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April 30, 2008

Transmitted Via E-Mail and Overnight Delivery

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Division of Solid and Hazardous Waste Materials
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Mr. Michael Infurna
USEPA Project Coordinator
Environmental Planning and Protection Division
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, Region II
290 Broadway – 20th Floor
New York, NY 10007-1866

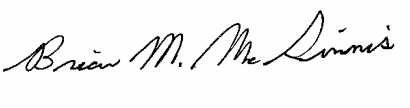
Re: Corrective Measures Study Work Plan – Suspected Air Deposition Study Area
RCRA Section 3008(h) Administrative Order on Consent
Docket No. II-RCRA-90-3008(h)-0209
FMC Corporation, Middleport, NY Facility
EPA I.D. No. NYD002126845

Dear Messrs. Mortefolio and Infurna:

FMC Corporation is submitting the enclosed, "Corrective Measures Study Work Plan – Suspected Air Deposition Study Area" in accordance with the terms and conditions of the above referenced AOC.

If there are any questions or if additional information is needed at this time, please contact me at (215) 299-6047 or at the above address.

Sincerely,



Brian M. McGinnis
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Enclosures

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B. Arnold, Middleport Community Input Group
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Senator George Maziarz, Lockport
Assemblyman Mike Cole, West Seneca
Congressman Tom Reynolds, Williamsville

Corrective Measures Study Work Plan for the Suspected Air Deposition Study Area South of the Erie Canal and West of the County Line

FMC Corporation, Middleport, New York

Prepared for:

FMC Corporation
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Middleport, New York 14105

Prepared by:

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90B John Muir Drive, Suite 104
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April 2008

Project No. 9936

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FMC Corporation
Middleport, New York

1.0 INTRODUCTION

FMC Corporation (FMC) is performing a Corrective Measures Study (CMS) for its Middleport, New York Facility (Facility or Site) (see Figure 1) under the terms and conditions of the Administrative Order on Consent (AOC), Docket No. II RCRA-90-3008(h)-0209, entered into by FMC, the New York State Department of Environmental Conservation (NYSDEC), and the United States Environmental Protection Agency (USEPA) (collectively referred to as the "Agencies"). Pursuant to Section VI.3.d) of the AOC, the CMS for the Facility is being conducted using a phased approach (e.g., operable unit approach) for the study areas associated with the Facility's RCRA Facility Investigation (RFI).

As specified in Section VI.2 of the AOC, the Agencies determined that a CMS is necessary within the Suspected Air Deposition Study Area south of the Erie Barge Canal and west of the Niagara/Orleans County Line, as discussed in the Agencies' letter dated September 24, 2007 and in subsequent related meetings and correspondences. The Agencies also specified (in letter dated March 10, 2008) that "there is currently sufficient data in the above off-site areas [Culvert 105 & flood zone, the portion of Tributary One & flood zone south of Pearson Road, and the off-Site portion of the suspected FMC arsenic air deposition area south of Barge Canal and west of the Niagara / Orleans County Line] to complete RFI characterization and delineation activities with respect to FMC-related soil contamination, and to support the subsequent development of a Corrective Measures Study (CMS) with respect to this soil contamination."

This Work Plan describes the proposed CMS activities to address the presence of potentially FMC Facility-related constituents (predominantly arsenic) in soil within the Suspected Air Deposition Study Area south of the Erie Barge Canal and west of the Niagara/Orleans County Line ("Suspected Air Deposition Area" or "Study Area").

1.1 CMS PURPOSE

The purpose of the CMS for the Suspected Air Deposition Area is to accomplish the following:

1. evaluate the concentrations of potentially FMC-related arsenic and associated exposures within the Study Area in comparison to background (e.g., Gasport) arsenic concentrations and associated exposures to identify areas that may warrant remediation;

2. identify potentially feasible remedial technologies to address impacted soils for the various land uses within the Study Area;

3. develop alternative corrective action scenarios that will identify different areas proposed for corrective action and incorporate appropriate remedial technologies into corrective measure alternatives;

4. evaluate the corrective measure alternatives taking into account community concerns and site-specific information, to the extent practicable; and

5. recommend the corrective measure alternative or alternatives for the areas warranting remediation that would effectively reduce potential incremental risks/exposures associated with FMC-related arsenic in soil within the Study Area while addressing community concerns.

1.2 CMS APPROACH AND SPECIAL CONSIDERATIONS

1.2.1 Community Considerations

The Study Area is described in detail in Section 2.0. The Study Area consists of approximately 285 off-Site properties that are not owned by FMC. The majority of the properties are situated within the Village of Middleport. Approximately half of the land (by area) included in the Study Area is occupied by single family homes (235 residential properties with sampling data) with an average lot size on the order of 15,000 square feet. The neighborhoods generally have mature trees on most lots and/or along the street Right-of-Way (ROW).

The remainder of the Study Area consists of commercial properties, agricultural or undeveloped lands, Village of Middleport owned land (i.e., ROWs), and the Royalton-Hartland Central School District (Roy-Hart) property. The major land uses within the Suspected Air Deposition Area (residential, school/public, commercial, industrial, and agricultural) will be

considered in each facet of the CMS (including risk assessment, corrective measure alternative development, and evaluation of alternatives).

The characteristics of this Study Area are not typically encountered in RCRA-regulated programs, which are generally focused on impacts from Solid Waste Management Units (SWMUs[1]) at regulated industrial facilities. In the case of this CMS, the Study Area properties are owned by the "Community". Therefore, Community participation will be a greater component of the CMS than would be typical of many RCRA-regulated studies.

