
830.1600	Description of materials used to produce the product	Y	**41702001** [4]
830.1620	Description of production process	Y	**41702001** [4]
830.1670	Discussion of formation of impurities	Y	42474101 [4]
830.1700	Preliminary analysis	Y	**41702002** [4], 42474101 [4]
830.1750	Certified limits	N/A [3]	
830.1800	Enforcement analytical method	N/A [3]	
830.6302	Color	Y	**41610001** [5]
830.6303	Physical state	Y	**41610001** [5]
830.6304	Odor	Y	**41610001** [5]
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	Y	**41610001** [5], 42378601 [6]
830.7000	pH	Y	**41610001** [5], 42378601 [6]
830.7050	UV/Visible absorption	N [7]	
830.7200	Melting point/melting range	Y	41789501 [8]
830.7220	Boiling point/boiling range	N/A [9]	
830.7300	Density/relative density/bulk density	Y	42451101 [10]
830.7370	Dissociation constants in water	Y	**41610001** [5]
830.7550	Partition coefficient (n-octanol/water), shake flask method	N/A [11]	
830.7840	Water solubility: column elution method; shake flask method	Y	**41610001** [5]
830.7950	Vapor pressure	Y	**41610001** [5], 41651901 [12]

[1] Y = Yes; N = No; N/A = Not Applicable.

[2] **Bolded** references were determined to be acceptable for Phase 5 review under the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger, and were reviewed as noted; all other references were reviewed as noted.

[3] Data are not required for the TGAI.

[4] CBRS No. 10622, D182871, 2/25/93, F. Toghrol.

[5] D235020, 5/17/99, K. Dockter.

[6] CBRS No. 10254, D180533, 2/22/93, A. Aikens.

[7] The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

[8] CBRS No. 8155, D165463, 11/20/91, F. Toghrol.

[9] Data are not required because the TGAI is a solid at room temperature.

[10] CBRS No. 10535, D182274, 10/26/92, D. McNeilly.

[11] Data are not required because MSMA is polar.

[12] CBRS No. 8811, D170285, 1/13/92, S. Funk.

Case No. 2395
Chemical No. 013803

Case Name: Methanearsonic acid salts
Registrant: GB Biosciences Corporation
Product(s): 59% MSMA T (EPA Reg. No. 50534-47)

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [1]	MRID Number [2]
830.1550	Product identity and composition	Y	42153501
830.1600	Description of materials used to produce the product	Y	42081201 [3]
830.1620	Description of production process	Y	42081201 [3]
830.1670	Discussion of formation of impurities	Y	41608101
830.1700	Preliminary analysis	Y	41608104
830.1750	Certified limits	N	NG
830.1800	Enforcement analytical method	N	NG
830.6302	Color	N [4]	**41610001** [5]
830.6303	Physical state	N [4]	**41610001** [5]
830.6304	Odor	N [4]	**41610001** [5]
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	Y	**41610001** [5], 42378601 [6]
830.7000	pH	N [4]	**41610001** [5], 42378601 [6]
830.7050	UV/Visible absorption	N [7]	
830.7200	Melting point/melting range	Y	41789501 [8]
830.7220	Boiling point/boiling range	Y	41608107
830.7300	Density/relative density/bulk density	N [4]	42451101 [9]
830.7370	Dissociation constants in water	Y	**41610001** [5]
830.7550	Partition coefficient (n-octanol/water), shake flask method	N/A [10]	
830.7840	Water solubility: column elution method; shake flask method	Y	**41610001** [5]
830.7950	Vapor pressure	Y	**41610001** [5], 41651901 [11]

[1] Y = Yes; N = No; N/A = Not Applicable; NG = Not Given.

[2] **Bolded** references were determined to be acceptable for Phase 5 review under the Methanearsonic Acid and Salts Phase 4 Reviews dated 3/28/91 by C. Olinger, and were reviewed as noted; all other references were reviewed as noted. [Note to secondary reviewer: underlined references were cited as reviewed in the data summary table of CBRS No. 10254, D180533, 2/22/93, A. Aikens. Although CBRS No. 10254 was originally reviewed by Dynamac, the data summary table was updated by A. Aikens, and the memoranda reviewing the underlined references were unavailable to Dynamac.]

[3] CBRS No. 8931, D171424, 1/13/92, S. Funk.

[4] Data requirements for the TGAI are satisfied; however, data concerning the 59% T manufacturing-use product are required.