Community input will be sought at several stages during the process as described in Section 3.0. In addition, the development and evaluation of corrective measure alternatives will consider the environmental setting within the neighborhoods including factors such as preservation of mature trees and maintenance of the neighborhood character to the extent practical.

1.2.2 Chemical(s) and Environmental Media of Concern

The Facility-wide RFI included sampling in the off-Site areas for a wide range of potentially Site related chemicals. Results and discussion of these sampling events have been submitted to the Agencies in a Draft RFI Report for the Middleport Facility dated January 1999. The 1999 Draft RFI Report concluded that arsenic was the predominant potentially Site-related chemical present in off-Site soils. As indicated below, a finding of widespread arsenic occurrence should always be expected given that arsenic is naturally found in soil and has been commonly applied in the environment (e.g., pesticides, wood preservatives).

Lead and certain chlorinated pesticides (e.g., DDT, DDE and DDD) have been detected in some soil samples collected from the Study Area at low concentrations. However, the presence of arsenic in the Study Area soils has dictated the scope of investigation and remediation efforts performed to date in the Study Area. From 2002 through 2005, FMC conducted several sampling programs within the Study Area. The most recent sampling and analysis study conducted in 2004-2005 focused on arsenic only.

[1] A Solid Waste Management Unit or SWMU (as defined in the 1990 Subpart S proposed rule[55FR30798, July 27, 1990) is "Any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released."

In April 2008, FMC submitted a RFI Report-Volume I Background and Related Information (ARCADIS and Geomatrix 2008) (referred to herein as the "RFI Report-Volume I") that describes the various sampling and analysis programs conducted in the off-Site study areas. An RFI Report –Volume II Suspected Air Deposition Study Area South of the Erie Canal and West of the Niagara/Orleans County Line will be issued in August 2008 to present the results of sampling programs conducted in the Study Area. The RFI Report –Volume II will also include an evaluation of the sample data to confirm that arsenic is the only potential FMC-related chemical of potential concern within the Study Area.

Since the presence of arsenic will dictate the scope of remediation efforts in the Study Area, this Work Plan and the CMS activities (e.g., risk assessment, corrective measures alternatives development and evaluation) will be focused on arsenic in soil.

1.2.3 Arsenic Soil Background Considerations

Arsenic is a naturally occurring element present in soil as a result of both geologic background and widespread use of a variety of man-made products (also referred to as "anthropogenic sources" which can be defined as sources derived from human activities, as opposed to those occurring in natural environments without human influences).

Arsenic presence within the Study Area is attributable to natural conditions, non-FMC anthropogenic sources and possibly historic air deposition from past operations at the FMC Facility. FMC and its predecessor companies (e.g., Niagara Sprayer) manufactured and managed common arsenical pesticides (e.g., calcium arsenate and lead arsenate) at the FMC Facility from approximately 1928 to 1974.

Non-FMC anthropogenic sources of arsenic in the Study Area likely have included the direct application of pesticides to soils, trees, and plants (e.g., crops, fruit trees); the use of fertilizers and common lawn-care products; the use of wood preservatives and/or materials treated with arsenic-containing wood preservatives; the industrial and commercial uses of other arsenic containing substances/materials (e.g., tanneries to preserve animal hides, foundries); coal combustion and disposal of associated ash; and the use of other arsenic containing materials/substances (e.g. potting soil, chicken manure, paints, leaded gasoline) [website references include http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/SIRB/Arsenic/ , http://www.atsdr.cdc.gov/csem/arsenic/exposure_pathways.html, http://pubs.usgs.gov/fs/2005/3152/].

Arsenical pesticides were commonly used in Western New York in fruit orchards and for other agricultural purposes. Some of the arsenical pesticide products produced at the Facility may have been used by others in the Middleport area for agricultural purposes (e.g., orchards, crop land) and other non-agricultural purposes (e.g., treatment of trees, weed control along railroad and power lines, other historic uses by local industries/businesses). The widespread, varied, and generally undocumented use of these materials in the Study Area makes it difficult, and in most cases, infeasible to determine the precise source of arsenic in the Study Area soils. However, where sufficient data or use information is available, the CMS will seek to distinguish areas where historic air deposition could be a major contributor to arsenic presence from those areas where it is not likely to have been a major contributor.

As part of FMC's previous off-site investigation and the RFI programs, FMC and the Agencies attempted to estimate the background levels of arsenic (from natural and non-FMC related anthropogenic sources) in soil in the area on several occasions. As discussed in Section 4.1 below and in the RFI Report-Volume I, the most recent arsenic soil background sampling and analysis program was performed in Gasport, New York and is referred to as the "2001-2003 Gasport Area Background Study".

Since the primary purpose of the corrective measures in the Study Area is to address unacceptable human health risks associated with FMC-derived constituents, the CMS will further evaluate local background arsenic soil concentration data obtained as part of the 2001-2003 Gasport Area Background Study (see Section 4.0) and the human health risks associated with exposure to background arsenic presence in soil (see Section 5.0) as a baseline against which risks due to potentially FMC-derived arsenic can be compared.

1.2.4 Considerations of Properties Traversed by Culvert 105

There are approximately 16 properties north of the Facility and south of the Canal that are traversed by the Village-owned storm sewer (referred to as "Culvert 105"). Surface soil samples were collected to a depth of 12 inches as part of the Study Area RFI sampling and analysis activities. In addition, deep subsurface soils on some of these properties were sampled as part of the Culvert 105 RFI activities. The surface and subsurface soil data will be evaluated in the data evaluation and risk assessment tasks of the CMS for the Suspected Air Deposition Study Area. However, the specific remedial effort for each of these properties, if determined to be required, will be not be finalized until after completion of the CMS for the Culvert 105.

1.3 CMS TASKS

The CMS process will consist of the following major tasks:

- CMS Task 1: Community Participation
- CMS Task 2: Study Area and Background Data Evaluation
- CMS Task 3: Risk Assessments
- CMS Task 4: Technology Screening and Pilot Studies
- CMS Task 5: Development of Corrective Measures Alternatives
- CMS Task 6: Evaluation of Corrective Measures Alternatives
- CMS Task 7: Development of Recommended Alternative

2.0 CMS STUDY AREA DESCRIPTION

2.1 STUDY AREA BOUNDARIES & PROPERTIES

The limits of the Suspected Air Deposition Study Area South of the Erie Canal and West of the Niagara/Orleans County Line is shown on Figure 2, and consists of approximately 285 properties around the FMC Facility. Approximately 24 properties within the limits of the Suspected Air Deposition Study Area were not be sampled as discussed below. This leaves approximately 259 properties that were sampled as part of FMC's RFI. The 259 properties include:

- 2 agricultural parcels east/northeast of the Facility;
- 16 commercial/business parcels north, west and south of the Facility;
- 4 industrial parcels that are part of the "North Commercial/Industrial Area" north of the Facility. The easternmost parcel of the North Commercial/Industrial area, known as the "Wooded Parcel" was remediated by soil removal and construction of a soil cover system, as part of the 2007 Early Actions;
- Village owned ROWs between the edge of the street and the property boundaries;
- The Royalton-Hartland Central School District (Roy-Hart) property north of the Facility. The southwestern portion of the Roy-Hart school property was remediated by FMC as part of a 1996 Interim Remedial Measure for the Bleacher Area and the 1999-2000 School Football Field Area Interim Corrective Measures (both described in the RFI Report-Volume I);
- 235 residential parcels north, west and south of the Facility, which includes 14 residential properties remediated in 2003 as an Interim Corrective Measure and 10 residential properties remediated in 2007 as part of the 2007 Early Actions. The RFI Report – Volume I describes these remedial programs.

Approximately 24 properties within the limits of the Suspected Air Deposition Study Area could not be sampled due to the lack of access permission from the property owners or were not sampled because of the presence of pavement or imported fill on most of the property. These 24 un-sampled properties are not included in the 260 properties discussed above and

cannot be evaluated as part of the CMS due to the lack of sample data. In 2008, FMC will review the current ownership of the 24 un-sampled properties and will offer new owners the opportunity for sampling in accordance with the previously approved 2004-2005 sampling program. The 24 un-sampled properties are not included in the CMS evaluations. If any of these are sampled in the future, the results will be evaluated after completion of the CMS.

2.2 STUDY AREA CURRENT ZONING AND HISTORIC USES

Figure 3 identifies the current zoning of the properties within the Study Areas. Figure 4 identifies the historic land usages within and surrounding the Study Areas. The historic land use information was based on review of Sanborn Maps, aerial photographs, and information obtained from property owners. RFI Report – Volume I describes the current and historic land uses in the Study Area and provides information on the FMC Facility. Summaries of the current and historic land usages of the properties within the Study Areas are presented below.

Area east and northeast of the FMC Plant Site – The properties east and northeast of the Plant Site primarily consist of agricultural fields situated outside of the Village of Middleport, within the Town of Royalton. The field that abuts the Facility's eastern property boundary is currently zoned for business uses, but is being used as an agricultural field. The field to the northeast of the Plant Site (north of the mainline railroad tracks) is zoned for agricultural usages. Areas along the public roads are zoned for residential uses. The farm fields are currently used for growing various crops (i.e., hay, alfalfa). Historically, portion of the lands have been used for orchards. Farther east and northeast of the agricultural fields are wooded land, farm fields and residential properties.

Area south of the FMC Plant Site – Properties that abut FMC's southern property boundary include a tractor repair shop (named "Service On Site"), an electrical substation, an automobile salvage yard (named "Lake Motors"), and the FMC's Former Research & Development (R&D) Property (currently occupied by a trucking/transportation company). Farther south, on the south side of Route 31, there are several commercial business and/or light industries (i.e., automobile salvage yard, automobile repair shop, a drive-in theater, and offices), apartment buildings, a church, and a park and a scout house (both of which are owned by the Village of Middleport).

Area west of the FMC Plant Site – Properties west of FMC's western property boundary and south of the mainline railroad tracks include the 14 residential properties that were remediated

in 2003 as an Interim Corrective Measure (ICM), and other residential and commercial properties. The commercial properties include an automobile garage and electrical substation along the north side of South Street; a former electrical substation lot, a small engine repair shop, and a gas station/convenience store (all of which are along the west side of South Main Street); and a general contracting business at the corner of Freeman Road and Telegraph Road. The 14 properties in the 2003 ICM area include 10 residential properties that are situated on the east side of South Vernon Street and abut FMC's western property boundary, and 4 residential properties that are situated on the west side of South Vernon Street and the east side of South Main Street. These 14 ICM properties are situated within a historic surface water migration pathway from the FMC Facility and are located near FMC's former surface water settling lagoons at the northwest corner of the Facility. The ICM project involved the removal of a former outfall sewer from FMC, excavation of impacted soil from the 14 properties, and restoration of each property.