[5] D235020, 5/17/99, K. Dockter.

[6] CBRS No. 10254, D180533, 2/22/93, A. Aikens.

[7] The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

[8] CBRS No. 8155, D165463, 11/20/91, F. Toghrol.

[9] CBRS No. 10535, D182274, 10/26/92, D. McNeilly.

[10] Data are not required because MSMA is polar.

[11] CBRS No. 8811, D170285, 1/13/92, S. Funk.

AGENCY MEMORANDA CITED IN THIS DOCUMENT

CBRS No(s):	8155
DP Barcode(s):	D165463
Subject:	Monosodium methanearsonate (MSMA): (ID# 013803-042519); Luxembourg-Pamol, Inc.: Response to MSMA (Case No. 2395, Chemical No. 13803) Phase 4 Reregistration Product Chemistry Data Requirements (Regarding Melting Point Guideline #63-5).
From:	F. Toghrol
To:	B. Briscoe
Dated:	11/20/91
MRID(s):	41789501

CBRS No(s):	RD Memorandum
DP Barcode(s):	D170330
Subject:	Product Chemistry Review of ISK Biotech Disodium Methanearsonate (EPA Reg. No. 50534-39); Action Code 345.
From:	M. Getz
To:	C. Giles-Parker
Dated:	12/26/91
MRID(s):	42051902

CBRS No(s):	8931
DP Barcode(s):	D171424
Subject:	Reregistration of Monosodium Methanearsonate. ISK Biotech Corp. Product Chemistry.
From:	S. Funk
To:	B. Crompton
Dated:	1/13/92
MRID(s):	42081201

CBRS No(s):	8810
DP Barcode(s):	D170296
Subject:	Reregistration of Disodium Methanearsonate. Luxembourg-Pamol, Inc. Response to Phase 4 Review.
From:	S. Funk
To:	B. Crompton
Dated:	1/13/92
MRID(s):	41982001, 41976201, and 41976202

CBRS No(s): 8811
DP Barcode(s): D170285
Subject: Reregistration of Monosodium Methanearsonate. Luxembourg-Pamol, Inc. Response to Phase 4 Review of Product Chemistry.
From: S. Funk
To: B. Crompton
Dated: 1/13/92
MRID(s): 41651901

CBRS No(s): 8916
DP Barcode(s): D170574
Subject: Reregistration of Disodium Methanearsonate. APC Holdings (Inter-Ag) Response to Phase 4 Review of Product Chemistry.
From: S. Funk
To: B. Crompton
Dated: 1/13/92
MRID(s): 42053701 and 42053702

CBRS No(s): 8916 (Addendum)
DP Barcode(s): D170574 (Addendum)
Subject: Reregistration of Disodium Methanearsonate (DSMA). APC Holdings (Inter-Ag) Response to Phase 4 Review of Product Chemistry. Addendum to Memorandum of 1/13/92.
From: S. Funk
To: B. Crompton
Dated: 3/11/92
MRID(s): 42053701

CBRS No(s): 8473
DP Barcode(s): D168029
Subject: Disodium methanearsonate (DSMA): (ID# 013802-042519); Luxembourg-Pamol, Inc.: Response to DSMA (Case No. 2395, Chemical No. 013802) Reregistration Product Chemistry Data Requirements (Regarding Melting Point & pH Guideline # 63-5 & 63-12).
From: F. Toghrol
To: B. Briscoe
Dated: 7/6/92
MRID(s): 41982002

CBRS No(s):	8526
DP Barcode(s):	D167786
Subject:	Disodium methanearsonate (DSMA): (ID# 013802-042519); Luxembourg-Pamol, Inc: Response to DSMA (Case No. 2395, Chemical No. 013802) Reregistration Product Chemistry Data Requirements (Regarding Dissociation Constant, Octanol/Water Partition Coefficient, and Stability (Guideline # 63-10, 63-11, & 63-13)).
From:	F. Toghrol
To:	B. Briscoe
Dated:	7/6/92
MRID(s):	41976203

CBRS No(s):	10535
DP Barcode(s):	D182274
Subject:	Reregistration of Monosodium Methanearsonate (MSMA). Luxembourg-Pamol, Inc. Product Chemistry {Guideline 63}. (Case No. 2395, Chemical No. 13803).
From:	D. McNeilly
To:	B. Crompton
Dated:	10/26/92
MRID(s):	42451101