Area north of the FMC Plant Site - Properties that abut FMC's northern property boundary (located north of the mainline railroad tracks) include an agricultural field, the Roy-Hart School Property, the southern end of Alfred Street, and the North Commercial/Industrial Area. The land farther north primarily consists of residential properties and businesses (i.e., funeral home, stores, and restaurants). Historical businesses include lumber yards located along the south side of the Erie Canal and between Vernon Street and Washington Street. The Roy-Hart property is currently occupied by the Roy-Hart Middle School (grades 5-8), High School (grades 9-12), central school district offices, paved roads and parking areas, maintenance office building, former school bus maintenance building (the school bus maintenance activities were moved off the school property in late 2005) and school athletic facilities (i.e., all-weather track, football field, bleachers, baseball fields, and soccer/lacrosse fields). The southwestern portion of the Roy-Hart school property was remediated by FMC as part of a 1996 Interim Remedial Measure for the Bleacher Area and the 1999-2000 School Football Field Area Interim Corrective Measures. In addition, 10 residential properties situated south of Park Avenue, east of Maple Avenue and west of Alfred Street and the easternmost parcel of the North Commercial/Industrial Area (known as the "Wooded Parcel") were remediated as part of the 2007 Early Actions.

2.3 EXCLUDED AREAS

Corrective actions (e.g., sampling) are not required in the following areas within the bounds of the Study Area as described below:

- Corrective action is not required for areas beneath public streets and roads and existing permanent buildings. These areas were excluded from the RFI sampling and analysis activities since the underlying soil could not have been impacted by historic air depositions from past operations at the FMC Facility. The Village streets and roads and many buildings within the Study Area existed prior to the FMC Facility (constructed in the early 1920's). In addition, it is likely that surface soils were removed during construction of public streets/roads and permanent buildings. The areas beneath public streets and roads and existing permanent buildings will be excluded from consideration in the CMS.

- Corrective measures technologies and alternatives will be identified to address the upper one to two feet of soil in areas. It is expected that subsurface soils at depths greater than one to two feet could not have been impacted by historic air depositions from past operations at the FMC Facility.

- As discussed in Section 1.2.4, the specific corrective actions for the 16 Study Area properties traversed by Culvert 105 (e.g., removal of soil at depths greater than 2 feet), if determined to be required, will be not be finalized until after completion of the CMS for Culvert 105.

- Of the 259 sampled properties within the Study Area, 46 residential properties received a letter from the Agencies in February 2007 that stated the following: 1) the sampling data were consistent with background arsenic soil levels found in residential properties in Gasport; 2) it was not necessary to restrict uses on the property; and 3) "no further sampling or other actions are necessary at this time". Accordingly, corrective actions are not required and will not be identified for these 46 No Further Action (NFA) properties. The soil arsenic data for all 46 properties are summarized below:

	Property Arsenic Concentrations Ranges
Mean Concentrations	4.3 to 17.4 mg/kg
Maximum Concentration	8.4 to 27.5 mg/kg

Notes:

(1) Excludes an anomalous analytical result of 103 mg/kg collected at sample location WSS27 from NFA Property T7 on April 2, 1997.

- Additional corrective measures are not required on the 14 residential properties (including the Village street ROWs) that were remediated as part of the 2003 ICM and the 10 residential properties (including the Village street ROWs) that were remediated as part of the 2007 Early Actions. Impacted soils were removed from the 24 residential properties in accordance with work plans approved by the Agencies. Owners of 2003 ICM properties received letters (in February 2004) from the Agencies that confirm completion of the approved soil cleanup activities and state that the remediated properties are suitable for unrestricted residential uses. Owners of the 10 residential properties remediated as part of the 2007 Early Actions are expected to receive similar letters from the Agencies in early 2008. As such, no further corrective actions will be identified for these 24 residential properties.

- The southwestern portion of the Roy-Hart School property was remediated as part the 1996 IRM and the 1999-2000 ICM. Impacted soils were removed from the specified area(s) identified under a human health risk assessment commissioned by the USEPA. The soil removal activities were performed under the oversight of the Agencies in accordance with work plans approved by the Agencies. As such, further corrective actions within the remediated areas of the Roy-Hart school property will not be required and will not be identified in the CMS.

As indicated in Section 2.1, the approximately 24 properties where access has been denied will be excluded from the CMS, though some of these may be sampled if ownership changes result in granting of access permission.

3.0 CMS TASK 1: COMMUNITY PARTICIPATION

3.1 GENERAL PRINCIPLES

FMC is committed to involving the Middleport community, affected property owners, local officials (including the Village of Middleport), and others potentially affected by the project. FMC has developed a project-specific public participation program in accordance with USEPA's 1996 RCRA Public Participation Manual. Goals of FMC's community participation program are as follows:

- **Provide Information** - Balanced and objective information will be provided to assist the public and stakeholders in understanding the project scope of work; the problems; the process for addressing the problems; the alternatives and solutions to the problems. Information will be provided to the public and stakeholders by fact sheets, newsletters, web sites, open houses, availability sessions, and/or meetings.

- **Obtain Feedback -** Public and stakeholder feedback on the project scope of work, the problems, the process for addressing the problems, the alternatives and solutions to the problems will be obtained. Comments and feedback will be obtained by maintaining open communications; holding public comment periods, public information sessions, and/or public meetings; conducting surveys; community-wide mailings with return/reply comment cards and/or web-site discussion forums.

- **Provide Opportunities for Involvement –** Opportunities for will be provided to stakeholders for involvement during the implementation of the project and not just at the end of the project. Opportunities will be provided by holding meetings, workshops, information sessions and/or public meetings.

3.2 PROJECT SPECIFIC STAKEHOLDERS

Corrective measures activities would impact a number of project-specific stakeholders. The local project-specific stakeholders and their potential concerns (during the CMS and implementation of any corrective measures) initially recognized are as follows:

Local Project-Specific Stakeholders	***Potential Major Concerns***
Village of Middleport	• Public safety and health of Village residents and Village workers • Impact to Village-owned property, roads and infrastructure • Quality of life (e.g., disruption of regular neighborhood activities, added noise, and traffic) • Preservation of the existing character of the Village (e.g., historic appearance, presence of mature trees, plantings and other flora) • Public image of the Village • Impact to property values and economics of the Village • Schedule for Decision (e.g., the length of time until a final decision is made concerning the affected properties) • Construction/Implementation Schedule for the selected corrective measure alternative
Owners of affected Properties within the Study Area	• Public safety and heath of residents of impacted properties • Quality of life (e.g., disruption of regular neighborhood activities, added noise, and traffic) • Impact to property values • Preservation of trees and other planting on individual properties • Agencies determination that no further action is required or that remedial actions have been completed • Schedule for Decision (e.g., the length of time until a final decision is made concerning the affected properties) • Construction/Implementation Schedule for the selected corrective measure alternative
Royalton-Hartland Central School District (Roy-Hart)	• Public safety and health of students, teachers and district employees • Quality of life (e.g., disruption of regular activities, added noise, and traffic) • Agencies determination that no further action is required or that remedial actions have been completed • Schedule for Decision • Construction/Implementation Schedule for the selected corrective measure alternative

Local Project-Specific Stakeholders	*Potential Major Concerns*
Middleport Community Input Group (MCIG)	• Same above concerns for the Village of Middleport and the Study Area property owners • Consideration of the USEPA's Green Remediation Program • Other issues and comments provided to FMC and the Agencies by email sent on April 19, 2008.
FMC	• Compliance with the terms and conditions of the AOC and applicable rules and regulations • Completion of the CMS process for the Study Area • Potential project-related concerns of the Village and owners of affected properties • Constructability/Implementability and effectiveness of the selected corrective measure alternative • Cost effectiveness of performing the work • Impact to employees who live in and around Middleport

It should be noted that FMC is a member of the Middleport community, and as such, has similar concerns as the Village of Middleport and property owners.

This initial list of project-specific stakeholders and their potential concerns will be reviewed throughout the life of the project and will be revised as necessary and appropriate.

3.3 PROJECT-SPECIFIC DOCUMENT REPOSITORIES AND CONTACT LIST

Project-related documents will be/are available for review by the public in FMC's document repository located at the Middleport Free Library and at the NYSDEC's Region 9 office in Buffalo. Periodic updates on the progress of the project will also be available on the website at http://www.teapothollow.com. In addition, information on the projects and the MCIG's activities are available on the MCIG's website at http://www.middleport-future.com/ .

In addition, FMC's community relations representatives are located at 17 Vernon Street in Middleport. Representatives at the office are available to discuss the CMS activities and answer questions.

The following is a contact list for any project related questions.

Organization	*Contact*	*Phone Number*
FMC Corporation – Middleport Facility	Dana Thompson – Plant Manager	716-735-3761, ext. 364
	Community Voice Message Box	716-735-3761, ext. 289 Please leave a message and an FMC Representative will return your call
	Robert Wojcik – Environmental Manager	716-735-3761, ext. 202
FMC Neighborhood House - (17 Vernon Street)	Debra Overkamp – FMC Community Liaison	716-735-7939
NYSDEC – Buffalo Office	Mike Hinton – Environmental Engineer	716-851-7220
NYSDEC – Albany Office	Matt Mortefolio– Environmental Engineer	518-402-8594
NYSDOH – Troy Office	Tamara S. Girard - Public Health Specialist	518-402-7860
USEPA Region II – New York City Office	Mike Infurna – Project Coordinator	212-637-4177

3.3 PROJECT-SPECIFIC PUBLIC PARTICIPATION ACTIVITIES

Communication with the stakeholders will include meetings, fact sheets, progress newsletters, public information sessions, open houses, establishment of a community information center and one-on-one conversations, as needed. Specific activities are summarized below:

Approximate Timing	*Proposed Activities*
A. Completion of CMS Work Plan	A1. Notify local officials, FMC's Community Advisory Panel (CAP), MCIG, Study Area property owners and/or other interested parties on FMC's mailing list
	A2. Place Work Plan in document repository.
	A3. Meet with the Project-Specific Stakeholders to review the proposed CMS activities and/or hold information session(s)/workshop(s) on the work plan activities and the RFI/CMS process.

Approximate Timing	*Proposed Activities*
	A4. Update FMC's mailing list and list of Project-Specific Stakeholders, as necessary.
B. During CMS Implementation, after completion of key CMS tasks and/or submittal of CMS technical memoranda and reports	B1. Provide updates (i.e. newsletters, fact sheets, visits to property owners, revised schedules) to Project-Specific Stakeholders, local officials, community, local media, and/or interested parties on FMC's mailing list.
	B2. Provide copies of technical memoranda and CMS Report to Project-Specific Stakeholders and place in the document repository for public review
	B3. Meet with the Project-Specific Stakeholders to review the CMS activities and or solicit comments/input and/or hold information session(s)/workshop(s) on the major CMS deliverables
	B4. Provide opportunities (e.g., public meetings, information sessions) for public and Project-Specific Stakeholders comments on the technical memoranda and/or CMS Report.
	B5 Document public and Project-Specific Stakeholders comments and responses to comments.
C. After selection of the corrective measure alternative	C1. Provide copy of the CMS Report in the document repositories.
	C2. Provide opportunities (e.g., public meetings, information sessions) for public and Project-Specific Stakeholders to comment on the selected corrective measure alternative and/or CMS Report
	C.3 Document public and Project-Specific Stakeholders comments and responses to comments.