CBRS No(s):	10542
DP Barcode(s):	D182275
Subject:	DSMA (Disodium Methanearsonate) Reregistration. Product Chemistry Guideline 63-7: Bulk Density or Specific Gravity. Response to Phase IV Review and 63 Series Status Report.
From:	A. Aikens
To:	B. Briscoe/B. Crompton
Dated:	10/27/92
MRID(s):	42451102

CBRS No(s): 9143, 10156, and 10216
DP Barcode(s): D172598, D180025, and D180715
Subject: DSMA Reregistration: a List B Chemical (Chemical No.: 013802; Case No. 2395). Registrants Response to the DSMA Product Chemistry Data Requirements.
From: F. Toghrol
To: L. Rossi/B. Briscoe
Dated: 2/8/93
MRID(s): 42388301, 42388302, 42361001, and 42120701

CBRS No(s): 10527
DP Barcode(s): D182420
Subject: Monosodium methanearsonate (MSMA): Luxembourg-Pamol, Inc. Response to MSMA (Case No. 2395; Chemical No. 013803) Reregistration Product Chemistry Data Requirements (Regarding Guideline # 61-1, 61-2(a), & 62-1 to 62-3).
From: F. Toghrol
To: B. Briscoe
Dated: 2/9/93
MRID(s): 42387801 and 42387802

CBRS No(s): 10254
DP Barcode(s): D180533
Subject: MSMA (Methanearsonic Acid and Salts): MAA Research Task Force Three. Response to the Phase IV Review dated (3/28/91): Product Chemistry Guidelines 63-12 and 63-13. (Chemical No. 013803)
From: A. Aikens
To: B. Briscoe/B. Crompton
Dated: 2/22/93
MRID(s): 42378601

CBRS No(s): 10622
DP Barcode(s): D182871
Subject: Monosodium methanearsonate (MSMA) Reregistration: a List B Chemical. APC Holdings, Inc. Response to MSMA (Case No. 2395, Chemical No. 013803) Reregistration Product Chemistry Data Requirements (Regarding Guideline # 61-2 & 62-1).
From: F. Toghrol
To: B. Briscoe
Dated: 2/25/93

MRID(s): 41702001, 41702002, and 42474101

DP Barcode(s): D235020
Subject: MSMA and DSMA; EPA Reg. Nos. 42519-1 and -7. PC Codes 013801 and 013802. List B Reregistration Case 2395. Supplemental Product Chemistry.
From: K. Dockter
To: L. Werrell
Dated: 5/17/99
MRID(s): 41602502, 41602701, 41610001, 42387801, and 42451102

DP Barcode(s): D265640
Subject: Product Chemistry Review of Luxembourg-Pamol DSMA 81% EP; Revised Manufacturing Process.
From:
To:
Dated: Currently under review
MRID(s): 44150401

PRODUCT CHEMISTRY CITATIONS

Bibliographic citations include only MRIDs containing data which fulfill data requirements.

References (cited):

41602502 Pesselman, R. (1990) Solvent Solubility Determination of Methanearsonate (DSMA): Final Report: Lab Project Number: 6001-577. Unpublished study prepared by Hazleton Laboratories America, Inc. 41 p.

41602701 MAA Research Task Force. (1990) MSMA 6.6: Product Identity and Composition. Unpublished study. 9 p.

41608101 Peplowski, M. (1990) Product Identity and Disclosure of Ingredients: Arsonate Liquid/Ansar 6.6 (MSMA). Unpublished study by Fermenta ASC Corp. 7 p.

41608104 Mizner, D. (1990) Ansar 6.6 Preliminary Analyses: Lab Project Number: PC-90-MAP-001. Unpublished study prepared by Fermenta ASC Corp. 9 p.

41608107 Fraley, R. (1990) Determination of Physical and Chemical Characteristics of Arsonate Liquid/Ansar 6.6 (MSMA): Lab Project Number: PC-90-RWF-001-01; PC-90-RWF-002-01;

PC-90-RWF-003-01. Unpublished study prepared by Fermenta ASC Corp., Formulation Lab. 115 p.

41610001 MAA Research Task Force Three (1990) MSMA 6.6: Physical and Chemical Characteristics: Final Reports: Lab Project Number: 1081-89-0355-AS-001; HLA 6001-575. Unpublished study. 234 p.

41651901 Lorence, P. (1989) Monomethylarsonic Acid. Determination of Vapor Pressure. Unpublished study prepared by Fermenta ASC Corp. 50 p.