4.0 CMS TASK 2: STUDY AREA AND BACKGROUND DATA EVALUATION

In order to equitably assess FMC responsibilities with respect to the CMS, it is necessary to distinguish that portion of arsenic found in the soil within the Study Area that is potentially attributable to historic air deposition from past operations at the FMC Facility from other non-FMC sources (i.e., application of arsenical pesticides to trees, agricultural land, weed control along the railroad and power lines, wood treatment or use of treated wood, coal combustion). To assist in this process, FMC and the Agencies attempted to estimate the background levels of arsenic (from natural and non-FMC related anthropogenic sources) in soil representative of the Middleport area. A description of the most recent estimates of the local soil arsenic background levels is summarized Sections 4.1 through 4.3 below.

CMS Task 2 is intended to evaluate the sample data within the Suspected Air Deposition Study Area to: 1) identify properties that contain soil arsenic levels that are consistent with local soil arsenic background levels; and 2) identify sample area/locations where the arsenic concentrations are above background, but still likely attributable to non-FMC related anthropogenic sources. This information will then be used in the development of corrective measures alternatives for the Study Area. The approach for this evaluation is described Section 4.4.

4.1 OVERVIEW OF MIDDLEPORT AREA SOIL BACKGROUND STUDIES

Since the mid-1980s, FMC and/or the Agencies variously performed soil sampling and analysis and/or background data evaluations as part of several studies to characterize local background arsenic concentrations (attributable to natural and non-FMC related anthropogenic sources) in Middleport area soils. These studies are summarized below:

- November 1985 Roy-Hart School Surface Soil Sampling & Analysis Program – Conducted by FMC that included the collection and arsenic analysis of surface soil samples from the Roy-Hart Elementary School in Gasport.

- January 1989 NYSDOH Soil Sampling Program in Middleport, New York – Included the collection and arsenic analysis of surface soil samples from residential yards and a farm field east of the FMC facility.

- 1989 Gasport Orchard Study – FMC collected soil samples from an active apple orchard east of Gasport in 1989 to further characterize background arsenic and lead concentrations in orchards (CRA 1989).

- 1990-1993 Off-Site Investigation – Included the collection and analysis of surface soil samples by FMC to characterize background soils south, southeast and east of the FMC facility, and in Gasport (CRA 1993).

- 1999 Draft RFI Report – In early 1996, the Agencies identified a set of arsenic soil background data from 11 background locations sampled as part of the above-mentioned studies and in early 1997 further identified 30 mg/kg as an appropriate background criterion for comparison to investigative data in the draft 1999 RFI Report (CRA 1999).

- 2001-2003 Gasport Area Background Study – In mid 2000, the Agencies proposed a program to re-evaluate local arsenic background concentrations representative of Middleport soils with collection of a larger, more extensive data set and developed the "Part A – Work Plan for Development of Arsenic Background in Middleport Soil" (Agencies 2001) (referred to as the "Agencies' 2001 Work Plan) that included the collection and analysis of surface soil samples from the Gasport Area.

  FMC implemented the Agencies' work plan beginning in December 2001, and issued a final report entitled "Development of Arsenic Background in Middleport Soils" (dated February 2003 and revised May 2003) (CRA 2003). The Agencies approved the final report in June 2003. The study included collection and arsenic analysis of surface soil samples from orchards, agricultural fields, undeveloped wooded properties, public properties and residential properties in Gasport. The arsenic data from the study was used to calculate various arsenic soil background criteria for Middleport.

- 2007 Re-evaluation of Middleport Area Soil Background - In late 2004, FMC obtained additional aerial photos of the Middleport Study Area that showed significantly more historic orchard presence than had been previously estimated and used in the 2003 Gasport Background Study Report. Based on this new information, new property type/usage weighting factors and associated Middleport soil arsenic background statistical values were recalculated and presented in the report entitled "Background

Arsenic Soil Concentrations in Middleport, NY" (Gradient Corporation 2007) (June 2007 Background Report).

In late 2007 through March 2008, the Agencies and FMC discussed the additional aerial photos, extent of historic orchard presence in Middleport, and the methods used to calculate the revised historic land use percentages/weighting factors and associated statistical values. As an outcome to those discussions, FMC utilized the additional aerial photos and revised historic land use percentages/weighting factors and associated statistical values using the methods discussed during a February 14, 2008 meeting. The two methods entail use of two time periods, as described in the approved September 2001 Work Plan for Development of Arsenic Background in Middleport Soil, and use of the Agencies' new method set forth in a March 10, 2008 letter, which uses time-weights for each photo date. The RFI Report – Volume 1 Background and Related Information summarizes the methods used, the Gasport sample data used in the evaluation, and presents the re-calculated statistical values. The re-calculated statistical values are summarized in the following subsections.

4.2 2001-2003 GASPORT BACKGROUND STUDY SAMPLE RESULTS

The nearby community of Gasport, NY was selected for the collection of surface soils samples that would provide local background concentrations of arsenic for the following reasons:

1. The Gasport Area includes properties that conform to the four major historic Middleport property type/usage groups based on review of local maps, aerial photos, and familiarity with the area.

2. The Gasport Area is similar to Middleport in character (i.e., economics, topography; surface water features, soil geology, and proximity to the Erie Canal and the mainline railroad tracks) and history (i.e., rural agricultural).

3. The Gasport Area is approximately 4.5 miles west of the Facility. It is sufficiently distant in an upwind direction from the FMC Facility so as not to have been impacted by past operations at the Facility.

4. Based on the topography and the surface water characteristics of the region, the Gasport Area soils could not have been impacted by past surface water releases from the FMC Facility.

The 2001-2003 Gasport Area Background Study generated total arsenic data for 103 surface soil samples (0-3-inch interval) collected from four major property types. A summary of the data is as follows:

Major Property Type/ Usage	Number of Samples	Arsenic Concentrations (mg/kg)				
		Range	Mean	95% UCL[2]	95th Percentile[3]	98th Percentile[4]
Orchard Land (3 Orchards)	12	3.1 – 121.3	33.3	63.5	99.6	112.6
Wooded/Overgrown/ Agricultural Crop Field Land (2 Wooded Lands, 5 Crop Fields)	56	3.1 – 56.7	7.9	14.2	33.5	51.8
Commercial/Industrial Land (2 Business and 2 Industrial Properties)	12	2.2 – 32.8	11.7	18.4	29.1	31.3
Residential/Public Land (7 Residential Properties, 1 School)	23	3.3 – 21.1	10.1	12.0	20.2	20.7
TOTAL	**103**	**2.2 - 121.3**	**11.8**	**19.1**	**42.6**	**56.7**

Note: 95% UCL = 95% Upper Confidence Limit on the Mean. 95% UCL values calculated using USEPA's ProUCL 4.0 software.

The Agencies' 2001 Work Plan for the 2001-2003 Gasport Area Background Study required the performance of statistical analysis to identify potential outliers. The analysis identified potential outliers within the Wooded-Agricultural land group. No outliers were identified in the other three property groups. The four potential outliers are as follows:

[2] 95% Upper Confidence Limit (UCL) on the Mean – The 95% UCL is a value such that there is confidence that the true background arsenic average will fall below it 95 percent of the time. If an infinite number of background sample data were available, the 95% UCL would equal the mean of the infinite data set.
[3] 95th Percentile – This is a calculated value below which fall 95 percent of the background data. Five percent of the background data are expected to be above the 95th Percentile.
[4] [4] 98th Percentile – This is a calculated value below which fall 98 percent of the background data. Two percent of the background data are expected to be above the 98th Percentile.

Major Property Type/ Usage	Sample Location	Arsenic Concentrations (mg/kg)
Wooded/Overgrown/ Agricultural Crop Field Land	Ca-1A	56.7
	Ch-3A	53.5
	Ch-2B	36.9
	Ca-4A	32.3

A summary of the 2001-2003 Gasport Area Background data, without the above four potential outliers, is as follows:

Major Property Type/ Usage	Number of Samples	Arsenic Concentrations (mg/kg)				
		Range	Mean	95% UCL	95th Percentile	98th Percentile
Orchard Land (3 Orchards)	12	3.1 – 121.3	33.3	63.5	99.6	112.6
Wooded/Overgrown/ Agricultural Crop Field Land (2 Wooded Lands, 5 Crop Fields)	52	3.1 – 11.9	5.0	5.5	9.1	9.8
Commercial/Industrial Land (2 Business and 2 Industrial Properties)	12	2.2 – 32.8	11.7	18.4	29.1	31.3
Residential/Public Land (7 Residential Properties, 1 School)	23	3.3 – 21.1	10.1	12.0	20.2	20.7
TOTAL	**99**	**2.2 - 121.3**	**10.4**	**17.4**	**28.3**	**57.3**

Note: 95% UCL = 95% Upper Confidence Limit on the Mean. 95% UCL values calculated using USEPA's ProUCL 4.0 software.

The 2001-2003 Gasport background soil data will be considered during performance of the CMS tasks.

4.3 CALCULATED MIDDLEPORT SOIL ARSENIC BACKGROUND CONCENTRATIONS

The above soil sample data collected during the 2001-2003 Gasport Area Background Study were used along with information on historic land use and property types in the Middleport Area to estimate soil arsenic background concentrations (that may represent both natural and non-FMC related anthropogenic sources) for the Middleport area, in accordance with the

procedures described in the Agencies' 2001 Work Plan. As discussed in Section 4.1, FMC calculated historic land use percentages/weighting factors and associated Middleport background statistical values using FMC's methods discussed during a February 14, 2008 meeting (e.g., use of two time periods, as described in the approved September 2001 Work Plan for Development of Arsenic Background in Middleport Soil) and the Agencies' new method set forth in a March 10, 2008 letter, which uses time-weights for each photo date. The details of the calculations and the results are presented in the RFI Report-Volume I. A summary of the calculated statistical background values is presented below.

Using the Gasport data and the time-weighted land use information specific to the Middleport area, the following Middleport Property Type/Usage Grouping Weighting Factors statistical values were calculated:

Property Group Weighting Factor Estimation Method	**Percent Property Type/Usage Group Weighting Factors**			
	Wooded/ Overgrown/ Agricultural Crop Field	**Commercial/ Industrial**	**Residential/ Public**	**Orchard**
A. FMC's Updated 2001 Work Plan Calculations (time-weighted, cumulative orchard areas within the two time periods, based on eight aerial photos)	**38%**	**9%**	**35%**	**18%**
B. Agencies' Photo-Date Time-Weighted Alternative (time-weighted by each photo date, orchard areas are not cumulative, based on additional photos)	**49%**	**8%**	**36%**	**7%**

These Middleport Property Group Weighting Factors were calculated based on the various land uses within the Middleport area south of Pearson Road over the approximate time period when the FMC Facility handled arsenical pesticides (approximately from 1928 to 1974).