41702001 Haefele, L. (1990) Product Identity and Composition: MSMA 660. Unpublished study prepared by Drexel Chemical Co. 24 p.

41702002 Haefele, L. (1990) Analysis and Certification of Ingredient Limits - MSMA 660. Unpublished study prepared by Drexel Chemical Co. 18 p.

41789501 Pesselman, R. (1991) Melting Point/Melting Range Determination of Synthetically Prepared Monosodium Methanearsonate (MSMA): LabProject Number: HWI 6001-685. Unpublished study prepared by Hazleton Wisconsin, Inc. 23 p.

41976201 Pesselman, R. (1991) Dissociation Constant Determination of DSMA Lab Project Number: 6366-102. Unpublished study prepared by Hazleton Wisconsin, Inc. 35 p.

41976202 Pesselman, R. (1991) Octanol/Water Partition Coefficient Determination of DSMA: Lab Project Number: 6366-101. Unpublished study prepared by Hazleton Wisconsin, Inc. 39 p.

41976203 Pesselman, R. (1991) Stability Determination of DSMA: Lab Project Number: 6366-105. Unpublished study prepared by Hazleton Wisconsin, Inc. 35 p.

41982001 Pesselman, R. (1991) Melting Point/Melting Range Determination DSMA: Final Report: Lab Project Number: HWI 6366-104. Unpublished study prepared by Hazleton Wisconsin, Inc. 21 p.

41982002 Pesselman, R. (1991) Ph Value Determination of DSMA: Final Report: Lab Project Number: HWI-6366-100. Unpublished study prepared by Hazleton Wisconsin, Inc. 19 p.

42051902 Owens, E. (1991) Product Identity and Disclosure of Ingredients Disodium Methanearsonate Technical Grade (DSMA). Unpublished study prepared by ISK Biotech Corp. 7 p.

42053701 Haefele, L. (1991) Product Identity and Compostion: DSMA Products. Unpublished study prepared by Drexel Chemical Co. 25 p.

42053702 Haefele, L. (1991) Analysis and Certification of Ingredient Limits: DSMA Products. Unpublished study prepared by Drexel Chemical Co. 18 p.

42081201 Lightsey, D. (1991) Description of Starting Materials and Manufacturing Process for Arsonate Liquid. Amendment #1. Unpublished study prepared by ISK Biotech 12p.

42120701 Pesselman, R. (1991) Vapor Pressure Determination of DSMA: Lab Project Number: HWI 6366-103. Unpublished study prepared by Hazleton Wisconsin, Inc. 36 p.

42153501 Owens, E. (1991) Confidential Statement of Formulation: Arsonate Liquid/Ansar 6. 6 (MSMA)/Daconate Super. Unpublished study prepared by ISK Biotech Corp. 6 p.

42361001 Haefele, L. (1992) Supplement to Product Chemistry--DSMA Products. Unpublished study prepared by Drexel Chemical Co. 13 p.

42378601 Pesselman, R. (1992) Final Report: Series 63 Product Chemistry Determinations of Monosodium Methanearsonate, MSMA (pH and Stability): Lab Project Number: 6366-108. Unpublished study prepared by Hazleton Wisconsin, Inc. 34 p.

42387801 Bellet, E. (1992) Target 6.6: Product Identity and Composition. Unpublished study prepared by Chemical Consultants International, Inc. 9 p.

42387802 Bellet, E. (1992) Target 6. 6: Analytical Methods. Unpublished study prepared by Chemical Consultants International, Inc. 11 p.

42388301 Bellet, E. (1992) DSMA 81 P: Product Identity and Composition. Unpublished study prepared by Chemical Consultants International. 9 p.

42388302 Bellet, E. (1992) DSMA 81 P: Analytical Methods. Unpublished study prepared by Chemical Consultants International, Inc. 10 p.

42451101 Bellet, E. (1992) Target 6.6: Physical and Chemical Characteristics. Unpublished study prepared by Consultants Intl., Inc. 6 p.

42451102 Bellet, E. (1992) DSMA 81 P: Physical and Chemical Characteristics. Unpublished study prepared by Chemical Consultants, Inc. 5 p.

42474101 Haefele, L. (1992) Supplement to Product Chemistry: MSMA Unpublished study prepared by Drexel Chemical Co. 11 p.

44150401 Eldan, M., comp. (1996) Revised Manufacturing Process and Discussion of Impurities for DSMA 81P. Unpublished study prepared by Chemical Consultants International, Inc.. 7 p.