Using both of the above Middleport Property Group Weighting Factors and all of the 103 Gasport soil samples (including the potential outliers), the Middleport soil arsenic background statistical values were estimated to be as follows:

Property Group Weighting Factor Estimation Method	Including Potential Outliers (N=103)			
	Weighted Mean (mg/kg)	95% UCL on Weighted Mean (mg/kg)	95th Percentile (mg/kg)	98th Percentile (mg/kg)
A. FMC's Updated 2001 Work Plan Calculations (time-weighted, cumulative orchard areas within the two time periods, based on eight aerial photos)	**14**	**19**	**40**	**75**
B. Agencies' Photo-Date Time-Weighted Alternative (time-weighted by each photo date, orchard areas are not cumulative, based on additional photos)	**11**	**14**	**25**	**41**

Note: N = Number of Samples from the 2001-2003 Gasport Area Background Study
95% UCL = 95% Upper Confidence Limit on the Weighted Mean

Using both of the above Middleport Property Group Weighting Factors and excluding the four potential outliers discussed in Section 4.2 (uses 99 of the 103 Gasport soil sample data), the Middleport soil arsenic background statistical values were estimated to be as follows:

Weighting Factor Calculation Method	Excluding Potential Outliers (N=99)			
	Weighted Mean (mg/kg)	95% UCL on Weighted Mean (mg/kg)	95th Percentile (mg/kg)	98th Percentile (mg/kg)
Updated 2001 Work Plan (time-weighted, cumulative orchard areas within the two time periods, based on eight additional photos)	**13**	**19**	**39**	**76**
Time-Weighted Alternative (time-weighted by photo, orchard areas are not cumulative, based on eight additional photos)	**9.3**	**13**	**23**	**40**

Note: N = Number of Samples from the 2001-2003 Gasport Area Background Study
95% UCL = 95% Upper Confidence Limit on the Weighted Mean

The 2001-2003 Gasport background soil data presented in Section 4.2 and the Middleport soil arsenic background statistical values presented in this section will be considered during performance of the CMS tasks. This will include evaluation of the data in the CMS Study Area

and the development of the corrective measures alternatives for the Suspected Air Deposition Study Area.

4.4 STUDY AREA SOIL ARSENIC DATA EVALUATION

This section describes the approach that will be used to: 1) identify properties that contain soil arsenic levels that are consistent with local soil arsenic background levels; and 2) identify sample area/locations where the arsenic concentrations are above background, but still likely attributable to non-FMC related anthropogenic sources. This information will then be used in the development of corrective measures alternatives for the Study Area.

To the extent practical, this CMS will focus on soils where arsenic is present above local background levels and is potentially attributable to historic air deposition from past emissions from the FMC Facility. While it may be feasible to identify specific non-FMC sources in certain areas (e.g., adjacent to wood structures treated with arsenicals, presence of orchard on or adjacent to area, known application of arsenic containing materials), distinguishing anthropogenic sources will be necessarily interpretive, particularly when considering the potential for historic undocumented use of arsenic-containing materials among the 285 Study Area properties.

Due to the uncertainties associated not with only historic air deposition from the FMC Facility, but also with past use of arsenic-containing materials by the community, it will not be feasible to "prove the negative" (i.e., conclude with certainty that arsenic at a given location is not FMC-related). Therefore, a "weight of evidence" approach will be used to: 1) identify sample areas/locations where the arsenic is likely attributable to non-FMC related anthropogenic sources (e.g., outliers or anomalies not consistent with expected air deposition patterns) and; 2) identify properties that contain soil arsenic levels that are consistent with local soil arsenic background levels.

As a first step, all properties with soil arsenic levels that are consistent with local background levels will be identified. A weight of evidence approach will also be used in this effort and will consider, but may not be limited to the following:

1. Property-specific data will be compared to Middleport soil arsenic background statistical values (as presented in Section 4.3);

2. Property-specific data will be compared to the appropriate land use based Gasport background soil data (as presented in Section 4.2);

3. Property-specific data will be compared to the data for the 46 NFA properties. As discussed in Section 2.3, the Agencies identified 46 residential properties within the Study Areas that require no further actions. The soil arsenic data for all 46 properties are summarized below:

	Property Arsenic Concentrations Ranges (1)
Mean Concentrations	4.3 to 17.4 mg/kg
Maximum Concentration	8.4 to 27.5 mg/kg

Notes:
(1) Excludes an anomalous result of 103 mg/kg collected at sample location WSS27 from NFA Property T7 on April 2, 2007.

Second, the CMS will identify sample areas/locations where the arsenic level is above background based on the considerations outlined above, but is likely attributable to non-FMC related anthropogenic sources (e.g., outliers or anomalies not consistent with expected air deposition patterns). This includes two possibilities: (1) areas where arsenic is above background but not consistent with an air deposition pathway; and (2) areas where arsenic is above background but can be predominantly (but perhaps not wholly) attributed to a non-FMC source. The weight of evidence approach for identification of potential outliers or anomalies that are not consistent with air deposition from the Facility will consider, but may not be limited to the following:

1. The Study Area data will be evaluated using statistical based methods or criteria (e.g., standard deviation) and by comparing the potential outlier/anomaly to data from adjacent sample locations and nearby properties;

2. Property-specific information obtained during implementation of the 2004-2005 sampling and analysis program will be reviewed to identify potential non-FMC related sources of arsenic that could have contributed to the presence of arsenic.